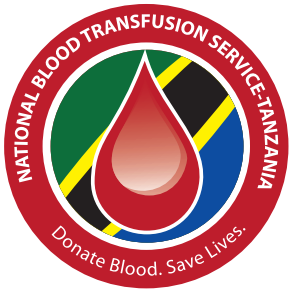
THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN

NATIONAL BLOOD TRANSFUSION SERVICE

EMERGENCY PREPAREDNESS AND DISASTER RESPONSE PLAN FOR BLOOD TRANSFUSION SERVICES

Version 1.0



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1.0 INTRODUCTION

1.1 Purpose of the Disaster Preparedness and Response Plan for Blood Transfusion Services.

Themain purpose of the disaster preparedness and response plans is to provide a consistent response framework for blood supply during disaster events in Tanzania.

This plan encompasses the following

1. Explains the entire cycle of management of disasters in relation to supply of safe blood during natural forces as well as those that result from human events.
2. Provide a framework for ensuring that in the event of a "disaster" blood collection, testing and distribution activities are carried out efficiently.
3. Provide guidance among Blood Transfusion Services (BTS) key players on how to communicate clear, concise and consistent information to the public and stakeholders on the status of blood supply in the disaster affected area.
4. Sensitize and orient health authorities, BTS and, blood bank personnel ontheir responsibilities and functions during disasters situation, taking into account priorities, needs and the local capacity for immediate response.
5. Facilitate coordination in a disaster among Blood Organization, Hospital blood banks, Governments authorities and Local governments officials to determine the medical need of blood and facilitate transportation of blood from one facility to another.
6. Ensure the safety of National Blood Transfusion Service (NBTS) and, NBTS - network staff, infrastructure, blood and blood products.

1.2 Definition of Terms

Disaster: is defined as an occurrence of natural or man-made calamity that cause or pose a significant disruption of the functioning of a community or cause wide spread human, material, economic or environment loss or impact which exceed the capacity of that community to cope using its own resources.

Disaster can also be defined as a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.

Disaster in the context of Blood Safety: is any natural or man-made event that suddenly requires a much larger amount of blood than usual stock level or temporarily

restricts or eliminates a blood collector's ability to collect, test, process, and distribute blood or temporarily restricts or prevents the local population from donating blood, or restricts or prevents the use of the available inventory of blood products and thus requires immediate replacement or resupply of the region's blood inventory from another region.

A natural disaster: Is defined as a major adverse event resulting from natural processes of the Earth(force majeure); examples include floods, eruptions, earthquakes, tsunamis, wildfire, winter storm and other geologic processes. A natural disaster can cause loss of life or property damage, the severity of which depends on the affected population's resilience, or ability to recover.

A man-made disaster: Is a disastrous event caused directly and principally by one or more identifiable deliberate or negligent human actions; examples industrial accidents, chemical &biological events, radiological & nuclear events, vehicle accidents, terrorism, collapse of storing building.

A hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss life, injury or health impacts, property damage, loss of livelihood and service, social and economic disruption or environmental damage.

Risk: The probability of harmful consequences or expected losses (lives lost, persons injured, damage to property and/or the environment, livelihoods lost, disruption of economic activity or social systems) due to the interaction between natural or human-induced hazards and vulnerable conditions (ISDR, 2004)

Risk assessment: Means systematic process of organizing information to support a risk decision to be made within a risk management process. It consist of the identification of hazard and the evaluation of risk associated with the exposure to those hazard.

Blood Stock level: Day's cover is also known as issuable stock index (ISI) defined as the number of days of available stock that is held in inventory for a particular blood product that will be sufficient to satisfy its daily demand. Day's cover is calculated by dividing the number of available safe blood product units in inventory by the number of blood product units used (on average) per day over a given time period.

National Blood Transfusion Service (NBTS): Means a designated section which is Ministry responsible for health, to establish policy, standards, oversee and coordinate all blood safety activities including, recruitment of blood donors, blood collection, storage, and production of blood components and blood products, test for transfusion transmissible infections, transport and distribute blood, as well as guiding on appropriate use of blood and blood products.

