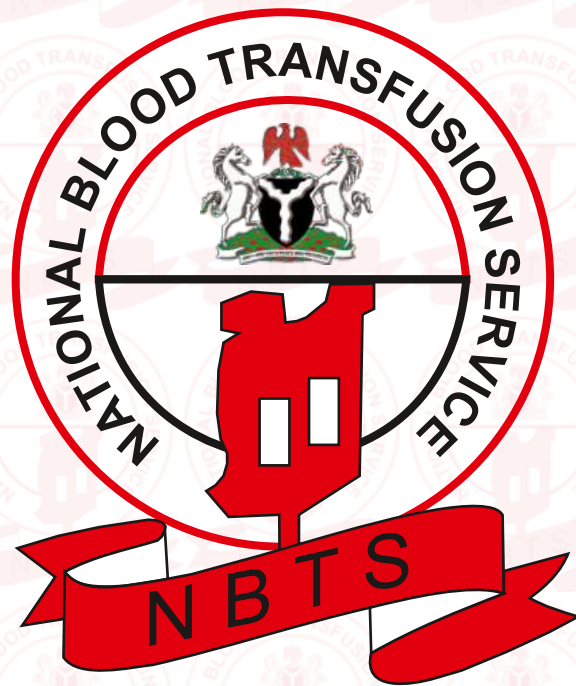


NATIONAL BLOOD TRANSFUSION SERVICE (NBTS)



STRATEGIC PLAN

Planning a future for a Safe, Quality, Regulated,
Coordinated and Accessible Blood System in Nigeria

2021 - 2030

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TABLE OF CONTENT

ABBREVIATIONS	3
GLOSSARY OF TERMS.....	5
LIST OF STAKEHOLDERS.....	6
FOREWORD.....	11
ACKNOWLEDGEMENTS.....	13
EXECUTIVE SUMMARY.....	15
VISION AND MISSION.....	19
BACKGROUND.....	20
CHALLENGES OF BLOOD TRANSFUSION SERVICES IN NIGERIA	22
RATIONALE OF THE TEN-YEAR STRATEGIC PLAN.....	23
SITUATIONAL ANALYSIS AND FUTURE OF NBTS.....	24
TEN-YEAR VISION OF NBTS.....	29
GOVERNANCE STRUCTURE.....	30
STRATEGIC DIRECTION OF NBTS.....	32
STRATEGIC OBJECTIVES.....	35
IMPLEMENTATION.....	49
MONITORING & EVALUATION.....	69
COSTING OF THE PLAN.....	93
REFERENCES.....	96

ABBREVIATIONS

AfSBT	African Society for Blood Transfusion
CBO	Community-based organisation
CDC	United States Centers for Disease Control and Prevention
DC	Donor care
DHIS2	District Health Information System Version 2
EIA	Enzyme-linked Immunosorbent Assay
ELISA	Enzyme-linked Immunosorbent Assay
FBO	Faith-based organisation
FCT	Federal Capital Territory
FGN	Federal Government of Nigeria
FMoH	Federal Ministry of Health
HIV	Human Immunodeficiency Virus
HLP	Hospital Linkage Programme
ISBT	International Society for Blood Transfusion
ISO	International Organization for Standardisation
LG	Local Government
LGA	Local Government Area
NAT	Nucleic Acid Test
NGO	Non-governmental organisation

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

NHIS	National Health Insurance Scheme
NSHDP	National Strategic Health Development Plan
NSSBR	National Strategic Safe Blood Reserve
NYSC	National Youth Service Corps
OECD	Organisation for Economic Cooperation and Development
OMSBUI	One Million Safe Blood Units Initiative
PEPFAR	United States President's Emergency Fund for AIDS Relief
SC	State Coordinator
SDG	Sustainable Development Goals
SG	State Government
SMoH	State Ministry of Health
SOP	Standard Operating Procedure
TTI	Transfusion-transmissible infection
UHC	Universal Health Coverage
USAID	United States Agency for International Development
USG	United States Government
VNRBD	Voluntary Non-remunerated Blood Donor
WHO	World Health Organization
ZC	Zonal Centre/Coordinator

GLOSSARY OF TERMS

Club 25 – A group of young people who have committed to voluntarily donating blood at least 25 times before their 25th birthday while conducting regular activities centred around raising public awareness of voluntary non-remunerated blood donation, safe blood and motivating other young people in communities to become regular voluntary unpaid blood donors.

Safe Blood – Blood that has been screened and found free of transfusion-transmissible infections such as Human Immunodeficiency Virus (HIV), hepatitis B, hepatitis C and syphilis.

Sustainable Development Goals (SDG) – also known as the **Global Goals**, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy good health, wellbeing, peace and prosperity by the year 2030.

Transfusion-transmissible infections (TTI) – infections that are transmitted from one person to another through blood transfusion. These include Human Immunodeficiency Virus (HIV), hepatitis B, hepatitis C, syphilis and others.

Universal Health Coverage (UHC) – a concept in which all people and communities receive the health services they need without suffering financial hardship.

Voluntary non-remunerated blood donors (VNRBD) – blood donors who voluntarily donate blood and receive no payment for it.

National Strategic Safe Blood Reserve (NSSBR) – a reserve of safely screened blood units strategically distributed around the country, such that needed blood units can be effectively mobilised during emergency situations

LIST OF STAKEHOLDERS

A. Professional societies

- i. Nigeria Medical Association (NMA)
- ii. Medical Women's Association of Nigeria (MWAN)
- iii. Association of General Private Medical Practitioners of Nigeria (AGPMPN)
- iv. Society of Family Physicians of Nigeria (SOFPON)
- v. Guild of Medical Directors (GMD)
- vi. Association of Medical Laboratory Scientists of Nigeria (AMLSN)
- vii. National Association of Nigeria Nurses and Midwives (NANNM)
- viii. Nigerian Society for Haematology and Blood Transfusion (NSHBT)
- ix. Haematology and Blood Transfusion Scientists Society of Nigeria (HBTSSN)
- x. College of Nigerian Pathologists (CNP)
- xi. Medical and Dental Consultants Association of Nigeria (MDCAN)
- xii. Committee of Hospital Chief Medical Directors/Medical Directors
- xiii. Joint Health Sector Union (JOHESU)

B. Regulatory bodies

- i. Medical and Dental Council of Nigeria (MDCN)
- ii. Medical Laboratory Science Council of Nigeria (MLSCN)
- iii. Nursing and Midwifery Council of Nigeria (NMCN)
- iv. National Agency for Food and Drug Administration and Control (NAFDAC)
- v. Paul Ehrlich Institute

C. Policy partners

- i. World Health Organization (WHO)
- ii. United States Centers for Disease Control and Prevention (CDC)
- iii. Institute of Human Virology of Nigeria (IHVN)
- iv. APIN Public Health Initiatives
- v. National Agency for Control of AIDS (NACA)
- vi. National AIDS & STIs Control Programme (NASCP)
- vii. FHI360

D. International Development Partners

- i. Safe Blood for Africa Foundation
- ii. UK Department for International Development (DFID)
- iii. United States Agency for International Development (USAID)
- iv. Canada International Development Agency
- v. Japan International Cooperation Agency (JICA)
- vi. China International Development Cooperative Agency
- vii. US Department of Defence HIV Program in Nigeria
- viii. US Department of Defence (DOD)
- ix. European Union

E. Non-Governmental Organisations (NGOs)

- i. Rotary International
- ii. Action Aid Nigeria
- iii. Planned Parenthood Federation of Nigeria (PPFN)
- iv. Society for Family Health (SFH)
- v. Centre for Integrated Health Programme (CIHP)
- vi. International Centre for AIDS Care & Treatment Programme (ICAP)

- vii. Dangote Foundation
- viii. Biobak Foundation
- ix. T.Y Danjuma Foundation
- x. Achieving Health Initiative Nigeria (AHNI)
- xi. Excellence Community Educational Welfare Scheme Ltd/Gte (ECEWS)
- xii. Centre for Clinical Care and Clinical Research Nigeria (CCCRN)
- xiii. Management Science for Health (MSH)
- xiv. Catholic Caritas Foundation of Nigeria (CCFN)
- xv. Friends for Global Health Initiative in Nigeria (FGHIN)

F. Emergency responder agencies

- i. Emergency Implementation Plan Committee (EPIC)
- ii. Lagos State Blood Transfusion Committee
- iii. Life Bank Nigeria
- iv. Nigeria Centre for Disease Control (NCDC)
- v. Coalition of Blood for Africa (CoBA)
- vi. International Rescue Committee

G. Paramilitary responder agencies

- i. Federal Road Safety Corps (FRSC)
- ii. Nigeria Police Force Medical Services
- iii. Nigeria Security and Civil Defence Corps (NSCDC)
- iv. Armed Forces
- v. State Security Service (DSS)
- vi. Nigeria Security and Civil Defence Corps

H. Community groups

- i. Red Cross International
- ii. Voluntary Blood Donors Club of Nigeria (VOBLODOCON)
- iii. Christian Association of Nigeria (CAN),
- iv. Pentecostal Fellowship of Nigeria (PFN)
- v. Nigerian Supreme Council for Islamic Affairs (NSCIA)
- vi. Ahmadiyya Muslim Jama'at
- vii. Nigeria Labour Congress (NLC)
- viii. National Youth Council of Nigeria

I. Media & Communication partners

- i. News Agency of Nigeria (NAN)
- ii. National Orientation Agency (NOA)
- iii. Nigeria Television Authority (NTA)
- iv. Voice of Nigeria (VON)
- v. Africa Independent Television (AIT)
- vi. Channels
- vii. Globacom Limited
- viii. Airtel
- ix. MTN
- x. 9Mobile
- xi. Nigeria Health Watch
- xii. EpiAfric
- xiii. Nigeria Union of Journalists (NUJ)

J. Consumer Goods partners

- i. Coca-Cola
- ii. Maltina
- iii. Nestle
- iv. Indomie

K. Transportation partners

- i. National Union of Road Transport Workers of Nigeria (NURTW)
- ii. Nigerian Association of Road Transport Owners
- iii. Life Bank Nigeria

FOREWORD

I am honoured to see this vital document come to fruition. The importance of Blood Transfusion Services has not yet received attention in Nigeria. The burden of maternal, infant and child deaths and poly trauma, anaemic disease conditions and major surgical procedures that will require safe blood units to be readily available and accessible to achieve positive health outcomes is enormous.

Obstetric complications, trauma and injuries, and cancer continue to cause significant morbidity and mortality and together constitute a significant proportion of blood needs amongst our population. A large part of this burden is borne by children and adolescents who account for over 50% of the country's population.

In May 2020, the World Health Organization (WHO) released the WHO Action Framework to Advance Access to Safe, Effective and Quality Assured Blood Production 2020–2025, encouraging countries to explore innovative means to advance blood transfusion services to meet country needs. This publication spurred the Federal Ministry of Health to take action and develop the National Blood Transfusion Service (NBTS) Ten-Year Strategic Plan, to forge the roadmap for a robust national blood system that delivers safe, quality and accessible blood services sustainably over the next decade.

It is envisaged that NBSC will become a more effective and efficient coordinator and regulator of blood services in Nigeria and ensure that all who are resident in Nigeria have access to safe blood and blood products when needed, and in an equitably distributed manner. Delivering on this vision would rely on more robust quality management systems, strong regulatory frameworks, appropriate quality policies and processes seamlessly institutionalised in coordinating blood establishments across the country, and a well-motivated, organised, and committed staff complement.

The National Health Act (NHAct) 2014, provided NBTS the Control and Regulation of the Use of Blood, Blood Products, Tissue and Gametes in Humans; and the mandate to ensure the provision of safe, quality blood and blood products for transfusion in order to protect and save the lives of Nigerians across the country (Sections 47 to 57).

This legal mandate seeks to ensure the safety of blood, blood products and tissues of living persons, and that all activities pertaining to the use of tissue, blood or blood products removed or withdrawn from living persons, administering of blood and blood products by a medical practitioner or dentist and payment in connection with the importation,

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

acquisition or supply of tissue, blood or blood products in Nigeria are in line with best practices. While the legislative process to becoming a commission is on course, having passed the public hearing stage, for the National Blood Service Commission (NBSC) Bill to be passed by the 9th National Assembly and for its assent by President Buhari, NBTS is fully empowered by the National Health Act of 2014, as clearly outlined above.

This Ten-Year Strategic Plan provides a realistic contextual and situational analysis of the state of blood transfusion services in Nigeria. It also provides a clear road map for implementation, as well as ongoing monitoring and evaluation with built-in feedback mechanisms.

Key considerations in the plan include an expansion of blood transfusion services into the separation of blood components and manufacturing of plasma-derived medicinal products for domestic, regional, and even international markets. Building on multi-sectoral and inter-departmental alliances, NBTS seeks to strengthen blood services in Nigeria to enhance access to safe, quality blood and blood products, even in the most remote of locations.

Additionally, the integration of the Plan into the National Strategic Health Development Plan will ensure an increase in utilisation of essential healthcare services across board with positive impact on health outcomes in Nigeria. This will contribute to the strengthening of Nigeria's entire health system, and significantly impact the dismal maternal mortality, infant and child mortality indices in the country.

I therefore call on all stakeholders within and outside the health sector, including private sector and Development Partners to join us as we forge a path towards more robust and accessible blood transfusion services in Nigeria as a critical component of Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs).



Dr. E. Osagie Ehanire, MD, FWACS

Honourable Minister of Health

December 2020

ACKNOWLEDGEMENTS

This Ten-year Strategic Plan was painstakingly developed with input from several individuals, professional societies and associations, governmental and nongovernmental organisations and agencies, international partners, and other relevant stakeholders. The contributions and efforts of the following are specifically acknowledged and appreciated: NBTS Zonal and State Coordinators, Donor Care, Laboratory and Quality Managers, and Heads of Donor Recruitment who all played relevant roles in this endeavour.

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NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

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I appreciate the support of all the NBTS Departmental and Unit Heads for their contributions to this Ten-Year Strategic Plan, I wish to specifically thank the Secretariat of the Committee headed by Dr Adaeze Oreh for their relentless efforts towards the development of the Plan.



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National Coordinator, NBTS

EXECUTIVE SUMMARY

The National Blood Transfusion Service (NBTS) is charged with the responsibility of regulating, coordinating and provision of safe, quality blood and blood products for transfusion in a cost-effective manner to all who may require it in Nigeria with an emphasis on voluntary non-remunerated blood donors in order to save lives across the country.

Blood Transfusion Services are a vital tool for the achievement of the Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC) especially because positive health outcomes for a large segment of the population are reliant on the availability and accessibility of safe blood and blood products that can be swiftly mobilised when needed.

Even though the establishment of the NBTS was as a result of the Cooperative Agreement (CoAg) between Nigeria and the United States, the legal framework relied upon now is the National Health Act (NHAct) of 2014, which in Section Vi, Sub-section 47-53, provides for the creation of NBTS as follows – “The Minister shall establish a National Blood Transfusion Service for the Federation.” The National Blood Service Commission (NBSC) bill in the National Assembly when passed will strengthen the NHAct 2014 and enable the Service to function as a Commission.

