

REPUBLIC OF ZAMBIA



MINISTRY OF HEALTH

**NATIONAL SURGICAL, OBSTETRIC, AND
ANAESTHESIA STRATEGIC PLAN (NSOASP)**

YEAR 2017-2021

October 2016

1.0 THEME FOR THE NSOASP 2017 TO 2021

“Achieving universal health coverage through safe, affordable, and timely surgery, obstetrics, and anaesthesia.”

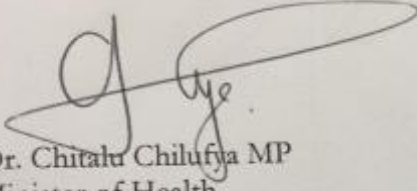
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1.1 STATEMENT BY THE HONOURABLE MINISTER OF HEALTH

In its on-going quest to improve the health status of its people, the Government of the Republic of Zambia has continued to strengthen health service delivery across the entire continuum of health care. Surgery and obstetrics are known to be the most neglected areas of health care delivery and inculcating basic surgical and obstetric service in Primary Health Care will enhance Universal Health Coverage. To address this gap, Zambia moved a motion to prioritize safe surgical, obstetric, and anaesthesia care at the 68th World Health Assembly. The WHO passed this resolution at the 68th World Health Assembly. In line with this resolution 68.15, Zambia has embarked on implementation of first ever National Surgical, Obstetric and Anaesthesia Strategic Plan (NSOASP), which will run alongside our National Health Strategic Plan 2017 – 2021 and our 7th National Development Plans.

This NSOASP recognises the need for significant collaboration; working with all cooperating partners (CPs), the private sector, civil society, the corporate sector, and other line-ministries in achieving these strategic objectives. It is my considered view that, with an appropriate level of commitment and support from the Government and all stakeholders, the NSOASP will improve the health status of all Zambians and significantly contribute to national development through the improvement of National Health Indicators. I therefore urge all stakeholders to fully dedicate themselves to this important national assignment, with the assurance that my Ministry will remain committed to the successful implementation of the plan.



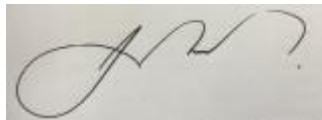
Dr. Chitalu Chilufya MP
Minister of Health

1.2 FOREWORD

In this plan, we have focused on several key priorities to ensure equitable access of surgical, obstetric, and anaesthesia services. The plan focuses on increasing the surgical capacity to meet at least 80% of the surgical needs, up from the current 26%. Additionally, the plan has an ambitious target to increase the number of surgical, obstetric, and anaesthesia providers to at least 3 per 100,000 population, as compared to the current situation of 1.1 per 100,000 population. We also aim to increase the safety of surgery and decrease all preventable deaths by tracking and analysing perioperative mortality.

Currently, approximately 25% of total health care expenditure is out of pocket. This factor drives many families into impoverishment as a result of seeking surgical care. Zambia is developing new financing mechanisms including social health insurance to mitigate catastrophic expenditure. This plan focuses on strengthening surgical, obstetric, and anaesthesia services and improving access to clinical care in order to contribute towards achieving Universal Health Coverage for all citizens.

The Ministry of Health and its partners, are committed to ensuring that the surgical, obstetric, and anaesthesia services are improved and offered safely to their citizens so as to contribute to sustainable development.



Dr Jabbin Mulwanda
Permanent Secretary – Health Services
Ministry of Health

1.3 ACKNOWLEDGEMENTS

The Directorate of Clinical Care and Diagnostic Services and the Safe Surgery Obstetric and Anaesthesia Committee is highly indebted to the following individuals for their invaluable contribution towards the development of the National Surgical Obstetric and Anaesthesia Strategic Plan 2017 to 2021:

Ministry of Health

Dr. Jabbin Mulwanda
Dr. Gardner Syakantu

Permanent Secretary – Health Services, Ministry of Health
Former Director, Clinical Care And Diagnostic Services, MoH

Ministry of Foreign Affairs

Amb. Chalwe Lombe
Amb. Encyla T. Sinjela

Permanent Secretary – Ministry of Foreign Affairs
Ambassador to Switzerland and Permanent Representative to UN

Prof. Emmanuel Makasa

Counsellor Health, Zambia Permanent Mission to UN
Geneva

Committee Members and Co-chairs

Dr. Kennedy Lishimpi
Dr. Yusuf Ahmed
Mr. Kennedy Bwalya
Dr. Christopher Chanda
Mr. Roy Chihinga
Ms. Maureen Chikwa
Dr. Mutina Chilala
Ms. Josephine Chimpinde
Dr. Evans Chinkoyo
Ms. Ncheebe Sindaza Chitashi
Dr. Papari Deka
Dr. Fastone Goma
Dr. Peter Hart
Dr. Feruza Ismailova