NBTS Network: Means organizations or institutions working in collaboration with NBTS to carry out blood safety activities including, donor education, donor recruitment, collection, storage, and production of blood products, blood components, transportation and distribution of blood.Such as Tanzania Red Cross Society (TRCS), Tanzania Peoples Defense Force (TPDF), Presidents Office Regional Administration and Local Government (PORALG) and blood donor organization.

Hospital Blood Bank: Means any unit within health facilities which stores and issues blood to clinical wards, and may perform compatibility tests on, blood and blood components exclusively for use within the facilities.

1.3 Scope of the Disaster Preparedness Plan

This Disaster Preparedness Plan helps Blood establishments and transfusing facilities in Tanzania to prepare and respond to domestic disaster and all emergencies affecting the blood supply. This guide is used to coordinate all blood transfusion stakeholders in coordination with other Disaster/Emergency Management Authority to coordinate blood supply to all affected areas.

The role of the NBTS, NBTS network and Hospital blood banks is to implement this plan when a blood supply failure occurs or when there is an event that requires provision of additional supply of blood than normal to meet surges in demand for blood components needed by causalities of natural and manmade disasters.

The NBTS may receive initial notification or warning of disaster from multiple sources. However, NBTS and its network will only activate this plan upon receiving notification from Disaster Management Department (DMD) through Ministry of Health, Community Development, Gender, Elderly and Children on the requirement of blood components to meet the additional requirements in the affected area.

2.0 RAPID RISK ASSESSMENT FOR BLOOD REQUIREMENTS DURING DISASTERS

The NBTS, together with key stakeholders, upon notification on the occurrence of any disaster event will assess the likelihood and potential impact of events affecting the supply and demand of blood and product. Assessing and managing risk is consistent with the NBTS standard for Risk Management Framework. The assessment process includes consideration of an event's likelihood and impact for the provision of blood and product and this will increase the capacity to mitigate supply-failure risks for that particular blood and products.

Table 1. Consequence of a supply or demand crisis

Scale	Category	Definition
4	Critical	Multi jurisdictional or widespread national outage. Blood stocks are below 24 hours and widespread loss of life will occur due to lack of blood and blood products
3	High	Multi jurisdictional or national level blood issued. Fresh blood stocks are below two days and there is inadequate blood for emergency surgery. Broad geographical demand for receipt with no expected immediate severe morbidity.
2	Medium	Stock level and mitigations strategies are sufficient to manage situation with minor impacts on clinical practice. Small concentration of no expected immediate minor or severe morbidity.
1	Low	Business as usual. (sock level within standard stock of 2-3 days)

Table 2. Risk matrix of a supply or demand crisis

Likelihood					
	4	4	8	12	16
	3	3	6	9	12
	2	2	4	6	8
	1	1	2	3	4
		1	2	3	4
	Impact				

Table 3: Demonstrates risk score where 1-2 is considered as low risk (green), those with a risk score of 3-7 are considered as a medium risk (yellow), 8-11 is considered as a high risk (orange) and 12-16 is considered critical risk (red).

SCORE	COLOUR	LEVEL
12-16		Critical
8-11		High
3-7		Medium
1-2		Low

Table 4. Summary of risk assessment, including possible causes of the scenario, likelihood, Consequence and overall risk rating.

Scenario	Possible causes	Likelihood	Impacts	Risk rating
Decrease in the volume of any products	Any event that could reduce the collection of products, such as the introduction of a new test for infectious markers with a high prevalence rate and significant reduction in donors such as influenza pandemic or Ebola outbreak etc.	2	4	8 High
Decrease in the quality of any blood and blood products that leads to a significant public health risk to a broad population	Any event that could reduce the quality of products, such as contamination or suspected contamination that may cause a risk to the health of recipients due to either, a bacteria, virus (e.g. a pandemic influenza) or prion (e.g. variant Creutzfeldt (vCJD).	1	4	4 Medium