The NBTS relies on a pool of regular donations by voluntary, unpaid blood donors and currently collects and screens approximately 25,000 units of blood collected from voluntary unpaid donors each year and these units of blood are made available to patients following requests from about 3,400 partner hospitals across Nigeria. Currently, less than 5% of the total blood donations are sourced from voluntary donors in Nigeria, and the rest are commercially provided, subjecting recipients to the risks of infections such as HIV, hepatitis B, hepatitis C, syphilis and others. Nationally, an estimated 1,130,000 units of blood are collected across several facilities each year, 90% of which are from paid commercial blood donors. Unfortunately, this method of sourcing blood has a higher risk of these transfusion-transmissible infections. Federal Ministry of Health estimates reveal that 10% of new HIV infections are from unsafe blood. This means that 1 in 10 persons living with HIV/AIDS were infected because of unsafe blood transfusion.

Furthermore, resource constraints in blood transfusion services have contributed to maternal mortality of which up to 25% of maternal deaths arise due to blood loss and unavailability of blood units to save lives. In addition, emergencies such as bomb blasts, other acts of insurgency, conflict, road traffic accidents and recent building collapses require that safely screened blood and blood products are available in national and regional blood banks at all times.

The National Blood Transfusion through its Ten-Year Strategic Plan has outlined several strategic objectives drawn from seven thematic areas:

- i. Efficient, Effective and Sustainable Blood Services
- ii. Robust Regulatory Framework and Regulation of Blood Establishments
- iii. Good Quality, Safe and Sustainable Blood Supply
- iv. Robust Partnerships and Stakeholder Collaboration
- v. Building a High-Performance Organisation with well-motivated personnel
- vi. Commercialisation through Public-Private Partnerships (PPP) in producing Plasma-derived medicinal products (PDMPs) and components
- vii. Establishment of a national strategic safe blood reserve for emergencies.

Over the next ten years, it is anticipated that NBTS will increase blood collection from voluntary non-remunerated blood donors to 3,000,000 blood units per year and increase voluntary blood donation rates to 100%. By embarking on several activities, NBTS seeks to achieve several substantial targets that would translate to improved health outcomes in Nigeria. A notable few of those activities include:

- Conduct advocacy and sensitisation activities in communities harnessing strategic partnerships, mass media and public enlightenment campaigns
- Improved blood donor retention strategies to increase numbers of return and repeat voluntary blood donors
- Establishment of a country-wide quality management system for blood transfusion services
- Maintaining a robust monitoring and evaluation system for blood transfusion services
- Introduction of new technologies and innovative strategies for increased efficiencies in blood collection, testing, storage, and equitable distribution of safely screened blood units to areas of need

- Creating investment opportunities for private sector engagement and investment in blood derivatives production in Nigeria
- Building strong partnerships and alliances for blood transfusion services across sectors, governmental agencies, and communities to scale up safe blood availability and deliver on the mandate for safe, quality, available and accessible blood units.
- Expanding collection, storage, and distribution centres for easy access to safe blood across the country.

The broad targets which are envisaged by this Ten-Year Strategic Plan thus include:

- i. Increased number of voluntary non-remunerated blood donors from the current 10% to 100%.
- ii. Ensure at least 1 million Nigerian regular voluntary unpaid blood donors via the ‘One Million Safe Blood Units’ initiative to build up a national strategic safe blood reserve.
- iii. Improve quality and reduce the incidence of adverse blood transfusion events in the provision of blood services in Nigeria through effective quality management system and hemovigilance.
- iv. Innovate the system of blood transfusion in Nigeria to optimise the use of technology, separate components and provide a wide range of blood products to Nigerians with increased efficiencies.
- v. Forge strategic partnerships and private sector investment in the blood product generation for domestic, regional, and international use thus creating job opportunities, build capacity and generate substantial revenue and self-sustainability.
- vi. Strengthened coordination of blood transfusion services nationwide.

The mandate of the NBTS to regulate, coordinate and provide access to safe blood and blood products is one that has been challenged immensely in the past few years. However, the need for blood and blood products for transfusion to be used appropriately thus ensuring blood donor and patient safety in Nigeria cannot be over-emphasised.

We must emphasise that blood available must be sufficient to meet the needs of the population and be accessible to those who need it at any given time. A focused and strategic plan of action is therefore needed to ensure that the NBTS mandate is achieved, as the regulation and provision of safe blood services are central to maternal, child and population health in accordance with the National Health Plan, National Strategic Health Development Plan (NSHDP), WHO Action Framework, Universal Health Coverage (UHC) and the achievement of the Sustainable Development Goals (SDGs).

A **“One Million Safe Blood Units Initiative” (OMBUI)** has been conceived, developed, and being prepared for a launch. It is an initiative of the National Blood Transfusion Service (NBTS) to improve, provide and make available enough safe blood units for transfusion, and also make them available for the establishment of the **“National Strategic Safe Blood Reserve”** that can be swiftly and effectively mobilised during emergencies to ensure Nigeria’s population survival, health protection and wellness. The reserves will be warehoused in the six (6) NBTS zonal centres of Kaduna, Maiduguri, Ibadan, Benin, Owerri and Jos. Other warehouses for ease of distribution will include Lagos, Port Harcourt, Kano, and Abuja. The reserve will also serve as a ready source of raw materials for blood components and PDMPs manufacturing.

The implementation of the Plan will be carefully and transparently monitored and evaluated with feedback provided, to track impact and progress. Deliberate advocacy and stakeholder mobilisation will be deployed to ensure and facilitate buy-in from all stakeholders, including local and state governments, federal government agencies and departments, non-governmental agencies, and development and investment partners.

The estimated cost of the entire plan is N42.3 billion (~US\$112 million) over the next ten years. This cost should be included in the budgets of governments, government agencies and departments to ensure adequate implementation. The NBTS Ten - Year Strategic Plan has been developed to fit into and be incorporated and integrated into the existing National Strategic Health Development Plan.

Dr. Omale Joseph Amedu, MD, PhD, *mni*

National Coordinator, NBTS

VISION AND MISSION

Vision

To have a national blood transfusion system that ensures safety, quality, and accessibility of blood and blood products to all resident in Nigeria in compliance with international standards and acknowledged as one of the best in Africa.

Mission

To provide through regulation and coordination, safe, quality, and adequate blood in an equitable and cost-effective manner to all people resident in Nigeria.

BACKGROUND

Blood is life, and this includes whole blood, blood components and plasma-derived medicinal products. Blood Transfusion Services are a vital tool for the achievement of Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs), because good health outcomes for a large segment of the population are reliant on the availability and accessibility of safe blood and blood products that can be swiftly mobilised when needed.¹⁻³

For Nigeria, the most populous country in sub-Saharan Africa, maternal mortality has remained an enormous challenge, with the country contributing nearly 25% of global maternal deaths – amounting to approximately 67,000 women dying following pregnancy or childbirth-related causes in 2017.⁴ That is an estimated 183 women dying every single day from pregnancy or during delivery.

Each year, with unwavering consistency, haemorrhage (bleeding) remains the leading cause of maternal mortality in Nigeria – contributing up to 25% amongst causes of death in pregnancy and childbirth.⁵⁻⁷ Despite strategies such as the promotion of institutional deliveries, in addition to the training and deployment of skilled health workers, Nigeria ranks among the top five countries globally that contribute more than 50% of maternal deaths around the world.^{4,5}

In children, conditions such as sickle cell disease and malaria, both of which Nigeria contributes the largest number of cases worldwide cause severe anaemia and heart failure, which are possible complications that add to the number of deaths of infants and young children each year. Nigeria reported over 57 million cases of malaria as of 2018 and recorded over 95,000 deaths – the highest in the world.⁸ Annually, over 150,000 babies are born with sickle cell disease in Nigeria, 70-90% of whom would die before the age of 5 years.⁹ Blood needs vary from approximately 40-60% for sickle cell disease patients, 38.7% in pregnancy and childbirth, 15% for cancer and blood diseases, and 5% for trauma and road traffic accidents.^{10,11} Survival in any of these conditions is therefore reliant on a safe, available, accessible, and affordable national blood supply.

Many of these health conditions and outcomes have been worsened by the rising number of regions affected by insurgency and violent conflict that have led to the killing and maiming of hundreds of thousands of Nigerians over the past decade. Since 2011, terrorist attacks have left more than 37,500 people dead, and may more seriously injured and in grave need of life-saving blood.¹²⁻¹⁵ Furthermore, Nigeria has one of the highest rates of road traffic accidents in the world, with

low- and middle-income countries such as Nigeria contributing up to 90% of the global burden of traumatic injuries, with significant impact on mortality, disability, and quality of life.¹⁶

Other conditions requiring safe blood supplies include routine surgeries and conditions such as kidney disease and cancers. Despite these obvious needs for safe blood in Nigeria, voluntary blood donation rates are abysmally low – accounting for less than 5% of the population compared to higher-income countries. Approximately 68% of countries that have achieved 100% voluntary unpaid blood donation are developed countries.¹⁷

Background of the National Blood Transfusion Service (NBTS)

The operations of NBTS commenced in 2007 as a result of a multilateral partnership between the Federal Government of Nigeria (FGN) and the United States government (USG) through the United States (U.S) President’s Emergency Fund for AIDS Relief (PEPFAR).^{18,19} The organisation currently has a nationwide presence with the establishment of an NBTS headquarters, seventeen (17) blood collection, screening, and distribution centres across the six (6) geopolitical zones of Nigeria, including the Federal Capital Territory (FCT) Abuja.²⁰ Through a pool of regular donations by voluntary, unpaid blood donors, NBTS collects, screens, stores and distributes thousands of safe blood units each year, making them available to patients following requests from partner hospitals across the country.²¹

Mandate

The National Blood Policy of 2006¹⁹ outlines the mandate of the National Blood Transfusion Service as follows:

- To develop a system of blood donor mobilisation and motivation based on a voluntary, non-remunerative donation of blood
- Standardise the methods of collection, transportation, processing, testing, storage and distribution of blood, blood components and derivatives which are safe for transfusion and other medical therapy
- Encourage the development of technology and research into all aspects of blood transfusion
- Relate to and cooperate with strategic partners in the strengthening and delivery of the blood safety mandate.

Challenges of Blood Transfusion Services in Nigeria

The need for blood is essential and constant. Globally, 118.5 million units of blood are collected annually, with 60% of these units collected in high-income countries.^{22,23} In countries such as Canada, USA, and South Africa, approximately 13%, 25% and 11% of the eligible adult population respectively donate blood voluntarily. However, in Nigeria, the figure is less than 4%, resulting in low blood supplies despite enormous daily demands.^{17,24}

Today, a large proportion of the nation's mortality rates are ascribed to blood loss due to blood loss following road traffic accidents, traumatic injuries, and childbirth. For conditions such as sickle cell disease, malaria, routine surgeries and related illnesses, blood needs are unmet.

Given Nigeria's youthful population, there are huge blood supply potentials which could substantially improve and sustain the National Strategic Safe Blood Reserve. However, despite this enormous potential, national voluntary blood donation rates and supplies are currently low due to various prevailing issues:

- i. Limited awareness and advocacy for blood donations
- ii. Cultural myths and misconceptions leading to scepticism about blood donation by the public
- iii. Low public awareness of voluntary blood donation in Nigeria
- iv. Lack of voluntary blood donation culture in Nigeria
- v. Low public awareness of benefits of safe blood transfusions
- vi. The current Coronavirus pandemic
- vii. Inefficient blood transfusion and storage systems
- viii. Absence of special blood donations programmes
- ix. Absence of critical staff for blood services – donor recruiters, donor counsellors, donor care managers, and phlebotomists nationwide
- x. Lack of enabling legislation to guarantee sustainable financing for the Blood Transfusion service in Nigeria.

Rationale for the Ten-Year Strategic Plan

Unfortunately, less than 5% of the total blood donations in Nigeria are sourced from voluntary donors. The rest are commercially provided, subjecting recipients to the risks of transfusion-transmissible infections (TTIs) such as HIV, hepatitis B, hepatitis C and syphilis. In fact, the Federal Ministry of Health reports that up to 10% of HIV infections in the country are due to unsafe blood transfusion.

The World Health Organization (WHO) recommends a stock of at least 2 million screened blood units from voluntary donors for a country of Nigeria's population, and according to the WHO, the blood donation rate is 4.6 donations per 1000 people in low-income countries compared to 33.1 donations in high-income countries.²² Fears of HIV, unsterile needles, blood loss and sudden death are amongst reported deterrents for many would-be donors.^{18,25} Researchers have also found that in many developing countries challenged by a dearth of voluntary blood donors, there is often a wide gap between awareness of voluntary blood donation and actual commitment by donating blood amongst young populations.²⁶⁻²⁸

Other reasons for low voluntary unpaid donations in low-resource settings include deferred donations in prospective blood donors due to low haemoglobin counts from anaemia, malaria, and poor nutrition. It is ironic that in Nigeria where the provision of adequate and safe blood products and derivatives are especially critical, large numbers of potentially healthy voluntary blood donors are unwilling to donate blood.

The National Blood Transfusion Service (NBTS) has thus developed several key initiatives in this ten-year Strategic Plan to address the myriad challenges impacting blood safety in Nigeria and ensure that safely screened blood units are available all year-round, accessible to Nigerians, and can be swiftly mobilised from national reserves when needed.

It is especially critical, given the current challenges faced in Nigeria with regards to maternal deaths, infant and child deaths, trauma, conflict, insurgency and insecurity, to retool and re-strategize on how to build up a more robust National Blood Service that is more capable, more resilient, and better positioned to respond to the critical need for safe blood and blood products by the populace.

One thing the present pandemic of COVID-19 has illustrated, is that a major health threat has the potential to bring global and national economies to a halt. Additionally, strong blood services have the potential to contribute to the pandemic response as evidenced by research and compassionate use of Convalescent COVID-19 Plasma (CCP) in the management of severe COVID-19 in several countries. Safe, affordable, and accessible blood services in Nigeria have been exceedingly challenged for a long time. However, with a clear vision and focused strategy designed to engage and recruit a teeming population of voluntary donors from amongst Nigeria's youth, safe blood and blood products will become available to address the country's health needs as a vital aspect of health security. Safe blood saves lives.

Situation Analysis and Future Direction of NBTS

The National Blood Transfusion Service (NBTS) over the years of its existence, has put in place a ground structure with quality management systems, processes and policies in place for the collection, storing, processing, and distribution of safely screened whole blood products through a system of voluntary blood donor mobilisation, recruitment and retention.

The screening of every blood unit donated using the 4th generation Enzyme-linked Immunosorbent Assay (ELISA) has been upgraded in two of the NBTS centres – Abuja and North-Central Zonal Centre in Jos to Chemiluminescence using Architect i1000-SR by Abbot Systems, thus enhancing the quality and proficiency of screening for the four WHO-mandated transfusion-transmissible infections namely HIV, hepatitis B, hepatitis C and syphilis. With a national presence that spans the six geo-political zones of the country, the screened blood units are thereafter distributed to a vast network of hospitals collaborating with NBTS.

The small team of willing and competent staff, and the infrastructure and equipment constraints within the Blood Service can certainly be improved on to deliver more widespread, safe, quality, and accessible blood services nationwide. The political will currently being enjoyed by the Blood Service from the highest levels of government and the hopeful passing of an appropriate legal framework to assure the nation's blood safety would be vital to the process of building a sustainable Blood Service for Nigeria.