National Coordinator, Cancer Diseases
Consultant Obstetrician, UTH
Medical Equipment Technologist, MoH
Consultant Pediatric Anaesthesiologist, UTH
Chief Human Resources Development Officer
Theatre Nurse In-charge, Chipata Level I Hospital
Medical Officer, Chongwe District Hospital
Theatre Superintendent MICU & Phase III, UTH
Family Physician, Chipata Level 1 Hospital
Chief Medical Imaging Officer, MoH
Consultant Anaesthesiologist, UTH
Dean of University Teaching Hospital
Visiting Lecturer in Anaesthesia, UNZA/UTH
Head of Department, Anaesthesia, Consultant
Anaesthesiologist, UTH
Senior Registrar, Anaesthesiologist, UTH
Medical Superintendent, Levy Mwanawasa General Hospital
Commandant Northern Command Military Hospital
Chief Specialist of Technical Support Services
Surgeon, Kabwe General Hospital
QA/QI Unit, Ministry of Health
Deputy Director of Planning and Budgeting
Principal, School of Theatre Nursing, UTH
Nursing Sister – Paediatrics
Chief Policy Analyst, MoH
Chief Nursing Officer, MoH
Clinical Care Specialist, Ministry of Health

Dr. Jane Kabwe
Dr. John Kachimba
Dr. Bernard Kapatamoyo
Mr. Henry Kansembe
Dr. Victor Kusweje
Ms. Rachel Lungwebungu
Mr. Mubita Luwabelwa
Ms. Amy Malwanda
Ms. Peggy Mashikati
Ms. Monica Mbewe
Ms. Ndubu Milapo
Dr. Crispin Moyo

Dr. Kangwa Ichengelo Mulenga Muma	National Eye Health Coordinator
Dr. Hazel Mumphansha	Senior Registrar, Anaesthesiologist, UTH
Dr. Jabulani Munalula	Surgeon, Fairview Hospital
Dr. James Munthali	Head of Department, Surgery, University of Zambia School of Medicine
Ms. Judith Munthali	Theatre Superintendent, C- Block & D – Block, UTH
Mr. Chelu Wisdom Musonda	National Anaesthesia Coordinator
Mr. Gilbert Musonda	Chief Medical Equipment Officer, MoH
Dr. Charles Mutemba	Head of Adult Medical Emergency Unit
Dr. Abel Mwale	Junior Registrar, Anaesthesiologist, UTH
Dr. Kabisa Mwala	Surgeon, UTH
Mr. Jackson Mwanza	Medical Officer, Chongwe District Hospital
Mr. Cleto Mweemba	Chief Physiotherapist, MoH
Dr. Mary Nambao	Deputy Director of Maternal Health
Dr. Ushmaben Patel	Senior Registrar , Anaesthesiologist, UTH
Dr. Naomi Shamambo	Senior Registrar, Anaesthesia, UTH
Ms. Mwila Shevern	Theatre Nurse In-charge, Phase V Theatres, UTH
Dr. Chabwela Shumba	Deputy Director of Mobile Health Services
Ms. Mable Simuchimba	Theatre Nurse In-charge, Phase 3, UTH
Ms. Benadette Tembo	Theatre Nurse In-charge, C-Block Theatres, UTH
Ms. Clare Tembo	Chief Nursing Officer, Ministry of Health
Dr. Penias Tembo	Consultant Surgeon, UTH
Dr. Getrude Gundumure Tshuma	Consultant OBS/GYN, UTH
Dr. Bellington Vwalika	Head of Department, OBS/GYN, UTH

Cooperating Partners

THET

DFID

COSECSA

University of Zambia, School of Medicine

Lusaka APEX Medical University

Lusaka School of Theatre Nursing

Chainama College of Health Sciences, School of Anaesthesia

Harvard Program in Global Surgery and Social Change (PGSSC)

Dr. John Meara	Program Director, Harvard PGSSC
Dr. Salim Afshar	Faculty, Harvard PGSSC
Dr. Swagoto Mukhopadhyay	Research Fellow
Dr. Nakul Raykar	Research Fellow
Dr. Yihan Lin	Research Fellow
Dr. Saurabh Saluja	Research Fellow
Mr. James Dahm	Research Associate
Mr. Neal McKimpson	Research Associate
Ms. Allison Silverstein	Research Associate
Ms. Kaytlin Eldred	Research Assistant
Ms. Amanda Good	Research Assistant
Ms. Kendra Hebert	Research Assistant

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Dr. Mzaza Nthele
Director, Clinical Care and Diagnostic Services
Ministry of Health