Scenario	Possible causes	Likelihood	Impacts	Risk rating
Blood establishment (Blood center or Regional blood center) unable to produce blood products	incident affecting production facility; for example: corporate failure, loss of facility inability to source consumables or supply chain failure	1	4	4 Medium
Loss of blood product through storage or distribution issue, batch failure or significant recall	Accident occurs in transportation or storage of significant batches of products, refrigeration failure requiring product disposal. Batch does not meet regulatory requirements.	1	1	1 Low
Multiple trauma patients	Major accident, natural disaster, or war or terrorism-related event.	3	2	6 Medium
Multiple burns patients	Large-scale catastrophic event such as an airport, rail or infrastructure accident, natural disaster or terrorism-related event.	1	4	4 Medium
Significant acute radiation or chemical incident	Accidental or terrorism-related event (explosive, chemical, biological, radiological attack) or war	1	4	4 Medium
Disaster affecting blood safety infrastructure and safety of staff	Large-scale catastrophic event such as natural disaster or terrorism-related event compromising blood services and safety of staff	1	4	4 Medium

3.0. DISASTER RESPONSE PLANNING ASSUMPTIONS

3.1 General assumptions:

- All disasters are local
- Immediate shipment of required blood and blood products will be from blood centre with access to the most rapid means of transportation to the affected blood area.
- The task force will reassess the needs at 24 hours after the event (and daily as needed)
- Hospital Blood Bank, Blood Center staff and all other stakeholders will be familiar with the blood transfusion services disaster plan, their individual's roles and responsibilities, and the roles and responsibilities of all essential departments.
- NBTS standards regarding blood product collection, testing, transport and administration are followed during disaster events.
- Additional qualified personnel may be needed to process requests for blood and blood products, process and administer blood within the treating facility.
- The media continuously provide the community with reliable information about need and supply of blood and blood products.
- After a disaster, the public usually responds by volunteering to donate larger quantities of blood and blood products than are needed. Influx of blood donors after disaster could strain the ability of the blood supply system to collect and process blood and blood products.
- When less causality require blood and blood products than the total number of victims, blood center will need to transfer blood and blood products area with need of blood at that particular time.

3.2 Specific assumptions

Since responses to disasters occur in phases. The following blood and blood products are the most likely to be needed in each of the following phase of a disaster

- Whole blood group O both rhesus negative and positive
- Fresh Frozen Plasma with all ABO/Rh types
- Determine blood requirements by calculating the O red blood cell requirements using the formula below

Calculate the total number of PRBC blood group O units required from the affected area by the disaster.

Total number of units required = Total number of units required for disaster – the number of units available in the blood establishments hospitals blood banks in the affected area.

Key:

- Total number of units required for disaster is given by total expected admittances x 3 units as constant = Total number of units required for disaster.

- Total expected admittance is given by total normal Hospital admittances plus total potential expected admittances related to disaster

4.0 PREPAREDNESS, RESPONSE AND RECOVERY ACTIONS

4.1 TRIGGERS TO ACTIVATE THE PLAN

The response plan may be activated when one of the following situations that require emergency blood supply response occurs.

1. Supply failure

Based on the risk threat assessment undertaken to guide this plan, supply failures could arise from

- A significant decrease in the volume or quality of blood components,
- A blood center unable to produce or fail to produce a significant amount of blood components
- A significant loss of blood components through storage or distribution
- A significant batch failure or batch recall
- Contamination or suspected contamination of products, which has a significant impact on ability to supply products.

OR

2. Demand surge

Based on the risk or threat assessment undertaken to guide this plan, demand surge could arise from emergency events that leads into multiple trauma or burn patients such as:

- Tragic accidents
- Act of terrorism
- Natural disaster
- A significant acute radiation or chemical incident
- A significant biological health incident.

OR

3. Public health risk

As identified by the risk or threat assessment, a supply failure may also be triggered by a possible public health risk to patients arising from a transfusion-transmissible infection (TTI) such as an outbreak of Ebola or Influenza which affects blood collection in the affected area.

4.2 Procedure to activate the Emergency Blood Supply Response

A condition that requires emergency blood supply in the district will be noted by the council blood safety coordinator from the transfusing facility laboratory manager. The council blood safety coordinator will report the incident to the regional blood safety coordinator and the District Medical Officer for further action to inform the regional and the zonal level.