PESTEL Analysis

Political Factors

A key priority for the NBTS is to manage, nurture and grow relationships within the Federal Ministry of Health, and other Ministries Departments and Agencies within the government of the Federal Republic of Nigeria. As a Division within the Federal Ministry of Health, NBTS is accountable to the Honourable Minister of Health.

The Federal Executive Council had in her memo EC (2017) of January 2018 blessed the establishment of the National Blood Transfusion as a Commission. Therefore, structural change with the passing of the National Blood Service Commission (NBSC) bill by the National Assembly is a possibility within the tenure of this Ten-year Strategic Plan with impact on funding sources and operational scope.

The recent COVID-19 pandemic has illustrated with great magnitude the critical role of government in the provision of essential healthcare services and health security. Therefore, the passing of an NBSC Act and its assent by President Muhammadu Buhari GCFR would be a giant step towards ensuring the robustness of delivery of blood transfusion services in Nigeria in a sustainable manner. Similarly, the pandemic's effect on global trade and supply chains has formed a backdrop to the urgency with which NBTS is exploring domestic manufacturing of blood-derived medicinal products as a vital aspect of the delivery of blood services in-country.

Additionally, at the 58th meeting of The National Council on Health (NCH) held in Sokoto in 2016, it was agreed that State Governments should be encouraged to establish State Blood Transfusion Services (SBTS), and take over management of those states which already had NBTS Centres located in their states. Further to this, within the NBTS Strategic Plan, the provision of technical support by NBTS for states to operationalise this is clearly outlined.

Economic Factors

Currently, approximately 3.2 million units of blood are transfused annually in secondary and tertiary hospitals across the country, mainly from paid commercial blood donors, putting the lives of millions of Nigerians at risk. Furthermore, data on blood commodities imported reveals that over 2 billion naira worth of blood products was imported into the country in 2018, highlighting the commercial viability of blood transfusion services and emphasising the urgent need for efficient regulation of blood in Nigeria.

This would rely on a substantial increase in funding and investments to enable NBTS meet in-county needs, while mindful of the huge economic gains that could be made from additional revenue generated from the production and sale of a suitable range of therapeutic blood products, plasma and plasma-derivative medicinal products locally, regionally and internationally. This would reduce an enormous amount of pressure on the national budget through additional revenue generation.

The impact of COVID-19 on the global economy while still largely unclear, is set to affect African economies such as Nigeria in several ways – lower trade and investment from China in the immediate term, a demand slump associated with the lockdowns in the European Union and OECD countries; and a continental supply shock affecting domestic and intra-African trade.²⁹ These issues have the potential to impact negatively on the NBTS, and therefore call for an exploration of national financing and domestic manufacturing strategies.

The estimated cost of production of each unit of safe screened blood ranges from N33,000 (direct cost of production) to N80,000 (full cost of production). However, due to the social service nature of the National Blood Service, handling charges for each unit of blood screened using the highly sensitive and specific ELISA technique is currently pegged at six thousand naira (N6,000) which is highly subsidised and constitutes only a fractional cost recovery. Increased accessibility and enhanced utilisation of blood services will require NBTS to explore multi-sectoral collaborations in order to reduce its cost base and provide better value for money while not compromising the quality of products and services delivered to patients and donors.

Sociological Factors

The population of Nigeria as of July 2018 was estimated at 203 million people, with a median age of 18.3 years and life expectancy at birth of 59.3 years. Approximately 126 million are below the age of 25 years, accounting for 62.26% of the population.³⁰

With a population growth rate of 2.54%, birth rate of 35.2 births per 1000 population, and total fertility rate of 4.85 children born per woman, it is evident that there will continue to be annual increases in the demand and utilisation of safe, quality blood transfusion services over the lifetime of this Plan. Furthermore, with a 51.2% urban population, there would be a need to massively expand the availability and accessibility of safe blood services to rural areas to adequately enhance the utilisation of essential healthcare services in accordance with the National Health Plan.

Nigeria's young population thus has enormous potential if effectively sensitised and educated, to grow the voluntary blood donation base and contribute enormously to the pool of safe blood in the country.

Technological Factors

Over the past ten years, technological advances in blood banking have contributed to enhanced safety of blood and blood products for patients. Close collaborations with hospitals, health facilities, relevant health professional organisations namely Nigerian Society for Haematology and Blood Transfusion (NSHBT), Nigerian Medical Association (NMA), Haematology and Blood Transfusion Scientists Society of Nigeria (HBTSSN), and international partners such as the World Health Organization (WHO), International Society for Blood Transfusion (ISBT), and Africa Society for Blood Transfusion (AfSBT) will therefore be instrumental. Through the adoption of innovative technologies, NBTS seeks to ensure increased efficiencies in blood collection, testing, storage, and equitable distribution of safely screened blood units to areas of need with adequate monitoring and evaluation in its operations.

The use of advanced technology presents ample opportunity for broad-based collaborations and partnerships as interested stakeholders are invited to invest in the large-scale production of plasma products. Alliances with the relevant organisations earlier mentioned would ensure appropriate technical and financial assistance for capacity building to achieve sustainability and growth of Nigeria's blood services while addressing financial constraints.

Environmental Factors

With increasing global attention on the Green agenda, and environmental sustainability, NBTS in a bid to reducing its carbon footprint at the Headquarters in Abuja, and all Zonal and State Centres across the country is including measures for clean energy through solar technology to power blood banking facilities, ensure optimal cold chain management and preservation of all collected and screened blood units and power incineration for disposal purposes.

Additionally, the means of disposal of clinical waste will continue to evolve in NBTS with affordable and clean energy for environmental sustainability in line with the Sustainable Development Goals at the forefront of those efforts.

Legal Factors

The regulatory environment for blood and tissue in Nigeria as clearly outlined in Part VI, Sections 47 to 57 of the National Health Act (NHAct.) 2014, calls for a stronger regulatory role by NBTS in the Control of Use of Blood, Blood Products, Tissue and Gametes in Humans; and the mandate to ensure the provision of safe, quality blood and blood products for transfusion in order to protect and save the lives of Nigerians across the country.

This legal mandate seeks to ensure the safety of blood, blood products and tissues of living persons, and that all activities pertaining to the use of tissue, blood or blood products removed or withdrawn from living persons, administering of blood and blood products by medical practitioner or dentist and payment in connection with the importation, acquisition or supply of tissue, blood or blood products in Nigeria are in line with best practices.

Assuring access to safe blood for Nigerians has become a matter of urgent national priority given the prevalent unavailability of safe blood and blood products to address the country's needs including high burden of maternal and child deaths; trauma from road traffic accidents, conflict and insurgency amidst widespread reports of transfusion of contaminated and infected blood and blood products, profiteering and unsafe practices along the blood transfusion chain.

A stronger regulatory role by NBTS over the lifespan of the Ten-year Strategic Plan will thus see a robust regulatory framework and country-wide hemovigilance systems in place to ensure safety and quality of blood services in Nigeria.

Ten-Year Vision for NBTS

Over the next ten years, it is envisaged that NBTS will be a more effective and efficient coordinator and regulator of blood services in Nigeria. This would ensure that all who are resident in Nigeria have access to safe blood when needed, and equitably distributed.

Delivering on this vision would rely on more robust quality management systems, robust regulatory frameworks, and quality policies and processes seamlessly institutionalised in blood establishments across the country.

It is long overdue for Nigeria's Blood Transfusion Service to embark on component production and manufacturing of blood-related medicinal products. As an organisation that places a premium on partnerships and collaborations, the provision of these products in response to demand from hospitals and health facilities nationwide would ensure the utilisation of essential healthcare services in line with the National Strategic Health Development Plan (NSHDP).

Component production and manufacturing of blood-related medicinal products would therefore rely on an enabling atmosphere for private sector investment for blood products manufacturing, and robust institutional capacity of the National Blood Service to ensure effective regulation of the quality and safety of those blood products, in addition to purpose-built centres for production, regulation, and coordination of all blood transfusion services country wide.

In achieving the aforementioned, NBTS would be primely positioned to lead and direct research into blood services in Nigeria and provide valuable input into the state of blood transfusion issues and services in Africa.

GOVERNANCE STRUCTURE

Operational Management

The roles and functions of the NBTS are carried out through the following departments at the Headquarters, Zonal and State Centres – Quality and Laboratory Services, Blood Services, Operations, Planning, Research and Statistics, Media and Publicity, Accounts and Finance and Administration. The National Coordinator is the accounting officer of NBTS, who together with the Management Team makes up the primary decision-making body of the organisation. The organogram showing the current Executive Management Team is attached.

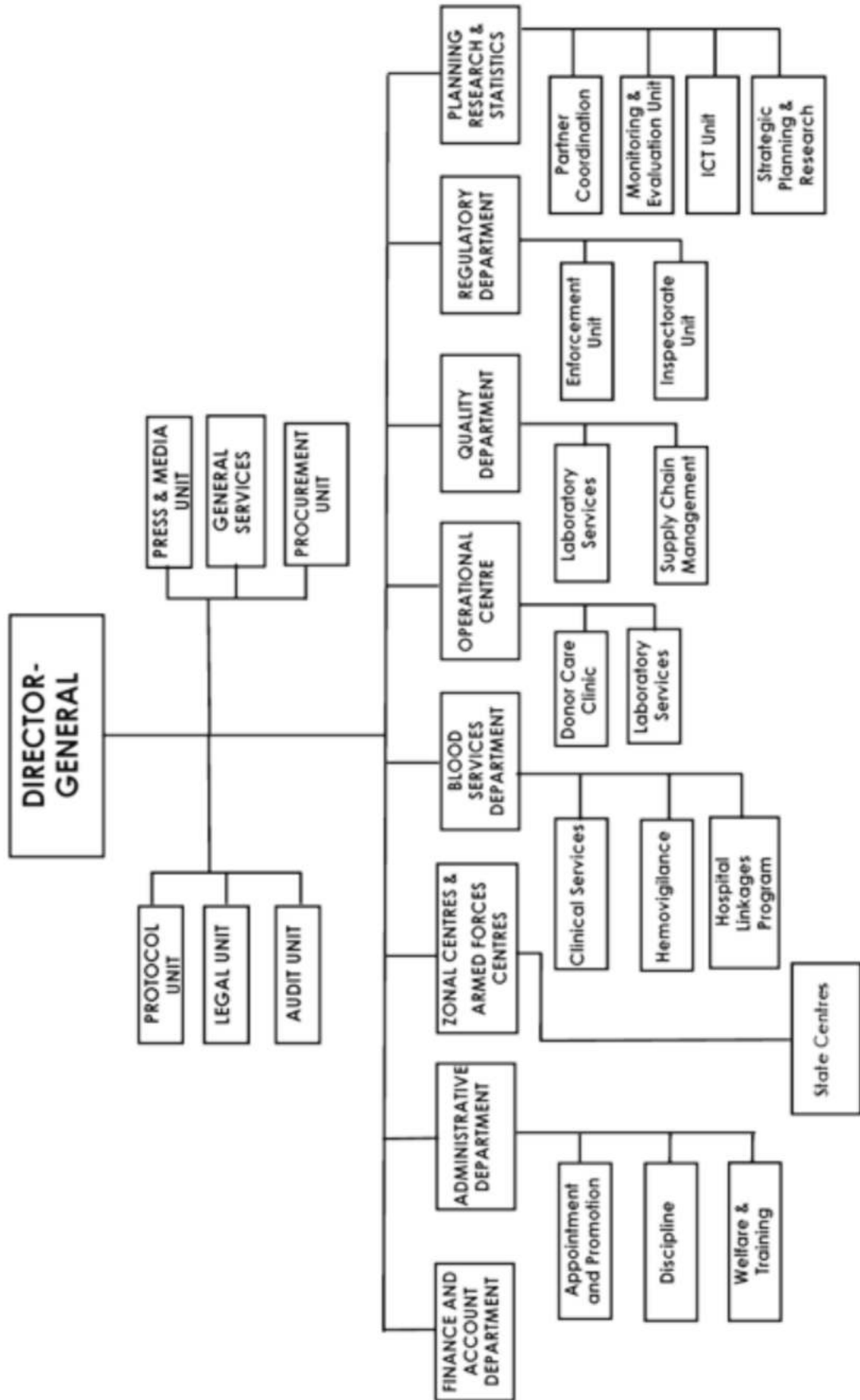
The headquarters is located in Abuja and houses the Operational Centre. There are six (6) Zonal centres located in Benin, Ibadan, Jos, Kaduna, Maiduguri and Owerri. State Centres are currently located in Abeokuta, Ado-Ekiti, Calabar, Enugu, Jalingo, Katsina, Lokoja, Nangere, Port Harcourt, and Sokoto, with more State Centres upcoming.

Business Environment

The NBTS operates within a highly regulated environment in strict adherence to international guidelines and best practices. To enable a safe transfusion service, close collaboration between the NBTS and end-users in hospitals and health facilities are critical. All blood collected and screened by NBTS for the four minimum WHO-mandated transfusion-transmissible infections (TTIs) namely HIV, hepatitis B, hepatitis C and syphilis are donated by voluntary non-remunerated blood donors (VNRBDs).

To build on the achievement of its mandate, NBTS is currently emphasising the invaluable role of robust partnerships and collaborations to strengthen its operations, innovate, and reposition for a sustainable blood service that embodies safety, quality, accessibility.

ORGANOGRAM FOR THE NBSC



STRATEGIC DIRECTION OF NBTS

In developing the Strategic Plan for 2020 to 2029, the NBTS has focused on seven thematic areas. We have deliberated deeply and consulted widely across the organisation for a broad-based perspective.

Using the Balanced Scorecard methodology which has proved valuable to several other national blood services,³¹ NBTS has developed four pillars – Government, Stakeholders, Clients, and Partners, Internal Process and Learning and Growth. From these four pillars, seven thematic areas have been further itemised, which serve as the foundation for its Ten-Year Strategic Plan, and are as follows:

1. Efficient, Effective and Sustainable Blood Services
2. Robust Regulatory Framework and Regulation of Blood Services
3. Good Quality, Safe and Sustainable Blood Supply
4. Robust Cooperation and Stakeholder Collaboration
5. Building a High-Performance Organisation with well-motivated personnel
6. Commercialisation through Public-Private Partnerships (PPP) in producing Plasma-derived medicinal products (PDMPs) and components
7. Establishment of a national strategic safe blood reserve for emergencies and medical services.

1. Efficient, Effective and Sustainable Blood Services

Ensuring that the services of NBTS meet the needs of all end-users – patients, clinicians, health professionals, families and communities means that the organisation has to constantly monitor its operations, and frequently engage with stakeholders to keep the NBTS client/patient-focused, relevant and impactful. Research into the activities and operations of the Blood Service will lead to findings and recommendations that are specifically tailored to the unique Nigerian environment and context, and will allow the NBTS better respond to emerging trends and threats such as the recent COVID-19 pandemic.