1.4 ACRONYMS & ABBREVIATIONS

AIDS Acquired Immune Deficiency Syndrome

BHCP Basic Health Care Package

BMET Biomedical Technician

CANECSA College of Anaesthesiologists of East Central and Southern Africa

CHAZ Christian Health Alliance of Zambia

CME Continuing Medical Education

COSECSA College of Surgeons of East, Central and Southern Africa

CP Cooperating Partners

CPD Continuing Professional Development

CSO Central Statistical Office

CSO Civil Society Organizations

DHIS-2 District Health Information System

DHS Demographic Health Survey

DRC Democratic Republic of Congo

GDP Gross Domestic Product

GNC General Nursing Council

HC Health Centres

HIV Human Immunodeficiency Virus

HMIS Health Management Information System

HP Health Posts

HPCZ Health Professions Council of Zambia

HR Human Resources

HRH Human Resources for Health

IT Information Technology

LCoGS Lancet Commission on Global Surgery

MDG Millenium Development Goals

M&E Monitoring and Evaluation

MoH Ministry of Health

MOU Memorandum of Understanding

MSL Medical Stores Limited

MVA Motor Vehicle Accidents

NCD Non-Communicable Diseases

NCEPOD UK National Confidential Enquiry of Perioperative Deaths

NDP National Development Plans

NGO Non-Governmental Organization

NHSP National Health Strategic Plan

NSOASP National Surgery Obstetric and Anaesthesia Strategic Plan

OPD Out-Patient Department

POMR Perioperative Mortality Rate

PPP Public Private Partnership

QI Quality Improvement

QA Quality Assurance

RDC Recurrent Departmental Charges

SHI Social Health Insurance

SOA Surgical, obstetric, and anaesthesia

SNDP Sixth NDP

SWOT Strengths, Weaknesses, Opportunities and Threats

SOA Surgeons, Obstetricians, and Anaesthetists

UHC Universal Health Coverage

ZAMRA Zambia Medicines Regulatory Authority

ZPPA Zambia Public Procurement Authority

1.5 EXECUTIVE SUMMARY

The Republic of Zambia is a lower-middle income country in Sub-Saharan Africa. Home to 15,066,266 people, it has one of the world's fastest growing populations. The country has made significant strides towards achieving the Millenium Development Goals, including reaching the target for infant mortality and reducing the maternal mortality rate by 50%. However, population growth and dispersed rural populations have strained the Government's ability to provide quality and equitable basic social services, including education, adequate water, sanitation and health care.

The 2015 United Nations General Assembly adopted the Sustainable Development Goals which reframed healthcare around the provision of a broad array of services. The subsequent passage of WHA Resolution 68.15, which recognized that surgery and anaesthesia are a critical component of Universal Health Coverage, has set the stage to strengthen surgical, obstetric, and anaesthesia (SOA) care. The Government of the Republic of Zambia, a sponsor of the WHA Resolution, will serve as a leader in doing so. This document lays out a strategic plan around the unifying theme of "Strengthening emergency and essential surgery and anaesthesia as a component of universal health coverage."

National Surgical, Obstetric, and Anaesthesia Strategic Plan, 2017-2021

The first National Surgical, Obstetric, and Anaesthesia Strategic Plan (NSOASP) 2017-2021 provides a framework for the planning, delivery, and management of quality surgical, obstetric, and anaesthesia services at all levels of health delivery systems in Zambia. It aims to address the many surgical, obstetric, and anaesthesia problems that our people face in this country, which are caused mainly by trauma, cancer, and complications of pregnancy. It addresses these through a strategic framework that seeks to:

- i. Strengthen service provision with a focus at the district level through expansion of workforce and infrastructure.
- ii. Build safe and high quality surgical, obstetric, and anaesthesia systems through strengthening health management information systems and research capabilities.
- iii. Develop accountable financing mechanisms and assuring strong leadership and governance.

The estimated budget for the NSOASP, 2017-2021, is **ZMW3,113,338,013** [USD 314,160,747.03] for five years. The Ministry of Health is committed to funding a significant percentage this budget with the cooperating partners funding the rest to facilitate an efficient and successful implementation of the NSOASP. Certain programmes and MoUs will be reviewed in order to conform to its provisions, recommendations, and aspirations.

2.0 NATIONAL SURGICAL, OBSTETRIC, AND ANAESTHESIA STRATEGIC PLAN

2.1 INTRODUCTION

In May 2015, at the 68th World Health Assembly, Zambia took a historic first step to ensure appropriate health care for the world by proposing and supporting the passage World Health Assembly Resolution 68.15. This resolution called for strengthening emergency and essential surgical and anaesthesia services as a component of Universal Health Coverage. This effort was directed at strengthening surgical systems in WHO member states and realizing the United Nations' Sustainable Development Goals. To take these global aspirations and help make them a reality, the Zambian Ministry of Health (MoH) partnered with the Lancet Commission on Global Surgery (LCoGS) to develop the National Surgery Obstetric and Anaesthesia Strategic Plan (NSOASP) 2017-2021. Not only is this Zambia's first NSOASP, but it is also the first of its kind in the world. By leading the effort towards universal surgical, obstetric, and anaesthesia care, Zambia continues to be a pioneer.

In the formulation of this plan, special attention was given to the World Health Assembly Resolution 68.15 and the Sustainable Development Goals. These also consider the surgical World Development Indicators supported by the World Bank.

It is currently estimated that 74% of Zambia's surgical needs are not met by the existing surgical capacity.⁴ The MoH, local providers, professional societies, academic institutions, and technocrats, along with the Cooperating Partners (CP) recognized the critical need to address this gap in health care services, and developed this NSOASP. This plan provides a framework for scale up of surgical, obstetric, and anaesthesia services across the following domains: service delivery, supply chain and infrastructure, human resources, financing, information management and technology, and leadership and governance.

This NSOASP for Zambia was developed and driven by local stakeholders through a transparent and consultative process. The National Safe Surgical, Obstetric, and Anaesthesia committee was formed consisting of representatives from across the surgical, obstetric, and anaesthesia disciplines. The plan's development involved the MoH, other relevant government ministries and departments, academic institutions, professional societies, technocrats, the private sector, civil society, international CPs, and many others.

The plan is divided into the following chapters: introduction, situation analysis, strategic focus, proposed strategic directions, implementation framework, monitoring and evaluation, costing of the plan, and annexes. The strategic focus spells out the mission, vision, overall goal, key principles, and national health priorities. The implementation framework outlines the policy as well as regulatory, institutional, and Monitoring and Evaluation (M&E) sections that will facilitate smooth and successful implementation of the plan.

