ACCESS TO SAFE AND EFFECTIVE BLOOD TRANSFUSION INCLUDING BLOOD COMPONENT THERAPY

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Outline

• Introduction
• Transplantation and BTS in Africa
• Organizational requirements
• Blood donors and blood collection
• Component preparation, testing and distribution
• Storage and transportation
• Blood component stock management
• Blood component therapy
• Constraints
Introduction

- Blood transfusion services (BTS) play a vital role in clinical transplantation programs through provision of blood and components for transfusion support to transplant patients.

- A well-organized BTS with an effective blood component programme and quality systems in all areas is a prerequisite for safe and effective use of blood including component therapy.
<table>
<thead>
<tr>
<th>Country</th>
<th>Scope of Transplantation services</th>
<th>Type of blood service</th>
<th>Blood Component</th>
<th>% Vol. donations GBDS WHO 2012</th>
<th>Total 2012 Health Expend.</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>HSCT Solid organ</td>
<td>NCBTS</td>
<td>RBC, FFP, CRYO, PC</td>
<td>100%</td>
<td>8.8</td>
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<td></td>
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<td>SANBS WPBTS</td>
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</tr>
<tr>
<td>Tunisia</td>
<td>HSCT Solid organ</td>
<td>National Blood Transfusion centre of Tunisia</td>
<td>RBC, FFP, CRYO, PC</td>
<td>32%</td>
<td>7.0</td>
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<tr>
<td>Algeria</td>
<td>HSCT</td>
<td>Agence National du Sang</td>
<td>RBC, FFP, CRYO</td>
<td>60%</td>
<td>5.2</td>
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<tr>
<td>Egypt</td>
<td>HSCT Solid organ</td>
<td>Egyptian National Blood Transfusion Service</td>
<td>RBC, FFP, CRYO, PC</td>
<td>64%</td>
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<tr>
<td>Morocco</td>
<td>HSCT</td>
<td>Centre National de Transfusion Sanguine, Morocco</td>
<td>RBC, FFP, CRYO,</td>
<td>63%</td>
<td>6.4</td>
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<tr>
<td>Libya</td>
<td>Kidney</td>
<td>Libyan Blood Transfusion Service</td>
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<td>No data</td>
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<tr>
<td>Nigeria</td>
<td>HSCT Kidney*</td>
<td>NCBTS &amp; others</td>
<td>No data</td>
<td>97% (NBTSN only 17 centres)</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NBTSN (3% collections)</td>
<td></td>
<td></td>
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<tr>
<td>Ghana</td>
<td>Kidney (2008)</td>
<td>NCBTS</td>
<td>RBC, FFP, CRYO, PC</td>
<td>45%</td>
<td>5.2</td>
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<tr>
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<td>NBSG</td>
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</table>
Organizational Requirements

• Nationally coordinated BTS with centralization or regionalization of blood processing and testing
  • economies of scale (resources & technology)
  • uniform standards of performance
  • improved quality and safety

• Assessment of clinical demands and feasibility of blood component programme.
  • clinical demand for blood and components
  • available medical and diagnostic services
  • capacity of BTS
  • may consider apheresis programme if demand cannot be met from components prepared from WB
Organizational Requirements

- Advocate for adequate and sustainable financial resources
  - adequate finances to meet additional cost of component preparation
  - suitable premises that comply with cGMP
  - sufficient number of trained staff
  - appropriate technology, specialized equipment for blood collection, processing, testing, storage and transportation and a preventive maintenance system
  - reliable supply of blood collection bags, leukodelpletion filters, reagents etc.
Organizational Requirements

• Appropriate infrastructure
  • suitable working environment for donor selection, blood collection, processing, testing and storage
  • appropriate technology, equipment and materials
  • reliable transportation system
  • reliable water and power supplies with back-up systems

• effective planning and communication system
  • set and evaluate targets for donor recruitment, blood collection and component preparation
  • collaboration with clinical staff for appropriate components for transfusion support