2. Robust Regulatory Framework and Regulation of Blood Services

A National Blood Service is only as strong as its weakest link. For as long as gaps remain in the assurance of safety and quality of blood transfusion processes and services delivered in health facilities nationwide, no Nigerian resident is guaranteed the transfusion of safe blood. Securing the safety of blood transfused country wide to limit the infection of recipients with infections such as HIV, hepatitis B, hepatitis C and syphilis would rely on an overriding robust regulatory framework, and quality management processes in place at all points along the blood transfusion value chain – donation, screening, storage, distribution and transfusion – at every blood establishment in the country. The Service will ensure full engagement and regulation of all blood service establishments as well as haemovigilance. This will be with associated sanctions and rewards.

3. Good Quality, Safe and Sustainable Blood Supply

The emphasis of NBTS on the quality of donor counselling, blood screening, storage and distribution processes, is directed at guaranteeing that all blood units provided by the organisation are of good quality and safe for use in accordance with global best practice and extant guidelines surrounding blood safety.

By advocating solely for voluntary non-remunerated blood donations, NBTS seeks to grow a broad-based pool of blood donors – male and female – who regularly donate blood, and thus engenders a sociocultural shift in Nigeria for the imbibing of a culture of regular, voluntary, unpaid blood donations for a sustainable national blood supply, while continuing to ensure that all blood and blood products from NBTS are produced to the highest standards of quality and efficacy.

4. Robust Partnerships and Stakeholder Collaboration

To effectively deliver on its mandate, NBTS would need to build and nurture robust partnerships, and engage stakeholders across multiple sectors for lasting collaborations. These relationships would ensure increased access to human and capital resources, knowledge and expertise resulting in shared responsibilities and strengthened ownership of blood safety activities by all stakeholders.

A major advantage of this approach is the optimisation of usage of resources by avoiding duplication of inputs for a marked improvement in effectiveness and efficiency of the National Blood Service in line with NSHDP Priority Areas of Community Participation, Community Ownership, and Partnerships for Health directed at creating an enabled environment for the attainment of health sector outcomes.

5. Building a High-Performance Organisation with well-motivated personnel

This is about building a high-performance organisation so that NBTS is able to deliver on its mandate and meet the transfusion needs of patients in Nigeria. This will involve having staff with relevant and appropriate skills and expertise across the organisation.

By improving the people management skills of NBTS staff, and by implementing the Learning and Development Strategy, NBTS aims to build a culture of trust, performance, teamwork, and zeal for positive impact. This can only be achieved by creating a learning environment that prioritises issues of communication, trust, transparency, and appropriate staff management practices in accordance with the principles of the public service, but one where every employee has a voice and is acknowledged as a vital contributor towards the achievement of organisational objectives.

6. Commercialisation through Public-Private Partnerships (PPP) in producing Plasma-derived medicinal products (PDMPs) and components

With adequate funding and advanced technology, the National Blood Transfusion Service (NBTS) seeks to embark on the separation of multiple blood components and the eventual production and sale of a suitable range of therapeutic blood products, plasma and plasma-derivative medicinal products for local, regional and even international use. This will ensure job creation and yield additional revenue sources for the organisation, thus reducing the pressures on the national budget through revenue generation. A system that is responsive to intervention needs in the hospitals, yield significant financial returns for Government, and human capital development by job creation fosters an environment for achieving the potential benefits of this initiative.

7. Establishment of a national strategic safe blood reserve for emergencies.

A **‘One Million Safe Blood Units Initiative’ (OMBUI)** has been conceived, developed, and being prepared for a launch. It is an initiative of the National Blood Transfusion Service (NBTS) to improve, provide and make available enough safe blood units for transfusion, and also make them available for the establishment of the **‘National Strategic Safe Blood Reserve’** that can be swiftly and effectively mobilised during emergencies to ensure Nigeria’s population survival, health protection and wellness. The reserves will be warehoused in the six (6) NBTS zonal centres of Kaduna, Maiduguri, Ibadan, Benin, Owerri and Jos. Other warehouses for ease of distribution will include Lagos, Port Harcourt, Kano and Abuja. The reserve will also serve as a ready source of raw materials for blood components and PDMPs manufacturing.

By increasing the number of blood units collected from voluntary non-remunerated donors, and sensitising Nigerians on the 'One Million Safe Blood Units Initiative', NBTS seeks to ensure that not less than 1,000,000 blood units are collected each year within the short-term. This would lead to the creation of a national strategic safe blood reserve of blood units that can be swiftly mobilised from across the country at any point in time to address national emergencies.

STRATEGIC OBJECTIVES

The National Blood Transfusion Service (NBTS) has outlined several critical strategic objectives to be addressed over the next ten years.

Each strategic objective in line with the National Strategic Health Development Plan (NSDHP) keys into several of the NSHDP pillars and focuses on some of the priority areas.

Strategic Objective 1 - Build institutional capacity in HQ, the six (6) zones and in the 36 states, to maintain a quality, safe blood supply such that all units of blood supplied by the NBTS and state facilities are safe for use by the end of 2021.

Strategic Objective 2 – To increase the number of blood units collected from voluntary non remunerated donors, and sensitise Nigerians on the 'One Million

Safe Blood Units Initiative' (OMSBUI) such that blood units collected will increase from 25,000 to 1,000,000 by the end of 2023, and 3,000,000 by 2030.

Strategic Objective 3 – Improve the data and information support system such that information on all the units of blood transfused in all registered hospitals will be captured real time on time by the end of 2022.

Strategic Objective 4 – Develop a Monitoring and Evaluation plan for the NBTS such that all M&E activities are enumerated and coordinated by the end of 2021.

Strategic Objective 5 – Provide for human resource capacity building such that all the human resource needs of the system are met by the end of 2023.

Strategic Objective 6 – Strengthen hospital linkage programme (HLP) such that secondary and tertiary hospitals will partner with NBTS by the end of 2021.

Strategic Objective 7 – Establish a system of Hemovigilance in all partner hospitals such that they are able to identify and report all adverse events by the end of 2022.

Strategic Objective 8 – Maintain a quality management system such that 6 Zonal and Abuja Operational Centre will attain AfSBT/ISO certification by the end of 2022.

Strategic Objective 9 – Establish a system of blood component production, such that HQ and 6 NBTS centres will be producing blood products by the end of 2024.

Strategic Objective 10 – Maintain a cost-effective service through appropriate legislation, budgeting, and judicious use of funds, such that the NBTS will be sustainable by the end of 2023.

Strategic Objective 11 – Strengthen central coordination of blood transfusion and safety activities in Nigeria for an efficient, effective and sustainable Blood Service.

Strategic Objective 12 – Robust Regulatory Framework and Regulation of Blood Services.

Strategic Objective 13 – Conduct and Publication of High-Quality Research in Blood Services in Nigeria.

Strategic Objective 1

Build institutional capacity in HQ, the six (6) zones and in the 36 states, to maintain a quality, safe blood supply such that all units of blood supplied by the NBTS and state facilities are safe for use by the end of 2021.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Area – Leadership and Governance*

*NSHDP Strategic Pillar 2 – Increased utilization of Essential Package of Health Services
Priority Area – Emergency Medical Services and Hospital Care*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Areas – Human Resources for Health, Health Infrastructure, Medicines, Vaccines, and other Health Technologies & Supplies*

*NSHDP Strategic Pillar 4 – Protection from health emergencies and risks
Priority Area – Public Health Emergencies Preparedness and Response*

Key strategies under this objective would include the following:

- i. Review of NBTS Organogram
- ii. Conduct a needs assessment of the current infrastructure (e.g., building, electrical and water supply, equipment, and vehicles)
- iii. Evaluate and improve procurement, cold chain management, and storage capacity within NBTS.
- iv. Training of NBTS key staff on cold chain management.
- v. Training of state key staff on cold chain management in collaboration with State Ministries of Health.
- vi. Strengthening of stock management system within the blood transfusion service for efficient delivery of services and reduced stock-outs.

- vii. Develop national storage capacity to accommodate one (1) million units of safe blood.
- viii. Establish purpose-built blood transfusion centres in the NBTS headquarters and six (6) zones of the country.
- ix. Support states in the provision of equipment to ensure safety and quality of blood and train the users.
- x. Collaborate with relevant stakeholders to monitor blood safety activities in-country.

Strategic Objective 2

To increase the number of blood units collected from voluntary non remunerated donors, and sensitise Nigerians on the 'One Million Safe Blood Units Initiative' (OMSBUI) such that blood units collected will increase from 25,000 to 1,000,000 by the end of 2023, and 3,000,000 by 2030.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Area – Leadership and Governance, Community Participation and Ownership, Partnerships for Health*

*NSHDP Strategic Pillar 2 – Increased utilization of Essential Package of Health Services
Priority Areas – Emergency Medical Services and Hospital Care*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Areas – Human Resources for Health, Health Infrastructure, Medicines, Vaccines, and other Health Technologies & Supplies*

*NSHDP Strategic Pillar 4 – Protection from health emergencies and risks
Priority Area – Public Health Emergencies Preparedness and Response*

Key strategies under this objective would include the following:

- i. Embark on massive public education campaigns (TV, radio jingles, interviews, programmes, IEC materials, posters, billboards, TV and radio programs, documentaries, print media articles, interviews).
- ii. Scale up the School Blood Safety Programme (SBSP) nationally.

- iii. Conduct blood safety and voluntary blood donation sensitization, awareness seminars, and workshops across institutions nationwide.
- iv. Establish fixed blood collection sites within highly populated communities.
- v. Promotion of Club 25 activities nationwide.
- vi. Promotion of NYSC Blood Safety Club activities nationwide.
- vii. Develop a national policy on voluntary blood donor incentives.
- viii. Conduct a survey to determine the needs for blood and blood products across the country.
- ix. Conduct of voluntary blood donation drives nationwide.
- x. Develop strategies for community blood donation drives.
- xi. Improve NBTS visibility and increase numbers of walk-in donors across all NBTS centres nationwide.
- xii. Strengthen and improve donor retention strategies to increase numbers of repeat voluntary blood donors.
- xiii. Facilitate the conversion of family replacement blood donors to voluntary non-remunerated blood donors (VNRBD).
- xiv. Establish monthly blood donation days that will be celebrated country wide.
- xv. Support states in the development and implementation of systems for ensuring adequate supply of safe blood during emergencies.

Strategic Objective 3

Improve the data and information support system such that information on all the units of blood transfused in all registered hospitals will be captured real time on time by the end of 2022.

NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services

Priority Areas – Health Infrastructure, Medicines, Vaccines, and other Health Technologies & Supplies, Health Information System

Key strategies under this objective would include the following:

- i. Perform a needs assessment for Abuja and the six (6 Zonal Centres) for establishing data collection and information and communication technology (ICT) requirements.
- ii. Collect and collate data on blood requirements through a comprehensive survey of all blood collection sites within each geo-political zone.
- iii. Budgeting for the implementation of ICT requirements.
- iv. Train staff and implement IT systems within Abuja and six zonal centres.
- v. Develop an Electronic Medical Record system/Electronic VNRBD Questionnaire
- vi. Collaborate with states to encourage blood safety data capturing of all health facilities in the Federal Ministry of Health (FMoH) DHIS2 platform.

Strategic Objective 4

Develop a Monitoring and Evaluation plan for the NBTS such that all M&E activities are enumerated and coordinated by the end of 2021.

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Areas – Health Infrastructure, Medicines, Vaccines, and other Health Technologies & Supplies, Health Information System*

Key strategies under this objective would include the following:

- i. Define M&E reporting requirements.
- ii. Develop and disseminate a 10-year M&E plan and revise existing tools.
- iii. Identify data reporting methods across NBTS centres country wide for continuous improvement.
- iv. Train National, Zonal and State M&E officers on reporting requirements and tools.

- v. Collect monthly blood safety data from across all Zonal and State centres and provide quarterly and annual M&E reports.
- vi. Perform annual M&E visits and provide summaries of the visits to relevant stakeholders.
- vii. Integrate the M&E Manager as a member of the Quality System.

Strategic Objective 5

Provide for human resource capacity building such that all the human resource needs of the system are met by the end of 2023.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Area – Leadership and Governance*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Area – Human Resources for Health*

Key strategies under this objective would include the following:

- i. Identify senior management team training needs and support additional training.
- ii. Develop comprehensive training plan for NBTS across all staff cadres.
- iii. Train a corps of NBTS staff providers, as master trainers in blood safety services.
- iv. Provision of Step-down training on blood services by NBTS master trainers.
- v. Identify orientation program requirements and develop a program for new staff and re-orientation of existing staff.
- vi. Review of the NBTS staff handbook.
- vii. Establish scheme of service for key posts within the Blood Transfusion Service in collaboration with the Office of the Head of the Civil Service of the Federation (OHCSF).
- viii. Develop a ten (10) year staff strength plan for NBTS.

- ix. Support states to build human resource capacities in blood safety and transfusion medicine.

Strategic Objective 6

Strengthen hospital linkage programme (HLP) such that secondary and tertiary hospitals will partner with NBTS by the end of 2021.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Area – Leadership and Governance, Community Participation and Ownership, Partnerships for Health*

*NSHDP Strategic Pillar 2 – Increased utilization of Essential Package of Health Services
Priority Area – Emergency Medical Services and Hospital Care*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Area – Medicines, Vaccines, and other Health Technologies & Supplies*

*NSHDP Strategic Pillar 4 – Protection from health emergencies and risks
Priority Area – Public Health Emergencies Preparedness and Response*

Key strategies under this objective would include the following:

- i. Develop KAP questions and conduct study to assess clinicians' attitudes and practices towards blood safety in Nigeria and NBTS.
- ii. Develop strategies to improve relations with secondary and tertiary health facilities.
- iii. Reprint and distribute NBTS operational guidelines to hospitals through implementing partners (IPs) and obtain support for NBTS.
- iv. Develop strategies and implementation plan to ensure complete testing (4th Generation EIA) of all blood products in all tertiary facilities.
- v. Support states in the training of clinicians on appropriate clinical use of blood.
- vi. Collaborate with IPs to forge a relationship with secondary and tertiary hospitals.

- vii. Collaborate with IPs to (re)screen pilot samples from secondary and tertiary hospitals.

Strategic Objective 7

Establish a system of Hemovigilance in all partner hospitals such that they are able to identify and report all adverse events by the end of 2022.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Areas – Leadership and Governance, Community Participation and Ownership, Partnerships for Health*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Areas – Human Resources for Health, Health Infrastructure, Medicines, Vaccines, and other Health Technologies & Supplies, Health Information System, Research for Health*

*NSHDP Strategic Pillar 4 – Protection from health emergencies and risks
Priority Area – Public Health Emergencies Preparedness and Response*

Key strategies under this objective would include the following:

- i. Develop hemovigilance tools.
- ii. Identify and train state and zonal Hemovigilance officers.
- iii. Support states with step-down Hemovigilance training for Hemovigilance officers in Hospital Linkage (HLP) partner facilities.
- iv. Review current blood transfusion guidelines and retrain physicians in the rational and optimal use of blood and blood products in accordance with reviewed and updated guidelines.
- v. Encourage and support hospitals to establish Hospital Transfusion Committees (HTCs) in states nationwide.