1 The Lancet Commission on Global Surgery

2.2 BACKGROUND

2.2.1 Country Background

The Republic of Zambia is located in the southern part of Sub-Saharan Africa. It covers approximately 752,612 km² and is surrounded by eight other countries, namely: Tanzania and the Democratic Republic of Congo (DRC) in the North; Malawi and Mozambique in the East; Zimbabwe, Botswana and Namibia in the South; and Angola in the West.

Zambia attained its independence from the United Kingdom on 24th October 1964, and has since continued to enjoy uninterrupted peace and political stability. Administratively, the country is divided into 10 provinces with 105 districts. Of the 10 provinces ~~districts~~, Lusaka Province has the largest percent share of the population at 16.7 percent of the total population. Copperbelt Province is second with 15.1 percent, and Eastern Province is third with 12.2 percent of the total population.²

Zambia has been implementing the Vision 2030 strategy since 2006. The country attained its lower-middle income status in 2010. Vision 2030 aims to transform the country into a prosperous middle-income nation by 2030. This is being implemented through successive 5-year National Development Plans (NDPs). The last NDP was the Revised Sixth NDP (R-SNDP), which ended in 2016. Currently, the country is implementing the 7th NDP, which outlines the country's overall socio-economic development agenda for the next five years, ending in 2021.

Over the past five years, the country has registered consistent economic growth, averaging 6.5% growth in the Gross Domestic Product (GDP) per year, and significant improvements in other key macro-economic indicators. Zambia has also achieved progress in health indicators, including reaching the Millenium Development Goals (MDG) targets for infant mortality and HIV prevalence. However, for maternal mortality, although this rate decreased by 50%, the country was not able to reach the MDG target. Table 1 below presents a summary of selected demographic and socio-economic indicators for Zambia. Table 2 represents health indicators of Zambia.

Table 1: Demographic and Socio-Economic Indicators for Zambia.

Indicator	Status	Source
Population	15.72 million	World Bank 2014
Sex Ratio (Males per Female)	1:1	World Bank 2014
Average Annual Population Growth Rate	3.1%	World Bank 2014
Life Expectancy at Birth	60 Years	World Bank 2014
Population Under the Age of 15 Years (%)	26.2%	World Bank 2014
Urban Population	46.4%	DHS 2013-2014
Poverty Levels	60.5%	World Bank 2010
GDP per capita	\$1721.60	World Bank 2014

Table 2: Health Indicators for Zambia.

Indicator	Status	Source
Maternal Mortality Rate	398 deaths/100,000 live births	CSO 2013
Infant Mortality	45 deaths/1,000 live births	CSO 2013
Mortality Rate Under 5	75 deaths/1,000 population	CSO 2013
HIV prevalence	11.3%	CSO 2013

CSO = Central Statistical Office; DHS = Demographic Health Survey

2.2.2 Disease Burden, Situation and Trends

The burden of disease in Zambia remains high. As a lower-middle income country, Zambia has a double burden of disease. We have a high incidence and prevalence of communicable diseases such as HIV and TB as well as an increasing burden of non-communicable diseases (NCDs). As life expectancy increases and communicable diseases are more effectively monitored and treated, NCDs increase in incidence and prevalence. The most common NCDs in Zambia include trauma, cancer, diabetes, hypertension, cardiac disease, chronic obstructive respiratory disease, and stroke – to mention but a few. Surgery plays a major role in the management of these diseases, either in prevention or in treatment.

In the past 15 years, the maternal mortality rate and infant mortality rates have been decreasing. Infant mortality rate have been reduced to 45/1,000 births in 2013. Maternal mortality has been reduced from 729 per 100,000 live births in 2002 to 398 per 100,000 live births in 2013.² Although this is a 50% reduction, it still did not meet the MDG target. Moving forward, surgery, obstetrics, and anaesthesia are important aspects in the reduction of maternal mortality in terms of ensuring that Caesarean sections are accessible in all level 1 hospitals in Zambia.

Trauma from motor vehicle accidents (MVAs) and other causes remains one of the top five causes of morbidity and mortality in Zambia. However, the ability to treat these conditions are concentrated in the secondary and tertiary hospitals. Additionally, the ability to transport victims safely and in time to facilities where they can be treated is limited. Therefore, these services need to be frontloaded and strengthened in the level 1 hospitals.

² Central Statistical Office Zambia

2.3 SWOT ANALYSIS

This section presents an analysis of the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the surgical, obstetric, and anaesthesia systems.

SERVICE DELIVERY					
STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Level 1 hospitals are available in most districts with plans for full coverage	Not all level 1 hospitals are capable of providing essential and emergency surgical care	Expand SOA care to all level 1 hospitals	WHA resolution, sponsored by Zambia, on emergency and essential surgery supporting its role in Universal Health Coverage	Resolution may not be adapted into domestic practice	Dissemination of WHA resolution to political leadership to promote its adoption
Most provinces have level 2 facilities and plans are in place to upgrade some level 2 hospitals to level 3 hospitals, and level 3 hospitals to teaching hospitals	Plans for service upgrades have not translated to the ability to provide elective and referred SOA services	Appropriately redistribute medical and health resources	Increased demand amongst population for SOA care	Existing resources are not sufficient to meet demands	External resources, innovative financing solutions, and improvement of process efficiency can mitigate the resource gap
Individual level 3 hospitals have formulated plans to expand services and introduce new aspects of SOA care with support from the MoH	Poor coordination amongst separate plans for expansion and has resulted in incomplete translation to service delivery	Develop NSOASP to improve coordinated care at all levels	There are potential for cost-savings from domestic treatment of patient as opposed to international referrals	Significant start-up costs are required to initiate and coordinate these services domestically	Cooperating partners are engaged in bringing new modalities of SOA care to Zambia