At the regional level the condition that requires emergency blood supply will be informed from the district or noted by Zonal NBTS Laboratory Personnel on duty. The zonal laboratory personnel on duty will inform laboratory in charge on the situation for further notification to the zonal manager. Also, an emergency or disaster event notification may be directly notified to the Zonal or National NBTS Program Manager respectively.

The zonal manager will simultaneously inform the national level Operations Officer and the respective Regional Medical Officer. NBTS Operations officer will assess the event and inform the NBTS Program Manager to activate the response plan based on the rapid assessment results. The Operations Officer is the overall emergency blood supply response coordinator at national level. The Zonal Manager is the coordinator at zonal level. Based on the risk assessment results, the NBTS Program Manager will notify the Permanent Secretary, Ministry responsible for health for further response coordination.

Upon receipt of information about a significant emergency or disaster situation, and after the risk assessment has been conducted, the risk categories of 3 and 4 will necessitate activation of NBTS Disaster Plan. The national NBTS Program manager will activate the plan after advice from the Operations Officer.

4.3 Disaster Preparedness and Response Actions Plan

This section outlines actions to be implemented during preparedness phase that will lead into effective implementation of response actions. It also details all response action need to be performed when the disaster/emergency plan has been activated. Preparedness actions should include list of name(s) or organizations, responsibilities during emergency situation, and contact numbers and addresses of the emergency response focal points. Also should include, people in charge of: activating the response services, communicating with headquarters, managing external relations and overall response coordination and liaising with other agencies and services as well as communicating with the media.

It is important to disseminate the emergency/disaster plan widely and to train the staff

that plays an important role in its execution, conduct periodic simulations to test the viability of the plan, develop a budget for disaster preparedness and response activities and institutionalize the plan, through ministerial directives responsible organizations indicated in the table will work with relevant organizations or stakeholders including Red Cross, TPDF etc.