Strategic Objective 8

Maintain a quality management system such that 6 Zonal and Abuja Operational Centre will attain AfSBT/ISO certification by the end of 2022.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Area – Leadership and Governance*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Area – Health Information System*

Key strategies under this objective would include the following:

- i. Establish and maintain a Quality Management system at the zonal and state levels of NBTS.
- ii. Conduct annual Quality Management system internal audits.
- iii. Develop a Quality Improvement Plan to guide the quality systems in HQ and six (6) Zonal centres.
- iv. Develop an on-demand label system using ISBT 128 data identifiers to reduce risk of errors and improve blood traceability in all zonal centres.
- v. Establish robust service and maintenance contracts for all equipment within the Blood Transfusion Service.
- vi. Train and retrain laboratory scientists in quality management (i.e., quality control, testing kit validation, records, and supplier qualifications)
- vii. Establish national guidelines for archiving of blood donor samples.
- viii. Conduct Annual Quality Review meetings.
- ix. Support states in the implementation of key functions of the quality system for hospital blood banks and clinical transfusion processes.

Strategic Objective 9

Establish a system of blood component production, such that HQ and 6 NBTS centres will be producing blood products by the end of 2024.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Areas – Leadership and Governance, Community Participation and Ownership,
Partnerships for Health*

*NSHDP Strategic Pillar 2 – Increased utilization of Essential Package of Health Services
Priority Area – Emergency Medical Services and Hospital Care*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package
of Health Services
Priority Area – Medicines, Vaccines, and other Health Technologies & Supplies*

*NSHDP Strategic Pillar 4 – Protection from health emergencies and risks
Priority Area – Public Health Emergencies Preparedness and Response*

*NSHDP Strategic Pillar 5 – Predictable financing and risk protection
Priority Area – Health financing*

Key strategies under this objective would include the following:

- i. Develop strategy for component production.
- ii. Exploratory visits of Global Best Practice Blood Service facilities (Public or Private).
- iii. Infrastructural development to accommodate product manufacturing and quality control.
- iv. Purchase of production and testing equipment.
- v. Train staff on production of blood components.
- vi. Establish component production facilities in NBTS headquarters and specific zones of the country.
- vii. Registration of blood products that require market authorisation.

Strategic Objective 10

Maintain a cost-effective service through appropriate legislation, budgeting, and judicious use of funds, such that the NBTS will be sustainable by the end of 2023.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Areas – Leadership and Governance, Community Participation and Ownership, Partnerships for Health*

*NSHDP Strategic Pillar 2 – Increased utilization of Essential Package of Health Services
Priority Area – Emergency Medical Services and Hospital Care*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Area – Medicines, Vaccines, and other Health Technologies & Supplies*

Key strategies under this objective would include the following:

- i. Reactivation of the NBSC bill process at the National Assembly and identification of steps to be taken to ensure sustainability of the NBTS through legislative action.
- ii. Media engagement and support towards appropriate Blood Safety legislation.
- iii. Budget planning and preparation.
- iv. Established funding modalities within the National health financing mechanism and identification of other sources of funds.
- v. Determination of cost recovery system for the NBTS.

Strategic Objective 11

Strengthen central coordination of blood transfusion and safety activities in Nigeria for an efficient, effective, and sustainable Blood Service.

NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes

Priority Areas – Leadership and Governance, Community Participation and Ownership, Partnerships for Health

*NSHDP Strategic Pillar 2 – Increased utilization of Essential Package of Health Services
Priority Area – Emergency Medical Services and Hospital Care*

*NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services
Priority Area – Medicines, Vaccines, and other Health Technologies & Supplies*

*NSHDP Strategic Pillar 4 – Protection from health emergencies and risks
Priority Area – Public Health Emergencies Preparedness and Response*

*NSHDP Strategic Pillar 5 – Predictable financing and risk protection
Priority Area – Health financing*

Key strategies under this objective would include the following:

- i. Identify and enumerate key interest groups and advocates of blood safety in Nigeria.
- ii. Engage key stakeholders and interest groups in blood safety.
- iii. Create a database of all blood services facilities in Nigeria.
- iv. NBTS to encourage and support State Governments to establish State Blood Transfusion Services in respective states blood centres or take over existing State centres.
- v. Encourage and support the Armed Forces to establish State Armed Forces Blood Transfusion Centres.
- vi. Engage and solicit collaboration and support from partners across multiple sectors - global health and development, health financing, youth engagement, media, telecommunications, finance, food and beverages and biotechnology.

Strategic Objective 12

Robust Regulatory Framework and Regulation of Blood Services.

*NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes
Priority Area – Leadership and Governance, Community Participation and Ownership, Partnerships for Health*

NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services

Priority Areas – Medicines, Vaccines, and other Health Technologies & Supplies

NSHDP Strategic Pillar 4 – Protection from health emergencies and risks

Priority Area – Public Health Emergencies Preparedness and Response

Key strategies under this objective would include the following:

- i. Identify needs of blood safety establishments in-country across three sub-heads: a) Collection centres b) Screening centres c) Production centres.
- ii. Expand knowledge base on best-practice regulatory settings worldwide through exploratory visits to best practice regulatory facilities such as those in South Africa, Malawi, Rwanda, Namibia, Ireland, Netherlands.
- iii. Build NBTS competency in Regulation of blood safety establishments through the training of a core Regulation team and Regulation officers at the headquarters and six (6) Zonal centres.
- iv. Develop and disseminate guidelines for Regulation of Blood Services to all relevant stakeholders.

Strategic Objective 13

Conduct and Publication of High-Quality Research in Blood Services in Nigeria.

NSHDP Strategic Pillar 1 – Enabled Environment for attainment of sector outcomes

Priority Area – Leadership and Governance, Community Participation and Ownership, Partnerships for Health

NSHDP Strategic Pillar 3 – Strengthened Health System for Delivery of the Essential Package of Health Services

Priority Areas – Human Resources for Health, Health Infrastructure, Medicines, Vaccines, and other Health Technologies & Supplies, Health Information System, Research for Health.

Key strategies under this objective would include the following:

- i. Lead and coordinate research in vital aspects of blood transfusion and services in Nigeria.

- ii. Build NBTS competency in research for blood safety practice and health systems policy.
- iii. Ensure ethical practice in the conduct of primary research involving human participants.

IMPLEMENTATION

Nigeria's large population with myriad challenges traversing the inadequacies in infrastructure, medical technology, equipment, and human resources for health provides the perfect platform required to roll out the Ten-Year Strategic Plan for Blood Transfusion Services.

Key Players in Implementation

The key players in the implementation would include the Federal Government of Nigeria and all the 36 State Governments, as well as the Federal Capital Territory through the Federal Ministry of Health (FMoH) and National Blood Transfusion Service (NBTS), and the State Ministries of Health (SMoH) as main drivers of the plan.

Essential stakeholders to the plan include but are not limited to professional associations namely Nigerian Society of Haematology and Blood Transfusion, Haematology and Blood Transfusion Scientists Society of Nigeria (HBTSSN), Paediatrics Association of Nigeria, Society of Obstetricians and Gynaecologists of Nigeria, Association of General and Private Medical Practitioners of Nigeria, Guild of Medical Directors, and Society of Family Physicians of Nigeria. Regulatory agencies namely the Medical and Dental Council of Nigeria (MDCN), Medical Laboratory Science Council of Nigeria (MLSCN), and the Nursing and Midwifery Council of Nigeria (NMCN) are charged with the responsibility for training and validating personnel in medical, nursing and laboratory practice, and thus are vital to the implementation of the plan.

All the healthcare facilities and training schools in the country are critical to the success of the NBTS Ten-Year Strategic Plan.

Other vital stakeholders relevant to the plan are the National Youth Service Corp (NYSC), National Health Insurance Scheme (NHIS), Ministry of Education and Ministry of Finance.

- i. Relevant Ministries, Departments and Agencies – Ministry of Information, Ministry of Education, Ministry of Youth and Sports, Ministry of Women Affairs, National Orientation Agency, National Agency for AIDS Control (NACA), National AIDS/STDs Control Programme (NASCP) and National agency for Food and Drug Administration (NAFDAC).
- ii. National Youth Service Corps NYSC – to recruit the support of the NYSC to form a pool of voluntary unpaid blood donors who will also serve as advocates for blood safety across the country.
- iii. Indigenous NGOs such as Safe Blood for Africa Foundation (SBFAF), Nigerian Red Cross Society, Aliko Dangote Foundation, TY Danjuma Foundation, Biobak Foundation who would collaborate on blood donation drives, and donate towards projects.
- iv. Technical partners – provide expertise and support with building capacity and technical competency: World Bank, World Health Organization (WHO), Society for Family Health (SFH), FHI-360, Institute of Human Virology (IHVN), PATHS, APIN Public Health Initiative, Bill and Melinda Gates Foundation, Nigerian Society of Haematology and Blood Transfusion, Association of General and Private medical Practitioners of Nigeria, Guild of Medical Directors, and Society of Family Physicians of Nigeria.
- v. Corporate organisations – would provide investment in the development and distribution of blood products and derivatives; provide support for advertisements, communications, and information dissemination and co-organise blood donation drives and outreach campaigns. For example, medical and diagnostic firms, investment firms, telecommunication companies such as MTN, GLO, Airtel, 9-Mobile; Fast-moving Consumer Goods Companies (Maltina, NBL, Nestle, Cadbury, Dangote), retail and commercial banks.
- vi. Private individuals – local community leaders (e.g. political, spiritual, religious, traditional), young people, community volunteers, celebrities, and influencers.

Implementation Roadmap for NBTS Ten-Year Strategic Plan

TABLE 1: Implementation of Objective 1 of the NBTS Ten-Year Strategic Plan

Objective 1: Build institutional capacity in HQ, the six (6) zones and the 36 states plus the FCT, to maintain a quality, safe blood supply such that all units of blood supplied by the NBTS and state facilities are safe for use by the end of 2021			
Strategic Target	Activities	Responsibility	Timelines
1. Review the NBTS Organogram.	Reviewed Organogram	NC Management Team	End of 2021
2. Conduct a needs assessment of current Infrastructure (e.g Building, electrical and water supply, equipment and vehicles)	Report on the infrastructural needs of NBTS	NC/DQ/DR/DFA/ZC/SC	End of 2021
3. Evaluate and improve procurement, cold chain, and storage capacity within NBTS.	Improve the cold chain and storage capacity of the NBTS	DQ/DR	End of 2021
4. Training of NBTS key staff on cold chain management	Train two (2) staff (1 Phlebotomist and 1 Lab Sci) per centre.	DQ/DR/HA	End of 2021
5. Strengthening of stock management system for efficient and effective delivery	NBTS to develop strategies for efficient and effective stock management in HQ and Zonal centres	NC/DQ/DR/HOPS/DFA/Hproc	End of 2021

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

of services and reduced stock-outs				End of 2021
6. Develop national storage capacity to accommodate one (1) million units of safe blood	<ul style="list-style-type: none"> i. Conduct a national survey to ascertain the safe blood storage capacity of Nigeria. ii. Purchase of blood bank refrigerators iii. Provision of alternative power supply; Generator and Solar Power Inverter 	NC/DQ/DR/HPRS NC/DQ/HPProc/DFA NC/DQ/HPProc/DFA		End of 2021 End of 2021 End of 2021
7. Establish purpose-built centres in the HQ and six (6) zones	Building and equipping NBTS centres for optimal blood collection, screening, and production	NC/DQ/HOPS/DFA/Hproc		End of 2022
8. Training of trainers for state key staff on cold chain management	Train four (4) staff (2 Phlebotomists and 2 Lab Sci) per state centre	DQ/DR/HA		End of 2021
9. Support states in the provision of equipment to ensure safety and quality of blood and train the users	Guide and support states in the procurement of blood safety equipment	NC/DQ/DR/HPProc./SMoH		2021 through 2030
10. NBTS collaborates with relevant stakeholders to monitor blood safety activities in country	Create an electronic real-time dashboard of Zonal/State Blood Centres and partner facilities	NC/ZC/SC/NSOANP Partners		End of 2022

Table 2: Implementation of Objective 2 of the NBTS Ten-Year Strategic Plan

Objective 2: To increase the number of blood units collected from voluntary non remunerated donors, and sensitise Nigerians on the 'One Million Safe Blood Units Initiative' such that blood units collected will increase from 25,000 to 1,000,000 by the end of 2023, and 3,000,000 by 2030.			
Strategic Target	Activities	Responsibilities	Timeline
1. Embark on massive public education campaign (TV, radio jingles, interviews, programmes, IEC materials, posters, billboards, TV and radio programs, documentaries, print media articles, interviews)	1.1 Two (2) jingles per three (3) stations per day in each of the six (6) geopolitical zones	HMP/ZCs	2021 through 2030
	1.2 One featured article or interview and advertorial per quarter for HQ	NC/HMP/HPRS	2021 through 2030
	1.3 One featured article or interview and advertorial per Zone per quarter	HMP/HPRS/ZCs	2021 through 2030
	1.4 Quarterly Newsletter published via NBTS website, printed, and circulated to stakeholders	HMP/HPRS	2021 through 2030
	1.5 120 Days Report published via NBTS website and circulated to stakeholders	HMP/HPRS	End of 2021

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>2. Scale up the School Blood Safety Programme (SBSP) nationally.</p>	<p>2.1 Conduct advocacy meetings with school authorities and Parent-Teachers' Associations (One meeting at 4 schools per term per Zone/Centre).</p> <p>2.2 Institute National Schools' Competition on Blood Safety - Essay, Quiz, Arts, Drama</p>	<p>DBS/HMP</p> <p>NC/DBS/HMP/HPRS/ZC/SC</p>	<p>2021 through 2030</p> <p>End of 2022</p>
<p>3. Conduct sensitization, awareness seminars, and workshops</p>	<p>3.1 Conduct ten (10) sensitization seminars and workshops per quarter per zonal/state centre</p> <p>3.2 Increase the NBTS voluntary blood donor base by 2000% annually</p>	<p>DBS/HOPS/ZC/SC</p> <p>DBS/HOPS/ZC/SC</p>	<p>2021 through 2030</p> <p>2021 through 2030</p>
<p>4. Establish fixed blood collection sites within highly populated communities</p>	<p>Establish three (3) fixed blood donation sites per state per zone per year.</p>	<p>HOPs/ZCs/SCs</p>	<p>2021 through 2030</p>
<p>5. Develop policy on donor incentives</p>	<p>Have a policy on donor incentives</p>	<p>NC/DBS/DQ/DR/HOPS/ HPRS</p>	<p>End of 2021</p>
<p>6. Promote Club 25 activities</p>	<p>6.1 Sponsor 4 quarterly meetings of State Club 25</p> <p>6.2 Sensitize, mobilise, and organize blood drive (1 per chapter per quarter)</p> <p>6.3 Promote Club 25 community services (1 per Chapter per year)</p>	<p>Club 25 focal persons/ NC/HPRS/ZC & SC</p> <p>Club 25 focal persons/ NC/HPRS/ZC & SC</p> <p>Club 25 focal persons/ NC/HPRS/ZC & SC</p>	<p>End of 2021</p> <p>End of 2021</p> <p>End of 2021</p>