HUMAN RESOURCES					
STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Appropriate and diverse cadres exist to carry out safe and necessary provision of surgical, obstetric, and anaesthesia	Continued shortages of personnel in each cadre at all levels, as well as inappropriate and unequal distribution of human resources to reflect care needed	Allow for task-sharing, introduce short courses or CPDs, increase long term trainings	Availability of trained Zambians in the diaspora	Refusal to return home and work in Zambia	Identify programmes that allow diaspora and foreign experts to train local providers
Establishments for recruitment of SOA personnel exist	Inadequate positions for specialized personnel in existing establishment and frozen positions	Expand and fund establishments	Government commitment and political will to address the surgical, obstetric, and anaesthesia HRH crisis	Brain drain	Improve conditions of services, bonding, and retention mechanisms
HR establishment registers exist	No communication between HR register information and regulatory body's such as HPCZ and GNC	Increase lines of communication and transparency between HR registers nationally	-----	-----	-----
Available annual performance appraisal systems	Weak implementation of performance appraisal system	Strengthen implementation of performance appraisal system	-----	-----	-----

HUMAN RESOURCES CONTINUED

STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Availability of training institutions and programs providing SOA training	Lack of subspecialization and task-sharing courses	Introduce specialist training and formalized training for task-sharers	Availability of training institutions and programs with specialized trainings abroad	Limited space available for foreign students with lengthy entry requirements	Government to government negotiations to allow Zambians to undergo specialization in foreign countries
Available personnel to specialize	Limited local training programs available	Establish more local training programs; Engage external trainers and partners to support local training programs	Availability of training programs abroad	Inadequate funding for training	Provide greater funding for trainees
CPD courses are available	CME requirements are not specific to cadre's scope of practice.	Introduce CPD courses that are specific to the scope of practice E-health mechanisms	Potential for collaboration with PPP and CPs to improve training and CPD	Uncertainty of funding for training program	Engage universities with current CPD programs in webinar form to share materials

INFRASTRUCTURE, EQUIPMENT AND SUPPLIES

(a) Surgical, Obstetric, and Anaesthetic Supplies

STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Pharmaceutical policies and regulations are in place	Existing policies and regulations may not address the needs for the surgical, obstetric, and anaesthesia—includes list for essential medicine	Expand existing policies to include the surgical, obstetric, and anaesthesia systems	Partner driven process available to support surgical, obstetric, and anaesthesia	Surgical care has not yet been prioritized by partners	Advocate for partners support for SOA programs Advocate for implementation and acquisition of a streamlined procurement system
Procurement committees are in place at all levels of health care	Procurement process can be bureaucratic and inefficient	Advocate for streamlining the procurement process	-----	-----	-----
Supply budget line available	Unavailability of a dedicated budget line for SOA, especially at level 1 hospital	Advocate for separation of medical and SOA supplies budget lines at all levels	International partners are increasingly interested in supporting SOA supplies	Support is mainly for obstetrics	Need to provide evidence to support surgery and anaesthesia, in addition to obstetrics
Logistics management for drugs and lab supplies is available	Weak logistic system for SOA supplies (e.g. oxygen)	Broaden and strengthen the logistics and distribution system for SOA services	Existing maternal health processes to learn from and expand to broader surgical and anaesthetic systems	Partners do not currently prioritize surgery and anaesthesia	Advocate to partners regarding the importance of strong surgical systems for levels 1 and 2 of care

Existence of Zambian National Blood Tranfusion Services	Facilities are unable to access blood in a timely fashion	Advocate for greater decentralization of Zambian National Tranfusion Services	-----	-----	-----
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INFRASTRUCTURE, EQUIPMENT AND SUPPLIES CONTINUED

(b) Surgical, Obstetric, and Anaesthetic Infrastructure

STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Availability of baseline infrastructure	Infrastructure available but limited in structure and number	Upgrade existing and construct infrastructure to cater for SOA care at different levels of the health care system	Some international partners support infrastructure development	Sustainability of infrastructure development and partner interest not assured	Advocate for resource allocation for infrastructure development Work with partners for long-term support
Existence of budget line for infrastructure development and management	Inadequate funds for infrastructure development	Advocate for more funding for infrastructure	Some partners support infrastructure development	Sustainability of infrastructure development and partner interest not assured	Advocate for resource allocation for infrastructure development Work with partners for long-term support
Availability of infrastructure planners at national and provincial levels	End users as stakeholders are not always involved in planning	Involve end users for planning and infrastructure development	Expertise and partners available	Cooperation not assured	Engage partners and other stakeholders early in the planning process

(c) Surgical, Obstetric, and Anaesthetic Transport

Existence of a general ambulance service	Ambulance service does not cover all sites	Advocate for transport system to reach all parts of the country	Existence of an extensive public transport system Partnership with CSOs providing transportation	Cooperation from private transporters not assured	Engage partners to support transport mechanisms to increase access to SOA care
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INFRASTRUCTURE, EQUIPMENT AND SUPPLIES CONTINUED