• waste management system
Organizational Requirements

• Effective quality system
  • specifications for blood components, equipment and materials
  • validation of processes, procedures, equipment and materials
  • regular maintenance and calibration of equipment to ensure quality and minimize down-time
  • standardized procedures
  • hygiene and safety of environment, equipment, blood donors and staff
  • documentation of all processes and accurate labelling to ensure traceability
  • ongoing training of staff
  • monitoring of all activities to ensure continuous quality improvement

• Suitable regulatory framework
Blood Donors and Blood Collection

- A reliable base of regular VNRBD a prerequisite for safe and effective blood component programme to meet transfusion requirements.

- Effective donor education, recruitment, motivation, call-up and retention strategies to promote regular donations by suitable donors
  - panel of regular VNRBD
  - national donor selection and deferral criteria, including criteria specific for component preparation to transplant patients.
  - mechanism for setting blood collection targets to meet component preparation targets and clinical demand
Blood Donors and Blood Collection

- Effective blood collection
  - systematic planning and preparation for fixed and mobile sessions

- planning of number and type of collections per session from whole blood/apheresis donors
- appropriately trained and adequate staff
- appropriate equipment
- suitable blood collection bags
Component Preparation, Testing & Distribution

• Preparation of components only from WB or apheresis donors who meet standard selection criteria
  • Prevalence of blood groups and alloantibodies

• Testing of all donated units and discard of all blood and components reactive for any TTI
  • mandatory tests- HIV 1&2, HBV, HCV, Syphilis
  • additional tests – CMV, malaria, rare blood groups, HLA-matching
  • alloantibodies
Component Preparation, Testing & Distribution

- Quality system and cGMP for all aspects of component preparation and distribution.
  - use of efficient/closed system
  - RBC, PC, FFP, cryoprecipitate

- Compliance with specifications for components, equipment e.g. irradiators and materials

- Labelling system for untested, quarantined and available stock

- Mechanism for quarantine and release
Component Preparation, Testing & Distribution

- Provide special blood components
  - irradiated components
  - leucodepleted components
  - CMV-negative components
  - HLA-matched components
  - rare RBC units, stem cell processing

- System for recall of defective components

- Cleaning and maintenance of all areas and equipment to minimize risk of contamination of components

- Quality monitoring of components, including statistical process control
Storage and Transportation

• Correct storage and transportation of blood bags, donor specimens, collected units, blood components, reagents and material
  • to processing centres and testing laboratories within prescribed temperature and time limits

• Separate storage areas for untested, quarantined and available units

• Suitable areas and equipment for storage and transportation that meet specifications
Storage and Transportation

- Monitoring and recording of temperatures in all cold chain equipment

- Corrective and preventive action in case of deviation from specified temperature ranges and time limits
Blood Component Stock Management

• Efficient stock management system are needed in the BTS and hospitals
  • formal agreement and ongoing communication between BTS and hospitals on optimum stocks, order and supply
  • ensure stock level optimum at all times in right mix.
  • monitoring and evaluation of component availability and utilization, including shortfalls and outdating
Blood Component Therapy

• Optimum use of blood as a scarce national resource requires
  • national and hospital guidelines on use of blood and blood products and alternatives to transfusion
  • HTC to develop local policies and guidelines and monitor component utilization
  • training of clinical staff involved in the prescription administration and monitoring of components
  • accurate transfusion records to ensure traceability of blood and efficacy of component usage

• Haemovigilance system for monitoring, investigation and reporting of adverse transfusion events
• ongoing assessment of current and future clinical needs for components and special products
Constraints

• Inadequate Infrastructure
  • appropriate equipment
  • standard reagents & consumables
  • reliable utilities & transportation

• Lack of political will

• Lack of support and commitment from health authorities

• Inadequate resources
  • human
  • financial
  • technological

• Lack of coordination of BTS

• Unstable voluntary blood donor base

• Lack of specific training for BTS and clinical staff
Thank You

National Blood Service, Ghana
NBSGhana
www.nbsghana.org