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>7. Promote NYSC Blood Safety Club Activities</p>	<p>7.1 Sponsor health seminars, workshops, and blood drives in orientation camps nationwide</p> <p>7.2 Conduct community sensitization activities with NYSC Medical CDS Groups</p> <p>7.3 Support NYSC Community Blood Safety Projects (Six (6) Per year - One Project per Zone)</p>	<p>NC/HOPS/HPRS/ZC/SC</p> <p>NC/HOPS/HPRS/ZC/SC</p> <p>NC/HOPS/HPRS/ZC/SC</p>	<p>End of 2021</p> <p>End of 2021</p> <p>End of 2021</p>
<p>8. Conduct a survey to establish the blood needs for the country</p>	<p>Establish the blood needs for the country</p>	<p>NC/DQ/DBS/HPRS/ZC and SC/NSOANP partners</p>	<p>End of 2021</p>
<p>9. Conduct of blood drives</p>	<p>9.1 Conduct 4 blood drives per week per zonal/state centre</p> <p>9.2 Establish blood collection centres at busy malls and commercial centres</p> <p>9.3 Conduct advocacy visits to the gate keepers of higher institutions of learning and faith-based organisations for blood drive activities</p>	<p>HOPs/ZCs/SCs</p> <p>HOPs/ZCs/SCs</p> <p>HOPs/ZCs/SCs</p>	<p>2021 through 2030</p> <p>2021 through 2030</p> <p>2021 through 2030</p>
<p>10. Develop community donation drives strategies</p>	<p>10.1 Develop a register of communities partnering with the blood service.</p>	<p>DBS/HOPs/HPRS</p>	<p>End of 2021</p>

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

	<p>10.2 Develop guidelines and Standard Operating Procedures (SOP) for engaging communities and Schools</p> <p>10.3 Train relevant officers on guidelines and SOPs</p> <p>10.4 Determine criteria and institute National Blood Safety Hero Awards and Rewards Schemes for partner communities</p>	<p>NC/DQ/DR/DBS/HOPS/HPRS</p> <p>DQ/DBS/HOPS/HA</p> <p>NC/DBS/HOPS/HA</p>	<p>End of 2021</p> <p>End of 2022</p> <p>End of 2022</p>
<p>11. To improve NBTS' visibility and increase the number of walk – in donors across all NBTS centres</p>	<p>11.1 Upgrade and frequently update the NBTS website</p> <p>11.2 Engage NURTW, Road Transport companies and airlines to have NBTS fliers/ IEC materials in their seat pockets</p> <p>11.3 NBTS billboards erected at strategic locations across Nigeria</p>	<p>HMP/HPRS</p> <p>NC/HPRS/HMP</p> <p>NC/HMP</p>	<p>2021 through 2030</p> <p>2021 through 2030</p> <p>2021 through 2030</p>
<p>12. To strengthen and improve donor retention strategies to increase the number of repeat donors.</p>	<p>12.1 Review, print and distribute guidelines and SOPs on donor retention to the centres</p>	<p>DQ/HOPS/ZC/SC</p>	<p>End of 2021</p>

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

	12.2 Train relevant officers on the guidelines and SOPs	HA/SBFAF/HOPS/ZC/SC	End of 2021
13. Facilitate the conversion of family replacement blood donors to VNRBD	13.1 Develop guidelines and SOPs on the conversion of family replacement donors to VNRBD 13.2 Train relevant officers and distribute guidelines and SOPs	HA/SBFAF/HOPS/ZC/SC	End of 2021
14. Establish monthly blood donation days	14. Have one dedicated day every month for increased advocacy and public awareness activities nationwide	DQ/HA/SBFAF/HOPS/ZC/SC NC/HMP/ZC/SC	End of 2021 2021 through 2030
15. Support states in the development and implementation of systems for ensuring adequate supply of safe blood during emergencies	15. Support states to develop and implement state blood donor recruitment programmes to achieve 100% voluntary non-remunerated blood donation	NC/DBS/ZCs/SCs	2021 through 2030

Table 3: Implementation of Objective 3 of the NBTS Ten-Year Strategic Plan

Objective 3: Improve the data and information support system such that information on all the units of blood transfused in all registered hospitals will be captured real time on time by the end of 2022			
Strategic Target	Activities	Responsibility	Timeline
1. Perform a needs assessment for Abuja and the six (6) Zonal Centres for establishing data collection and IT requirements	Establish the requirements for data collection and reports	NC/HPRS/HOPS/ZC/SC	End of 2021
2. Visit all zones and collect data on blood requirements and a comprehensive survey of all blood collection sites within each zone	Develop a comprehensive inventory of all blood collection sites in the country and registry of all blood collection sites in all the zones and Abuja	NC/HPRS/HOPS/ZC/SC	End of 2021
3. Prepare a budget for implementation of IT requirements	Develop a budget for implementation of IT requirements	NC/HPRS/HOPS	End of 2021
4. Train staff and implement IT systems within Abuja and six zonal centers	Train two (2) staff per centre	NC/HPRS/HA	End of 2022
5. Develop an Electronic Medical Record system/Electronic VNRBD Questionnaire	Developed Electronic Medical Record system	NC/HPRS/HOPS	End of 2022
6. Collaborate with states to encourage blood safety data capturing of all health facilities in DHIS2 platform	Support hospital facilities in states to report blood safety data in DHIS2	NC/HPRS/HOPS/ZC/SC	End of 2022

Table 4: Implementation of Objective 4 of the NBTS Ten-Year Strategic Plan

Objective 4: Develop a Monitoring and Evaluation plan for the NBTS such that all M&E activities are enumerated and coordinated by the end of 2021.			
Strategic Target	Activities	Responsibility	Timeline
1. Define M&E reporting requirements	All M&E reporting requirements clearly defined.	NC/HPRS	End of 2021
2. Develop a 10-year M&E plan and revise existing tools	A comprehensive 10-year M&E plan developed alongside with the M&E tools	HPRS	End of 2021
3. Identify reporting methods	Identify all methods to feedback M&E findings for continuous improvement.	HPRS	End of 2021
4. Train National, Zonal and State M&E officers on reporting requirements and tools	Train two (2) officers per zonal/state centre.	HPRS	End of 2021
5. Collect monthly data and provide quarterly M&E report	To ensure all data from previous month is collected first week of succeeding month, and quarterly report is disseminated two (2) weeks after the end of the quarter.	HPRS	End of 2021
6. Perform annual M&E visits and provide a summary of the visit to the stakeholders	Visit all centres, at least once in a year and provide monitoring report two (2) weeks after visitation.	HPRS	2021 through 2030
7. Integrate the M&E Manager as a member of the Quality System	Ensure the M&E findings are integrated into the quality management system	DQ/HPRS	2021 through 2030

Table 5: Implementation of Objective 5 of the NBTS Ten-Year Strategic Plan

Objective 5: Provide for human resource capacity building such that all the human resource needs of the system are met by the end of 2023.			
Strategic Plan	Activities	Responsibility	Timeline
1. Identify senior management team training needs and support additional training	Report all the training needs of senior management	HA(Training officer NBTS)	End of 2021
2. Develop training plan for NBTS	Develop a detailed training plan	DQ/HA/HPRS/SBFAF/Stakeholders	End of 2021
3. Train a corps of NBTS staff providers, as master trainers in blood safety services	Train a corps of fifty (50) NBTS staff providers, as master trainers in blood safety services, representative of the six (6) geo-political zones	DBS/HCSU	End of 2023
4. Step-down training of blood services providers by NBTS master trainers	Step down training to one hundred and fifty (150) staff from service providers	HA/DBS/HCSU	End of 2022
5. Identify orientation program requirements and develop a program for new staff and re-orientation of existing staff	Develop a new staff orientation programme	HA/HOPS/HPRS/DQ	End of 2021
6. Review of staff handbook	Review staff handbook to guide staff conduct	NC/Mgt Team	End of 2021
7. Establish scheme of service for key posts (i.e., counselors, phlebotomist, and donor recruiters)	Establish scheme of service for key posts (i.e., counselors, phlebotomist, and donor recruiters)	NBTS /FMoH/HoS	End of 2021
8. Developing a ten (10) year staff strength plan for NBTS	Develop a ten (10) year NBTS staff capacity building strategy for enhanced productivity	NC/Mgt. team	2021 through 2030
9. Support states to build human resource capacities in blood safety and transfusion medicine	Train state staff in blood safety and transfusion medicine	NC/Mgt. team/SMoH	2021 through 2030

Table 6: Implementation of Objective 6 of the NBTS Ten-Year Strategic plan

Objective 6: Strengthen hospital linkage programme (HLP) such that secondary and tertiary hospitals will partner with NBTS by the end of 2021			
Strategic Target	Activities	Responsibility	Timeline
1. Develop KAP questions and conduct study to assess clinicians' attitude and practice towards NBTS	Conduct study in the six zonal centres	HPRS/ZC/DQ	End of 2021
2. Develop strategies to improve relations with secondary and tertiary health facilities	Strategic meetings with secondary and tertiary hospitals	NC/DBS	End of 2021
3. Reprint and distribute NBTS operational guidelines to hospitals through IPs and obtain support for NBTS	Distribute Operational Guidelines to all the secondary and tertiary hospitals where IPs are operating.	NC/DBS/DR/HPRS/IPs	End of 2021
4. Develop strategies and implementation plan to ensure complete testing (4th Gen EIA) of all blood products in all tertiary facilities	All blood used in tertiary institutions are tested using 4th generation EIA	DQ/DBS	End of 2023
5. Support states in the training of clinicians on appropriate clinical use of blood	Six tertiary and twelve secondary hospitals per zone	DBS/SBFAP	End of 2023
6. Collaborate with IPs to forge a relationship with secondary and tertiary hospitals	Forge good working relationship with secondary and tertiary hospitals.	DBS/HPRS	End of 2021
7. Collaborate with IPs to (re)screen pilot samples from secondary and tertiary hospital	Screen 45,000 pilot samples	DBS/DQ	End of 2021

Table 7: Implementation of Objective 7 of the NBTS Ten-Year Strategic Plan

Objective 7: Establish a system of Hemovigilance in all partner hospitals such that they are able to identify and report all adverse events/reactions by the end of 2022				
Strategic Target	Activities	Responsibility	Time line	
1. Develop Hemovigilance tools	Hemovigilance tools	DBS/TATBD/DQ/DR	End of 2022	
2. Identify and train state and zonal Hemovigilance officers	Train one Hemovigilance officer per centre	DBS/TATBD/DQ/DR	2023 through 2030	
3. Support states with step-down Hemovigilance training to linkage partner hospital Hemovigilance officers	Step-down training to one secondary and tertiary hospital per state.	DBS/TATBD/DQ/DR	2023 through 2030	
4. Review current transfusion guidelines and retrain physicians in the rational and optimal use of blood and blood products to the established guidelines	Reviewed transfusion guidelines	NBTS/Expert committee	2023 through 2030	
5. Encourage and support hospitals to establish Hospital Transfusion Committees (HTCs) in states nationwide	Guidelines for operations of HTCs	NBTS/Expert committee	2023 through 2030	

Table 8: Implementation of Objective 8 of the NBTS Ten-Year Strategic Plan

Objective 8: Maintain a quality management system such that 6 Zonal and Abuja Operational Centre will attain AfSBT/ISO certification by the end of 2022.			
Strategic Target	Activities	Responsibility	Timeline
1. Establish and maintain a Quality Management system at the zonal and state level of NBTS	Maintain a Quality Management System (QMS) in all NBTS centres	DQ/ZC/SC	2021 through 2030
2. Conduct a Quality Management system internal audit annually	One Audit per centre per year	DQ/ZC/SC	2021 through 2030
3. Develop a Quality Improvement Plan to guide the quality systems in HQ and six (6) Zonal centres	Develop, disseminate and implement the quality improvement plan in HQ and six (6) zonal centres	DQ/DR/HOPS/HPRS	End of 2021
4. Develop an on-demand label system using ISBT 128 data identifiers to reduce risk of errors and improve blood traceability in all zonal centres	Conduct a pilot scheme in Jos zonal centre with plans to extend to all zonal centres.	NC/DQ/HPRS	End of 2021
5. Establish service and maintenance contracts for equipment	A contract that outlines the maintenance and service of all equipment in NBTS	NC/DQ/Equipment const/DFA	End of 2021
6. Train and retrain laboratory scientist in quality management (i.e., quality control, testing kit validation, records and supplier qualifications)	Train one quality officer, and one laboratory officer per centre	NC/DQ/DR/ SBFAF	End of 2021
7. Establish national guidelines for archiving of blood donor samples	Develop and disseminate national guidelines for archiving of blood donor samples	NC/DQ/DR/HPRS	End of 2022

8. Conduct Annual Quality Review meeting	One Quality Review meeting of Technical Managers and Quality Officers in all Zonal and State Centres	NC/DQ	2021 through 2030
9. Support states in the implementation of key functions of the quality system for hospital blood banks and clinical transfusion processes	Training and supportive mentorship of state centres	NC/Mgmt team/SMoH	2021 through 2030

Table 9: Implementation of Objective 9 of the NBTS Ten-Year Strategic Plan

Objective 9: Establish a system of blood component production, such that HQ and 6 NBTS centres will be producing blood products through public-private partnerships (PPP) by the end of 2024.			
Strategic Target	Activities	Responsibility	Timeline
1. Develop strategy for component production	Developed component production strategies and terms of reference for engagement of technical and investment partners.	NC/TATBD	End of 2021
2. Train staff on production of blood components	Train staff from all six (6) Zonal centres on component production.	DQ/TATBD/HA	End of 2021
3. Infrastructural development to accommodate product manufacturing and quality control	Sourcing of appropriate accommodations, building and renovation works	NC/Mgmt team/TATBD	End of 2023
4. Purchase of production and testing equipment	Purchase of relevant production and testing equipment for component production and fractionation	NC/DQ/DFA/Hproc	End of 2023
5. Establish component production facilities	Establish components production in the six (6) NBTS Zonal centres	NC/DQ/TATBD	End of 2021

6. Exploratory visits of Global Best Practice Blood Service facilities (Public or Private)	Conduct exploratory visits of best practice facilities e.g South Africa, Malawi, Rwanda, Namibia, Ireland, Netherlands	NC/Mgt. team	End of 2022
7. Registration of products that require market authorisation	Follow due process of registration of blood products for market authorisation	NC/DQ/HPRS	End of 2023

Table 10. Implementation of Objective 10 of the NBTS Ten-Year Strategic Plan

Objective 10: Maintain a cost-effective service through appropriate legislation, budgeting, and judicious use of funds, such that the NBTS will be sustainable by the end of 2023.			
Strategic Target	Activities	Responsibility	Time line
1. Reactivate the NBSC bill process at the National Assembly and identify steps to be taken to ensure sustainability of the NBTS through legislative action	High-level advocacy to Federal Executives and Legislators	NC/LA FMOH	End of 2021
2. Media engagement and support towards Blood Safety legislation	Engage the media on public awareness and enlightenment campaigns on the benefits of Blood Safety legislation	NC/HMP/Mgmt team	End of 2021
3. Prepare a realistic budget	A budget that is in tune with reality	NC/Mgt. Team	End of 2021
4. Establish funding modalities within the National health financing mechanism and identify other sources of funds	Identify other sources of funds	NC/Mgt. Team	End of 2022
5. Establish funding modalities within the National health financing mechanism and identify other sources of funds	The appropriate cost for NBTS products	NC/TATBD	End of 2023