(d) Surgical, Obstetric, and Anaesthetic Equipment

STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Standard list of equipment is available	Standard list of equipment is available but limited	Standard list should be revised in collaboration with technocrats and end users	Some international partners support equipment procurement	Sustainability of partner interest not assured	Advocate for resource allocation for equipment purchasing Work with partners for long-term support
Medical-Surgical and equipment Budget Line System available	Unavailability of a dedicated budget line for surgical, obstetric, and anaesthesia equipment	Advocate for separation of medical-surgical, obstetric, and anaesthesia equipment budget lines	International partners are increasingly interested in supporting SOA equipment	Support is mainly for obstetrics	Need to provide evidence to support surgery and anaesthesia in addition to obstetrics

Dedicated equipment maintenance contracts are available	Maintenance contracts are not available for all equipment	Maintenance contracts should be expanded to include all possible equipment	Interest from partners in supporting BMET training	Sustainability of partner interest is not assured	Advocate to partners regarding the importance of functional equipment and maintenance mechanisms Work with partners for long-term support
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HEALTH INFORMATION AND RESEARCH					
STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
DHIS-2 and HMIS available	DHIS-2 and HMIS not linked to the primary service provision points Gives inadequate information on surgery, obstetrics, and anaesthesia	Revise to include surgery, obstetrics, and anaesthesia indicators Establish e-patient record systems that are linked to DHIS-2 and HMIS	Availability of International partners that are helping and willing to strengthen DHIS2 and HMIS	Unassured support from partners	Provide annual reports on SOA services from DHIS-2 and HMIS Engage partners on long-term cooperation
Quality improvement initiatives available in hospitals	Poor data utilization by quality improvement teams Mortality data are not routinely used as an important aspect of decision making	Institutionalize quality improvement systems at all levels of SOA services	Quality improvement systems have been successful in other settings	Failure to adopt and adapt to Zambia	Familiarization tours of hospitals with well-functioning QI programs
Information officers available	Information officers not trained in surgery, obstetrics, and anaesthesia specifics	Build capacity by training more information officers ICD-10 coding	Institutions already offering training in the region	Accessibility to training not assured	Establish local training capacity and add cancer in training guidelines

HEALTH INFORMATION AND RESEARCH CONTINUED

STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Directorate of disease surveillance, control and research exists	Inadequate resources for research	Lobby for more resources for research	Local and international NGOs willing to fund and collaborate in surgery, obstetrics, and anaesthesia-related research	NGO funds tied to specific diseases	Involve partners during planning stages
Expertise available	Inadequate expertise for research Lack of protected time to do research	Invest in surgery, obstetrics, and anaesthesia research	Advocate for policy to ensure protected research time	Accessibility not assured	Engage partners and create conducive research environment
Research institutions available	Lack of interest in surgery, obstetrics, and anaesthesia research	Create incentives for research	Peer review journals available	Cost of doing research	Increase accessibility to government and partner grants for research
Electronic vital registration in Zambia, ensure that death registration includes date and cause of death	Lack of surveillance for perioperative mortality	Establish linkages from patient records to DHIS2 and HMIS for perioperative mortality	Availability of advanced electronic vital registration systems in other SADC countries International organisations willing to help	Unassured cooperation from countries with best practices	Come up with a mutually beneficial arrangements

HEALTH FINANCING					
STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Resource allocation criteria available and there is government commitment to increase health sector funding	Funding is available for levels 2 and 3 but no specific funding to level 1 for SOA	Advocate for establishment for Recurrent Developmental Charges (RDCs) for level 1 hospitals directly from MoH	Partners willing to support SOA programmes	Sustainability not assured	Establish long-term relationships with partners
Well-developed sector coordination structures with health sector financing technical working group	Surgical, obstetric, and anaesthesia activities not prioritized	Ensure inclusion of surgical, obstetric, and anaesthesia activities in health sector financing technical working group	Global sources of support available, e.g. World Bank, SIDA, CIDA, USG, CDC, DFID, THE'T, Harvard PGSSC	Weak coordination of external sources of funding	Advocate for strengthening of coordination, mapping and harmonisation mechanisms
High cost of accessing services by most people	Establishment of SHI still in planning and not yet approved	Advocate for speeding up of approval process, such that SHI will mitigate the high out-of-pocket expenditures	Similar system already working in other countries, e.g. Ghana, Kenya	Unassured adaptability to Zambia	Conduct case studies of countries already implementing SHI for SOA management
Public Private Partnership (PPP) act available	Lack of awareness among SOA providers	Increase awareness of availability of PPP	-----	-----	-----
Integrated Financial Management Information Systems and NAVISION implemented in the health sector to track financing	Not currently available at all levels	Plan to have this available at all levels	Other tracking mechanisms available	Expensive	Will advocate for current NAVISION and IFMIS