4.4. Outline of the Emergency Preparedness and Response Actions

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Provide notification on the occurrence of Disaster/ Emergency on blood supply	Response	Disaster Management Department (DMD) through KM-MOHCDEGC	
	NBTS Receive notification on the occurrence of the disaster event	Response	NBTS	
	Activating NBTS disaster response system	Response	PM-NBTS and Zonal Managers	
	Assess consideration of an event's likelihood and consequence for the provision of blood and blood products to predict how often or likely any of the supply or demand crises may occur.	Preparedness and response	NBTS - O.O, HQA and ZM	
	Evaluate the operational status of the blood center, assessing the impact of the disaster on the facility, as well as any blood supply needs and provide this information to the authorities.	Response	NBTS - O.O and ZM	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Communicate with hospital customers in order to assess their operational status and blood product needs and confirm the number of units available for immediate release to the affected areas.	Response	NBTS – ZMs and O.O	
	Determine blood stock level in the affected area and in the country and determine additional blood requirement in the affected area	Response	NBTS - O.O and ZM	
	Confirm the number of units available for immediate release to the affected areas and Evaluate the contribution of unprocessed units of blood available in the blood banks	Response	NBTS - O.O, HQA and ZM	
	Determine the ability to meet the demand before beginning to make appeals to the community and causing more panic than an emergency already entails, then proceed with appeals to the community if absolutely necessary	Response	NBTS - **O.O** and ZM,	
	Maintain timely, accurate and consistent communication with the public and media. Develop key messages according to the blood shortage phase. Use a single unified single message to communicate with all blood centres in the country and the general public notifying them of the requirements for blood in the affected areas and nominate a spokesperson	Response	NBTS - MPRO	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Collect blood in accordance with the standards in the country, including implementation of all screening tests (HIV, HBV, HCV, syphilis), ABO and Rh grouping, component separation, release of approved products for transfusion;	Response	NBTS – **HODM,** HOL	
	Designate a national reference blood bank to coordinate operations and designate centers that are strategically located in accordance with geopolitical conditions in the country, type of emergency, access routes, and communications	Response	NBTS - OO	
	Organize the communications systems of the blood banks, transfusion services, and the reference bank	Response	NBTS – O.O	
	Ensure that information is transmitted about the need for and inventory of immediately available blood and components	Response	NBTS and NBTS Networks	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Organize the transportation of the blood and components to the affected areas as necessary, taking advantage of the cold chain established for supplies such as drugs and vaccines; • Contact with transport services (land, sea or air). Have updated, accessible lists (telephone, e-mail, radio). • Establish relationships with local emergency services: local police, civil protection organizations, Red Cross, and the authorities so that they will transport blood or allow the center's vehicles to pass. • Give the emergency services instruction on the special characteristics of the blood supply, requirements, conservation and safety. • Have authority approved adhesive corporate logos available to allow access to affected areas. • Establish alternative means of transport or busses for those personnel who must gain access to the center to carry out their duties.	Preparedness and response	NBTS-Administrator, O.O	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Plan blood collection in accordance with needs; • Determine the maximum number of donors you can handle—consider need, supply, staff, time, and lab capacity. • Locate facilities for mass collections in case the primary collection site is not sufficient or operational. • Arrange for additional site(s) that allow for large-scale access (parking, mass transit, restrooms, and water). • Concentrate volunteer donation centers in areas that are not congested • Develop a plan for crowd control considers waiting lines, emergency vehicle access, and safety and security measures for donors and staff. • Determine the maximum capacity (personnel, collection material, and time). • As necessary, mobilize skilled health workers who are trained to collect blood.	Response	NBTS - HODM	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Blood processing material supply chain. • Prepare a list of products, services and supplies necessary for collecting, processing, storage and temperature control, transportation and blood testing, • Establish an emergency inventory for each item • List of suppliers for each product and means of contact • Establish a contingency plan with suppliers.	Preparedness	NBTS – Supplies officer, head of laboratory	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Coordination with government authorities and emergency management Agencies • The NBTS should identify the local and national government authorities and emergency organizations to Contact in the event of a disaster and Blood Transfusion Services should be listed on local emergency response plans supporting hospital and health care organization. • Establish blood transfusion as a critical health entity (blood supplier) within emergency response system, to be included in appropriate planning sessions as well as national and local emergency preparedness exercises. • Request that blood transfusion be placed on priority restoration lists for power, water, fuel, and communication during the disaster. • Locate the places used by the emergency services during emergency situations, because they could be used to distribute blood and supplies	Preparedness and Response	NBTS- PM	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	The blood Transfusion must remain operational and in communication with the exterior. • Ensure that Centre must have alternative sources of electrical power (generators). • Ensure that the Centre has alternative telephones and radio • Protect the blood safety infrastructure	Response	NBTS – PM, ZM, Regional Authorities	
	Safety • Maintain personnel safety and educate them on evacuation plans. • Establish staff shifts changes and avoid exhaustion. Have lists of personnel telephone numbers. • Maintain safety standards in processes and products. • Maintain supplies of emergency materials: Water, batteries, torches. Safety	Response	NBTS – Z.M, QSO	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	At each blood bank/center, define and establish functions for the different work areas, considering higher demand, reduced capacity to provide services, and the need for alternate local sites to absorb demand. These functions will include • Donor reception and orientation, including telephone assistance, donor selection, blood collection, and post-donation donor care;Screening tests; Blood grouping; Component separation; Release of products for transfusion. • Shipments of blood and components, including the receipt of requests for blood and components and coordination with land and air transport. • Administrative/logistical support (delivery of material, establish shifts for personnel, role of volunteer personnel, statistical information, information to the communications media).	Response	Head of transfusing facility-MOI, ZM	

SN	Action	Phase	Responsible Organization	Emergency Contacts
	Post-Emergency/Post Disaster Stage • Assess compliance with the existing emergency plan and take the appropriate corrective action. (After Action Review) • Evaluate coverage of the demand and at a minimum, determine, Number of units dispatched versus units requested, Number of units dispatched versus units transfused, Number of discarded units and reasons for discard (this should include all the units collected in response to the event) • Replace stock (including supplies,reagents,andbudget affected by the increase in demand) • Check the inventory and use of the supplies of blood and components • Notify the responsible authorities of the actions taken • Report to and thank the community for the blood donations.	Post Emergency/ Disaster	NBTS – OO, MPRO	
	Organize simulation exercises every year	Preparedness	NBTS – O.O	

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6.0 APPROVAL

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