Table 11: Implementation of Objective 11 of the NBTS Ten-Year Strategic Plan

Objective 11: Strengthen central coordination of blood transfusion and safety activities in Nigeria for an efficient, effective and sustainable Blood Service			
Strategic Target	Activities	Responsibility	Timeline
1. Identify and enumerate key interest groups and advocates of blood safety in Nigeria	Revise list of stakeholders in blood safety	NC/Mgt. Team	End of 2020
2. Engage key stakeholders and interest groups	Conduct high level advocacy visits to key stakeholders and interest groups Conduct a stakeholders' meeting to formulate strategies for sustainability of the National Blood Service	NC/Mgmt team NC/HPRS	2021 through 2030
3. Create a database of all blood services facilities in Nigeria	Advertise for the registration of all blood services facilities/establishments in Nigeria through major national news publications	NC/HMC/Mgmt team	End of 2021
4. NBTS to encourage and support State Governments to establish State Blood Transfusion Services in respective states blood centres or take over existing State Centres	Courtesy visits and meetings with State Governors and State Commissioners of Health	NC/Mgmt team	End of 2024
5. NBTS to encourage and support the Armed Forces to establish State Blood Transfusion Centres	Courtesy visits and meetings with Chief of Defence Staff, Army, Navy, Air Force, Police, Immigration and Customs	NC/Mgmt team	End of 2024
6. NBTS to engage and solicit collaboration and support from partners across multiple sectors - global health and development, health financing, youth engagement, media etc	Courtesy visits and one-on-one meetings with stakeholders	NC/HPRS/Mgmt team	2021 through 2030

Table 12: Implementation of Objective 12 of the NBTS Ten-Year Strategic Plan

Objective 12: Robust Regulatory Framework and Regulation of Blood Services			
Strategic Target	Activities	Responsibility	Timeline
1. NBTS to identify needs of blood safety establishments in-country across three sub-heads i) Collection centres ii) Screening centres iii) Production centres	NBTS to identify needs of blood safety establishments in-country across three sub-heads i) Collection centres ii) Screening centres iii) Production centres	NC/DR/DQ/HPRS/Mgmt team/	End of 2024
2. Expand knowledge base on best-practice regulatory settings worldwide	Conduct exploratory visits of best practice regulatory facilities e.g South Africa, Malawi, Rwanda, Namibia, Ireland, Netherlands	NC/DR/DQ/Mgmt team	2021 through 2030
3. Build NBTS competence in Regulation of blood safety establishments	Training of Regulation team and Regulation officers in HQ and six (6) Zonal centres on Regulation of Blood Services	DR/DQ/HA/TATBD	2021 through 2030
4. Develop NBTS Regulatory guidelines	Develop and disseminate guidelines for Regulation of Blood Services	DR/DQ/HA/TATBD	2021 through 2030

Table 13: Implementation of Objective 13 of the NBTS Ten-Year Strategic Plan

Objective 13: Conduct and Publication of High-Quality Research in Blood Services in Nigeria.			
Strategic Target	Activity	Responsibility	Timeline
1. NBTS to lead and coordinate research in vital aspects of blood transfusion and services in Nigeria	Conduct research studies on blood donors and donation; hospital management of blood-related services; biological safety; transfusion systems; supplies, distribution, and financing	HPRS/DQ/DBS/ZC/SC	2021 through 2030
2. Build NBTS competence in research for blood safety practice and health systems policy	Training of NBTS staff in Research methodology	NC/DQ/DBS/HA/HPRS/	2021 through 2030
3. Ensure ethical practice in the conduct of primary research involving human participants	Constitution of an NBTS Research Ethics Committee	NC/HPRS/Mgmt team	End of 2021

Table 14: Monitoring & Evaluation of Objective 1 of the NBTS Ten-Year Strategic Plan

Objective 1: Build institutional capacity in HQ, the six (6) zones and the 36 states plus the FCT, to maintain a quality, safe blood supply such that all units of blood supplied by the NBTS and state facilities are safe for use by the end of 2021				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Review the organogram for NBTS	Good quality, safe and sustainable blood supply leading to improved healthcare service delivery.	Reviewed document	NC/Mgmt team	End of 2021
2. Conduct a needs assessment of the current infrastructure (e.g., building, electrical and water supply, equipment, and vehicles)		Report	NC/DQ/DR/DF/A/ZC/S C	End of 2021
3. Evaluate and improve procurement, cold chain, and storage capacity within NBTS.		Report	DQ/DR	End of 2021
4. Training of NBTS key staff on cold chain management		Training Records	DQ/DR/HA	End of 2021
5. Strengthening of stock management system for efficient and effective delivery of services and reduced stock-outs		Documented strategy to prevent commodities and consumables stock-outs.	NC/DQ/DR/HOPS/DF A/Hproc	End of 2021

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>6. Develop national storage capacity to accommodate one (1) million units of safe blood</p> <p>7. Establish purpose-built centres in the HQ and six (6) zones</p> <p>8. Training of trainers for state key staff on cold chain management</p> <p>9. Support states in the provision of equipment to ensure safety and quality of blood and train the users</p> <p>10. NBTS collaborates with relevant stakeholders to monitor blood safety activities in country</p>		<p>Survey Reports, Invoices</p> <p>Building & Renovation Plans Equipment invoices</p> <p>Training Records</p> <p>Equipment Invoices</p> <p>Installed Real-time dashboard at HQ</p>	<p>NC/DQ/DR/HPRS/DF A/Hproc.</p> <p>NC/DQ/HOPS/DFA/H proc</p> <p>DQ/DR/HA</p> <p>NC/DQ/DR/HProc./SM oH</p> <p>NC/ZC/SC/NBTS Partners</p>	<p>End of 2021</p> <p>End of 2022</p> <p>End of 2021</p> <p>2021 through 2030</p> <p>End of 2022</p>
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Table 15: Monitoring & Evaluation of Objective 2 of the NBTS Ten-Year Strategic Plan

Objective 2: To increase the number of blood units collected from voluntary non remunerated donors, and sensitise Nigerians on the 'One Million Safe Blood Units Initiative' such that blood units collected will increase from 25,000 to 1,000,000 by the end of 2023, and 3,000,000 by 2030.				
Strategic Target	Indicator	How to measure	Responsibility	Timeline
1. Embark on massive public education campaign (TV, radio jingles, interviews, programmes, IEC materials, posters, billboards, TV and radio programs, documentaries, print media articles, interviews)	Increased awareness of voluntary non-remunerated blood donation and increased voluntary blood donations nationwide	Number of jingles, interviews, documentaries, and programmes aired; posters and billboards erected Number of featured articles/interviews from HQ Number of featured articles/interviews from Zones Number of volumes/editions published	HMP/ZCs NC/HMP/HPRS HMP/HPRS/ZCs HMP/HPRS DBS/HMP	2021 through 2030 2021 through 2030 2021 through 2030 2021 through 2030

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>2. Scale up the School Blood Safety Programme (SBSP) nationally.</p> <p>3. Conduct sensitisation, awareness seminars, and workshops</p> <p>4. Establish fixed blood collection sites within highly populated communities</p> <p>5. Develop policy on donor incentives</p> <p>6. Promote Club 25 Activities</p>		<p>Reports of advocacy visits and meetings held with school authorities and PTA in a quarter.</p> <p>Number of competition entries</p> <p>Number of Schools with active SBSP</p> <p>Number of sensitization seminars and workshops conducted in a quarter</p> <p>Percentage increase in donor base per annum</p> <p>Number of fixed sites established per annum.</p> <p>Policy developed and printed for circulation</p> <p>Number of Club 25 meetings sponsored in the quarter</p> <p>Number of blood drives conducted with Club 25</p>	<p>NC/DBS/HMP/H PRS/ZC/SC</p> <p>NC/DBS/HMP/H PRS/ZC/SC</p> <p>DBS/HOPS/ZC/S C</p> <p>DBS/HOPS/ZC/S C</p> <p>HOPS/ZCs/SCs</p> <p>NC/DBS/DQ/DR/HOPS/ HPRS</p> <p>Club 25 focal persons/ NC/HPRS/ZC & SC</p> <p>Club 25 focal persons/ NC/HPRS/ZC & SC</p>	<p>2021 through 2030</p> <p>End of 2022</p> <p>2021 through 2030</p> <p>2021 through 2030</p> <p>2021 through 2030</p> <p>2021 through 2030</p> <p>End of 2021</p> <p>End of 2021</p> <p>End of 2021</p>
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NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>7. Promote NYSC Blood Safety Club Activities</p>		<p>The number of community service activities conducted by Club 25.</p> <p>Number of NYSC orientation camp activities</p> <p>Number of community sensitization activities held with NYSC.</p> <p>Number of NYSC Community Blood Safety Projects supported</p>	<p>Club 25 focal persons/ NC/HPRS/ZC & SC</p> <p>NC/HOPS/HPRS/ ZC/SC</p> <p>NC/HOPS/HPRS/ ZC/SC</p> <p>NC/HOPS/HPRS/ ZC/SC</p> <p>NC/DQ/DBS/HPR S/ZC and SC/NBTS partners</p> <p>HOPS/ZC/SC</p> <p>HOPS/ZC/SC</p> <p>HOPS/ZC/SC</p>	<p>End of 2021</p> <p>End of 2021</p> <p>End of 2021</p> <p>End of 2021</p> <p>End of 2021</p> <p>2021 through 2030</p> <p>2021 through 2030</p> <p>2021 through 2030</p>
<p>8. Conduct a survey to establish the blood needs for the country</p>		<p>Blood needs assessment report</p>		
<p>9. Conduct of blood drives</p>		<p>Number of blood drives conducted in a month.</p> <p>Establish blood collection centres at busy malls and commercial centres</p> <p>Advocacy visit reports Number of blood drives held</p>		

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>10. Develop community donation drives strategies</p>		<p>Register of partnering communities Guidelines and SOPs developed Training Reports Number of Blood Safety Hero awardees and Community Reward Scheme participants Website traffic Reports of engagement with transportation partners Number of billboards Distribution lists and acknowledgement Training reports and attendance Developed SOPs Training reports and attendance</p>	<p>DBS/HOPS/HPRS NC/DQ/DR/DBS/HOPS/HPRS DQ/DBS/HOPS/H A NC/DBS/HOPS/H A HMC/HPRS NC/HPRS/HMC NC/HMC DQ/HOPS/ZC/SC HA/SBFAF/HOP S/ZC/SC HA/SBFAF/HOP S/ZC/SC DQ/HA/SBFAF/HOPS/ZC/SC</p>	<p>End of 2021 End of 2021 End of 2021 End of 2022 2021 through 2030 2021 through 2030 2021 through 2030 End of 2021 End of 2021 End of 2021 End of 2021</p>
<p>11. To improve NBTS' visibility and increase the number of walk – in donors across all NBTS centres</p>	<p>Increased number of walk-in voluntary blood donations nationwide</p>			
<p>12. To strengthen and improve donor retention strategies to increase the number of repeat donors.</p>	<p>Increased number of regular repeat donors</p>			
<p>13. Facilitate the conversion of family replacement blood donors (FRDs)</p>	<p>Increased number of voluntary non-remunerated blood donors (VNRBD) and</p>			

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>to voluntary non-remunerated blood donors (VNRBD)</p> <p>14. Establish monthly blood donation days</p> <p>15. Support states in the development and implementation of systems for ensuring adequate supply of safe blood during emergencies</p>	<p>reduced family replacement donors (FRDs)</p> <p>Monthly day set aside nationally for blood donation awareness</p> <p>Systems in place sub-nationally to ensure adequate safe blood supplies for regular and emergency needs</p>	<p>Advocacy and media reports</p> <p>Percentage increase in donor base per annum</p> <p>Number of states with active state blood donor recruitment programmes</p>	<p>NC/HMP/ZC/SC</p> <p>NC/DBS/ZCs/SCs</p>	<p>2021 through 2030</p> <p>Continuous</p>
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Table 16: Monitoring & Evaluation of Objective 3 of the NBTS Ten-Year Strategic Plan

Objective 3: Improve the data and information support system such that information on all the units of blood transfused in all registered hospitals will be captured real time on time by the end of 2022				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Perform a needs assessment for Abuja and the six (6) Zonal Centres for establishing data collection and IT requirements	Improved data availability, quality and information support systems for blood transfusion and services in facilities nationwide	Report of the needs assessment	NC/HPRS/HOPS/ZC/S C	End of 2021
2. Visit all zones and collect data on blood requirements and a comprehensive survey of all blood collection sites within each zone		Developed inventory	NC/HPRS/HOPS/ZC/S C	End of 2021
3. Prepare a budget for implementation of IT requirements		Developed Budget	NC/HPRS/HOPS/ZC/S C	End of 2021
4. Train staff and implement IT systems within Abuja and six zonal centers		Training Report	NC/HPRS/HA	End of 2022
5. Develop an Electronic Medical Record system/Electronic Blood Donor Questionnaire		Developed and functional EMR system for Blood Donors	NC/HPRS/HOPS	End of 2022

**NATIONAL BLOOD TRANSFUSION SERVICE (NBTS)
STRATEGIC PLAN**

<p>6. Collaborate with states to encourage blood safety data capturing of all health facilities in FMOH DHIS2 platform</p>		<p>Lists of facilities entering blood safety data in DHIS2</p>	<p>NC/HPRS/HOPS/ZC/S C</p>	<p>End of 2022</p>
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Table 17: Monitoring & Evaluation of Objective 4 of the NBTS Ten-Year Strategic Plan

Objective 4: Develop a Monitoring and Evaluation plan for the NBTS such that all M&E activities are enumerated and coordinated by the end of 2021.				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Define M&E reporting requirements	Robust Monitoring and Evaluation systems in place and effectively coordinated	M&E Reporting requirements defined and disseminated to all M&E personnel	NC/HPRS	End of 2021
2. Develop a 10 year M&E plan and revise existing tools		M&E Plan	HPRS	End of 2021
3. Identify reporting methods		Reporting methods identified nationwide	HPRS	End of 2021
4. Train National, Zonal and State M&E officers on reporting requirements and tools		Training Records	HPRS	End of 2021
5. Collect monthly data and provide quarterly M&E report		Monthly Reports	HPRS	End of 2021
6. Perform annual M&E visits and provide a summary of the visit to the stakeholders		Visitation Reports	HPRS	2021 through 2030
7. Integrate the M&E Manager as a member of the Quality System		Report of Quality System meetings and proceedings	DQ/HPRS	Continuous

Table 18: Monitoring & Evaluation of Objective 5 of the NBTS Ten-Year Strategic Plan

Objective 5: Provide for human resource capacity building such that all the human resource needs of the system are met by the end of 2023				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Identify senior management team training needs and support additional training	Optimal capacity development for a high-performance for a Blood Service with well-trained and motivated personnel.	Training needs report	HA(Training officer NBTS)	End of 2021
2. Develop training plan for NBTS		Training plan report	DQ/HA/HPRS/SBFAF/Stakeholders	End of 2021
3. Train a corps of NBTS staff providers, as master trainers in blood safety services		Training Records	HA/DBS/HCSU	End of 2023
4. Step-down training of blood services providers by NBTS master trainers		Training Records	HA/ DBS/HCSU	End of 2022