LEADERSHIP AND GOVERNANCE					
STRENGTHS	WEAKNESSES	STRENGTHS COUNTERACTING WEAKNESSES	OPPORTUNITIES	THREATS	OPPORTUNITIES COUNTERACTING THREATS
Strong and consistent leadership of the sector from MoH	Inadequate awareness and prioritization of SOA services	Advocacy on the need to prioritize SOA services	Strong political will	Changing political landscape & Lack of existing NSOAP framework	Ensure policy documents are in place
Existence of public health acts and health policies, National Health Care Package with the Vision 2030	Delayed replacement of the repealed National Health Services Act of 1995	To complete the approval process of the National Health Services Act	Existence of WHA 68.15, DCP3 to help organize the government systems	Failure to take advantage of the potential of this opportunity	Develop and strengthen the framework for delivery of surgery, obstetrics, and anaesthesia
Developed and institutionalized “Bottom-Up” planning system, encompassing all levels	Inadequate time for wider consultation	Planning process must include SOA professionals and activities	Strong partnerships with the community, CHAZ, CPs, and civil society	Weak coordination of sector support	Strengthen partner coordination mechanisms
Presence of institutional structures for decentralised management and stakeholder participation	Not very well elaborated structures for at all levels of SOA services	Advocate for decentralized management at all levels	Support from bilateral partners is available	Some Support is uncertain	Engage partners for decentralisation process
Governance Action Plan, jointly developed with the CPs & civil society, aimed at strengthening sector governance & accountability.	Poor adherence to the systems & structures for promoting transparency, accountability & access to information.	Enforce adherence to promote transparency, accountability and access to information	Existing MOUs with CPs and civil society	Delays in renewing MOUs	Prompt renewal of MOUs

2.4 STRATEGIC FOCUS

2.4.1 Vision, Mission and Overall Goal

- Vision: A nation of healthy and productive people
- Mission: To provide safe, affordable, and timely surgical, obstetric, and anaesthesia care to all Zambians
- Overall Goal: To improve the surgical, obstetric, and anaesthesia systems in Zambia to promote health, prosperity, and quality of life, as close as possible to the family
- Key Principles: Safety; Cost Effective; Affordable; Essential; Timely; Equitable; Effective; Efficient

2.4.2 Key Principles

- **Safety:** To ensure that we protect patients from avoidable complications of surgical, obstetric and anaesthetic care in order to optimize good outcomes.
- **Cost-Effective:** An intervention that is considered financially optimal if there is no other intervention that offers a clinically appropriate benefit at a lower cost.
- **Affordable:** To ensure no patient seeking health care services experiences any undue financial expenditure.
- **Essential:** Level 1 hospitals to be able to perform the Bellwether procedures (Caesarean section, laparotomy, stabilization of open fracture)
- **Timeliness:** To ensure all patients can reach a facility providing essential surgical services within 2 hours. To reduce waiting times and care delays for those receiving care.
- **Equitable:** To provide care that does not vary in quality because of characteristics such as age, gender, ethnicity, geographic location, socioeconomic status, cultural status, and political status.
- **Effective:** To provide services based on scientific knowledge to all who could benefit, and refrain from providing services to those not likely to benefit.
- **Efficient:** To avoid waste, including waste of equipment, supplies, ideas, and energy.

2.4.3 Key priorities

	Priority Intervention /System	Standard	Current Estimated Baseline 2016	Objective/Main Targets
(1)	Access to timely essential surgery	Proportion of the population that can access, within 2 hours , a facility that can do caesarean delivery, laparotomy, and treatment of open fracture (the Bellwether Procedures)	Unavailable in 5 of 10 provinces Level 1: • C-section: 98% • Laparotomy: - • Open fracture treatment: -	80% of patients requiring essential SOA services in Zambia should have access within 2 hours at a level 1 hospital by 2021
(2)	SOA workforce density	Number of SOA providers who are working, per 100,000 population	*1.1/100,000 population (specialist surgeons, anaesthesiologists, and obstetricians)	At least 3SOA providers per 100,000 population by 2021
(3)	Surgical Volume	Procedures done in an operating theatre, per 100,000 population per year	Estimated need: 6,145 procedures per 100,000 Met need: 1,617 procedures per 100,000 (26%) Deficit: 4,528 procedures per 100,000 (74%)	Meet 80% (4,916 procedures per 100,000) of the surgical need by 2021
(4)	Perioperative mortality	All-cause death rate at 14 days or at time of discharge (whichever comes first) in patients who have undergone a procedure in an operating theatre, divided by the total number of procedures, presented as a percentage	Unknown: data available but not aggregated	Begin tracking perioperative mortality rate (POMR) and link to HMIS
(5)	Financial-risk protection	Protection against impoverishing expenditure: Proportion of households protected against impoverishment from direct out-of-pocket payments for SOA care	94% chance of impoverishment from caesarean section	Protection against out-of-pocket expenditure for surgery, obstetrics, and anaesthesia should be reduced to zero by 2021
		Protection against catastrophic expenditure: Proportion of households protected against catastrophic expenditure from direct out-of-pocket payments for SOA care	56% chance of catastrophic expense from surgery	

3.0 EFFECTIVE SURGICAL, OBSTETRIC, AND ANAESTHESIA HEALTH SYSTEMS

3.1 SERVICE DELIVERY

Comprehensive effective and efficient service delivery in surgery, obstetrics, and anaesthesia is fundamental to a healthy country. At its core is excellence. This service must be directly and permanently accessible with no undue barriers of cost, language, culture, or geography. Furthermore, these health services must be brought close to the people with a routine point of entry to the service network at the primary care level. The services must be equitable, safe, timely, and centred on the patients' needs. A comprehensive range of health services, including surgical, obstetric, and anaesthesia care, is a mandatory complement to primary care service delivery in offering health promotion, disease prevention, cure, palliation, and rehabilitation.