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

	Staff orientation program reports	HA/HOPS/HPRS/DQ	End of 2021
5. Identify orientation program requirements and develop a program for new staff and re-orientation of existing staff	Staff orientation program reports	HA/HOPS/HPRS/DQ	End of 2021
6. Review of Staff handbook	Staff handbook	NC/Mgmt Team	End of 2021
7. Establish scheme of service for key posts (i.e., donor counsellors, phlebotomists, and donor recruiters)	Official Gazette of the Federal Republic of Nigeria	NBTS /FMoH/HoS	End of 2021
8. Developing a ten (10) year staff strength plan for NBTS	Ten (10) year capacity building strategy document	NC/Mgmt team	2021 through 2030
9. Support states to build human resource capacities in blood safety and transfusion medicine	Training Reports	NC/Mgmt team/SMoH	2021 through 2030

Table 19: Monitoring & Evaluation of Objective 6 of the NBTS Ten-Year Strategic Plan

Objective 6: Strengthen hospital linkage programme (HLP) such that secondary and tertiary hospitals will partner with NBTS by the end of 2021					
Strategic Target	Indicator	How to Measure	Responsibility	Timeline	
1. Develop KAP questions and conduct study to assess clinicians' attitude and practice towards NBTS	Improved collaborations with secondary hospitals for improved blood safety, issuance, and reduced wastages.	Study report	HPRS/ZC/DQ	End of 2021	
2. Develop strategies to improve relations with secondary and tertiary health facilities		Strategy document	NC/DBS	End of 2021	
3. Reprint and distribute NBTS operational guidelines to hospitals through IPs and obtain support for NBTS		Printed guidelines disseminated	NC/DBS/DR/HPRS/IPs	End of 2021	
4. Develop strategies and implementation plan to ensure complete testing (4th Gen EIA) of all blood products in all tertiary facilities		Implementation plan report	DQ/DBS	End of 2023	

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

	DBS/SBFAF	Training reports		
End of 2023				
End of 2021	DBS/HPRS	Number of secondary and tertiary hospitals reporting to NBTS Improved issuance of blood to hospitals Reduced numbers of expired blood units and discards Results of (re)screened pilot samples		
End of 2021	DBS/DQ			

Table 20: Monitoring & Evaluation of Objective 7 of the NBTS Ten-Year Strategic Plan

Objective 7: Establish a system of Hemovigilance in all partner hospitals such that they are able to identify and report all adverse events/reactions by the end of 2022				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Develop Hemovigilance tools	Hemovigilance systems implemented in hospitals nationwide	Developed hemovigilance tools	DBS/TATBD/DQ/DR	End of 2022
2. Identify and train state and zonal Hemovigilance officers		Training reports	DBS/TATBD/DQ/DR	2023 through 2030
3. Support states with step-down Hemovigilance training to linkage partner hospital Hemovigilance officers		Training reports	DBS/TATBD/DQ/DR	2023 through 2030
4. Review current transfusion guidelines and retrain physicians in the rational and optimal use of blood and blood products to the established guidelines		Reviewed transfusion guidelines	NBTS/Expert Committee	2023 through 2030
5. Encourage and support hospitals to establish Hospital Transfusion Committees (HTCs) in states nationwide		Guidelines and reports of various HTCs	NBTS/Expert Committee	2023 through 2030

Table 21: Monitoring & Evaluation of Objective 8 of the NBTS Ten-Year Strategic Plan

Objective 8: Maintain a quality management system such that 6 Zonal and Abuja Operational Centre will attain AfSBT/ISO certification by the end of 2022.				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Establish and maintain a Quality Management system at the zonal and state level of NBTS	Improved quality management system and AfSBT/ISO certification of NBTS	Quality management reports	DQ/ZC/SC	2021 through 2030
2. Conduct a Quality Management system internal audit annually		Audit reports	DQ/ZC/SC	2021 through 2030
3. Develop a Quality Improvement Plan to guide the quality systems in HQ and six (6) Zonal centres		Developed quality improvement plan	DQ/DR/HOPS/HPRS	End of 2021
4. Develop an on-demand label system using ISBT 128 data identifiers to reduce risk of errors and improve blood traceability in all zonal centres		Reports of the pilot scheme	NC/DQ/HPRS	End of 2021
5. Establish service and maintenance contracts for equipment		Contract report	NC/DQ/Equipment const/DFA	End of 2021
		Training report	NC/DQ/DR/ SBFAF	End of 2021

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>6. Train and retrain laboratory scientists in quality management (i.e., quality control, testing kit validation, records, and supplier qualifications)</p> <p>7. Establish national guidelines for archiving of blood donor samples</p> <p>8. Conduct Annual Quality Review meeting</p> <p>9. Support states in the implementation of key functions of the quality system for hospital blood banks and clinical transfusion processes</p>		<p>National archiving guidelines</p> <p>Reports of Annual Quality Review meeting</p> <p>Training reports</p>	<p>NC/DQ/DR/HPRS</p> <p>NC/DQ</p> <p>NC/Mgmt/SMoH</p>	<p>End of 2022</p> <p>2021 through 2030</p> <p>2021 through 2030</p>
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Table 22: Monitoring & Evaluation of Objective 9 of the NBTS Ten-Year Strategic Plan

Objective 9: Establish a system of blood component production, such that HQ and 6 NBTS centres will be producing blood products through public-private partnerships (PPP) by the end of 2024.				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Develop strategy for component production	Commercialisation through Public-Private Partnerships (PPP) in producing Plasma-derived medicinal products (PDMs) and components	Report on developed strategy for component production	NC/TATBD	End of 2021
2. Train staff on production of blood components		Training reports	DQ/TATBD/HA	End of 2021
3. Infrastructural development to accommodate product manufacturing and quality control		Developed infrastructure	NC/Mgmt team/TATBD	End of 2023
4. Purchase of relevant production and testing equipment for component production and fractionation		Equipment invoices and delivery notes	NC/DQ/DFA/Hproc	End of 2023
5. Establish component production facilities		Progress and site visit reports	NC/DQ/TATBD	End of 2021
6. Exploratory visits of Global Best Practice		Study tour reports	NC/Mgmt team	End of 2022

<p>Blood Service facilities (Public or Private)</p> <p>7. Registration of products that require market authorisation</p>		<p>Registration certificates</p>	<p>NC/DQ/HPRS</p>	<p>End of 2023</p>
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Table 23: Monitoring & Evaluation of Objective 10 of the NBTS Ten-Year Strategic Plan

Objective 10: Maintain a cost-effective service through appropriate legislation, budgeting, and judicious use of funds, such that the NBTS will be sustainable by the end of 2023.				
Strategic Target	Indicator	How to Measure	Responsibility	Timeline
1. Reactivate the NBSC bill process at the National Assembly and identify steps to be taken to ensure sustainability of the NBTS through legislative action	NBSC Act passed into law	Official Gazette of the Government of Nigeria	NC/LA FMoH	End of 2021
2. Media engagement and support towards Blood Safety legislation	Increased public awareness on the NBSC bill and its important role for national blood safety	Report of meetings with media Media reportage on Blood Safety legislation	NC/HMP/Mgmt team	End of 2021
3. Prepare a realistic budget	Appropriate budget line for NBTS	Prepared and submitted budget	NC/Mgmt team	End of 2021
4. Establish funding modalities within the National health financing mechanism and identify other sources of funds	Multiple streams of financing for NBTS	Report on other sources of funds	NC/Mgmt team	End of 2022
5. Establish funding modalities within the National health financing mechanism and identify other sources of funds	Sustainable cost recovery system in place	Report on appropriate costing of NBTS products	NC/TATBD	End of 2023

Table 24: Monitoring & Evaluation of Objective 11 of the NBTS Ten-Year Strategic Plan

Objective 11: Strengthen central coordination of blood transfusion and safety activities in Nigeria for an efficient, effective and sustainable Blood Service.				
Strategic Target	Indicator	How to Measure	Persons Responsible	Timeline
1. Identify and enumerate key interest groups and advocates of blood safety in Nigeria.	Revised list of stakeholders in blood safety.	Developed list of all stakeholders in blood safety	NC/Mgmt team	End of 2021
2. Engage key stakeholders and interest groups	High level advocacy visits to key stakeholders and interest groups Stakeholders' meetings to formulate strategies for sustainability of the National Blood Service	Report of advocacy visits Report of meetings with stakeholders	NC/Mgmt team NC/HPRS	2021 through 2030 2021 through 2030
3. Create a database of all blood services facilities in Nigeria	Advertise for the registration of all blood services facilities/establishments in Nigeria through major national news publications.	List of blood transfusion facilities in each State of the Federation	NC/HMC/Mgmt team	End of 2021
4. NBTS to encourage and support State Governments		Reports of visits and meetings	NC/Mgmt team	End of 2024

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

<p>to establish State Blood Transfusion Services in respective states blood centres or take over existing State centres.</p>	<p>Courtesy visits and meetings with State Governors and State Commissioners of Health.</p>	<p>Number of State Centres operated by State Ministries of Health</p>		
<p>5. NBTS to encourage and support the Armed Forces to establish State Blood Transfusion Centre</p>	<p>Courtesy visits and meetings with Chief of Defence Staff, Army, Navy, Air Force, Police, Immigration and Customs.</p>	<p>Number of new Blood Centres established by the Military and Paramilitary. Reports of meetings</p>	<p>NC/Mgmt team</p>	<p>End of 2024</p>
<p>6. NBTS to engage and solicit collaboration and support from partners across multiple sectors - global health and development, health financing, youth engagement, media etc</p>	<p>Courtesy visits and one-on-one meetings with partners</p>	<p>Signed MOUs</p>	<p>NC/HPRS/Mgmt team</p>	<p>2021 through 2030</p>

Table 25: Monitoring & Evaluation of Objective 12 of the NBTS Ten-Year Strategic Plan

Objective 12: Robust Regulatory Framework and Regulation of Blood Services				
Strategic Target	Indicator	How to Measure	Persons responsible	Timeline
<ol style="list-style-type: none"> 1. NBTS to identify needs of blood safety establishments in-country across three sub-heads i) Collection centres ii) Screening centres iii) Production centres. 2. Expand knowledge-base on best-practice regulatory settings worldwide 3. Build NBTS competency in Regulation of blood safety establishments. 4. Develop NBTS Regulatory guidelines. 	Capacity building for effective regulation of blood services nationwide	Report of needs assessment	NC/DR/DQ/HPRS/Mgmt team.	End of 2024
		Exploratory visit reports	NC/DR/DQ/Mgmt team	2021 through 2030
		Training reports	DR/DQ/HA/TATBD	2021 through 2030
		Regulation guidelines	DR/DQ/HA/TATBD	2021 through 2030

Table 26: Monitoring & Evaluation of Objective 13 of the NBTS Ten-Year Strategic Plan

Objective 13: Conduct and Publication of High-Quality Research in Blood Services in Nigeria.				
Strategic Target	Indicator	How to Measure	Persons responsible	Timeline
1. NBTS to lead and coordinate research in vital aspects of blood transfusion and services in Nigeria.	Conduct research studies on blood donors and donation; hospital management of blood-related services; biological safety; transfusion systems; supplies, distribution, and financing.	Research publications	HPRS/DQ/DBS/ZC/SC	2021 through 2030
2. Build NBTS competency in research for blood safety practice and health systems policy	Training of NBTS staff in Research methodology	Training reports	NC/DQ/DBS/HA/HPRS	2021 through 2030
3. Ensure ethical practice in the conduct of primary research involving human participants	Constitution of an NBTS Research Ethics Committee	List of Committee members Committee submissions Committee reports	NC/HPRS/Mgmt team	End Of 2021

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

NBTS Ten-Year Strategic Plan Costing

Projected estimated cost of implementing the NBTS Ten-Year Strategic Plan.

S/N	Objectives	1st Year	Short-Term	Mid-Term	Long-Term	Total
1	Build institutional capacity in HQ, the six (6) zones and the 36 states plus the FCT, to maintain a quality, safe blood supply such that all units of blood supplied by the NBTS and state facilities are safe for use by the end of 2021.	N 1,536,500,000	N 1,536,500,000	N 49,000,000	N 360,500,000	N 1,946,000,000
2	To increase the number of blood units collected from voluntary non remunerated donors, and sensitise Nigerians on the 'One Million Safe Blood Units Initiative' such that blood units collected will increase from 25,000 to 1,000,000 by the end of 2023, and 3,000,000 by 2030.	N 2,960,335,000	N 8,183,435,000	N 15,921,181,000	N 10,518,735,000	N 34,623,351,000
3	Improve the data and information support system such that information on all the units of blood transfused in all registered hospitals will be captured real time on time by the end of 2022	N 408,000,000	N 408,000,000	N 32,500,000	N 58,000,000	N 498,500,000

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

4	Develop a Monitoring and Evaluation plan for the NBTS such that all M&E activities are enumerated and coordinated by the end of 2021.	N 18,000,000	N 27,000,000	N 18,000,000	N 27,000,000	N 72,000,000
5	Provide for human resource capacity building such that all the human resource needs of the system are met by the end of 2023.	N 71,700,000	N 71,700,000	N 69,400,000	N 69,400,000	N 210,500,000
6	Strengthen hospital linkage programme (HLP) such that secondary and tertiary hospitals will partner with NBTS by the end of 2021.	N 117,700,000	N 117,700,000	N 89,500,000	N 117,700,000	N 324,900,000
7	Establish a system of Hemovigilance in all partner hospitals such that they are able to identify and report all adverse events/reactions by the end of 2022	N 110,000,000	N 110,000,000	N 110,000,000	N 110,000,000	N 330,000,000
8	Maintain a quality management system such that 6 Zonal and Abuja Operational Centre will attain AfSBT/ISO certification by the end of 2022.	N 76,200,000	N 118,200,000	N 130,500,000	N 109,500,000	N 358,200,000
9	Establish a system of blood component production, such that HQ and 6 NBTS centres will be producing blood products through	N 1,326,700,000	N 1,326,700,000	N 76,700,000	N 76,700,000	N 1,480,100,000

NATIONAL BLOOD TRANSFUSION SERVICE (NBTS) STRATEGIC PLAN

	public-private partnerships (PPP) by the end of 2024.							
10	Maintain a cost-effective service through appropriate legislation, budgeting, and judicious use of funds, such that the NBTS will be sustainable by the end of 2023.	N 90,450,000	N 270,450,000	N 360,000,000	N 270,250,000	N 900,700,000		
11	Strengthen central coordination of blood transfusion and safety activities in Nigeria for an efficient, effective, and sustainable Blood Service	N 110,300,000	N 175,700,000	N 165,700,000	N 133,700,000	N 475,100,000		
12	Robust Regulatory Framework and Regulation of Blood Services	N 92,000,000	N 92,000,000	N 92,000,000	N 92,000,000	N 276,000,000		
13	Conduct and Publication of High-Quality Research in Blood Services in Nigeria.	N 90,500,000	N 240,500,000	N 315,500,000	N 240,500,000	N 796,500,000		
	TOTAL	N 7,008,385,000	N12,677,885,000	N 17,429,981,000	N 12,183,985,000	N 42,291,851,000		

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