This section of the NSOASP outlines the core component of the MoH's plan for enhancing surgical, obstetric, and anaesthesia care delivery across the continuum of health care countrywide. For service delivery to be actualised it is important to note the role of the following;

- Human resources are necessary for the provision health care and enable the provision of services in our facilities
- Infrastructure, equipment, and supplies provide SOA with the appropriate material they need to provide services

Service delivery provides the inspiration upon which the subsequent sections delineate their objectives and strategies with the end goal of creating a full package of services that provide safe, affordable, and timely surgical, obstetric, and anaesthesia care.

Practitioners shall endeavour to be excellent in their practice by integrating theoretical and practical knowhow as they attend to clients, with a focus on achieving optimal health outcomes. The practitioner shall at all times:

- Be able to think critically in exercising professional and clinical judgment.
- Promote ethical behavior and expertise in practice.
- Exercise "perfect" skill in fostering safety and comfort.
- Have the knowhow and ability to establish an effective practitioner-client relationship.
- Practice highly developed problem solving, conflict management, and communication skills.

Objective:

1. To ensure all Zambians are able to receive safe, equitable and timely surgical, obstetric, and anaesthesia care by the provision of:
 - a. essential and emergency care at the primary level,
 - b. comprehensive care at the secondary level,
 - c. highly specialized and complex care at the tertiary level.

Strategies:

3.1.1 Level 1 Facility

1. Establish and strengthen the provision of quality essential and emergency surgical services
 - a. Implement Lifebox, use of the WHO Checklist, SafeObs, and SafePeds training programs
 - b. Strengthen the capacity to care for trauma and injuries
 - i. Provide a trauma course at all level 1 hospitals
 - ii. Provide surgical airways, tube thoracostomy, trauma laparotomy, management of non-displaced fractures, fracture reduction, irrigation and debridement of open fractures, external fixator placement, escharotomy/fasciotomy, trauma-related amputations, skin grafting, and burr holes
 - iii. Establish designated trauma teams trained in Advanced Trauma and Life Support management as per laid down guidelines and procedures
 - iv. Treat patients within two hours of injury
 - v. Establish pre-hospital emergency services that can provide safe and timely transport of the patients to an appropriate level of care
 - c. Strengthen capacity to recognize and refer surgical oncologic conditions and pediatric diseases
 - i. Train non-physician providers in recognition of surgical oncologic conditions and treatment of paediatric surgical emergencies and recognition of children with neonatal conditions, congenital malformations, and burns (after stabilization:
 - ii. Strengthen the following programs:
 1. Neonatal screening program for congenital heart disease
 2. Rheumatic heart disease prevention program
 - d. Strengthen care for abdominal surgical conditions by treating bowel obstruction, appendicitis, perforated viscus, and hernias
 - e. Strengthen care for burns and wounds
 - i. Create community sensitization activities around burns prevention including media and posters
 - ii. Increase awareness and promote programs at the community level for the prevention of burns
 - iii. Provide comprehensive burns and wound care services, including the adoption of newer methods of wound care such as negative pressure wound therapy or skin grafting in fifty percent of districts in all provinces
 - iv. Reduce mortality in children under 5 suffering from burns from an estimated 90% to 40%
 - f. Strengthen care for patients with genito-urinary conditions
 - i. Provide essential urologic care including: relief of urinary obstruction with catheterization or suprapubic cystostomy and urethral dilatation
 - ii. Create screening and treatment programs for urinary schistosomiasis
 - iii. Create a screening program for prostate cancer
 - g. Strengthen care for orthopaedic patients by managing acute and chronic osteomyelitis, perform arthrotomy for septic joints, and provide non-operative management of club feet

2. Strengthen the provision of quality essential and emergency obstetric and gynaecologic services
 - a. Train OBS/GYN teams to provide EMONC services
 - b. Train level 1 providers to provide emergency hysterectomy
 - c. Train OBS/GYN teams in the provision of focused antenatal care
 - d. Train OBS/GYN teams in the use of ultrasound for management of obstetric complications
 - e. Develop and implement protocols in the recognition of gynaecologic oncologic conditions
 - f. Scale up cervical cancer screening programs in all districts
3. Establish and strengthen the provision of quality essential and emergency anaesthesia services
 - a. Scale-up Safe Paeds Anaesthesia Program for anaesthesia providers
 - b. Scale-up regional anaesthesia in-service training
 - c. Scale-up training in acute and chronic pain management for all levels of the medical workforce
 - d. Establish high-dependency units at level 2 and 3 hospitals
4. Strengthen countrywide mentorship for surgery, obstetrics, and anaesthesia at the district level.

3.1.2 Level 2 and Level 3 Facilities:

1. Establish and strengthen the provision of quality comprehensive, highly specialized, and complex surgical care
 - a. Establish comprehensive emergency care units/Trauma Centres at all secondary and tertiary facilities
 - b. Establish laparoscopic units for surgery and gynaecology at Ndola Central Hospital and University Teaching Hospital
 - c. Establish a cardiac centre in Lusaka
 - d. Establish urology and orthopaedic services at all level 2 hospitals
 - e. Establish maxillofacial services at all tertiary hospitals
 - f. Establish plastic and reconstructive services at Ndola Central Hospital and University Teaching Hospital
 - g. Strengthen neurosurgical services at all tertiary hospitals
 - h. Establish a spinal surgery service at Ndola Central Hospital and strengthen the spinal surgery service at University Teaching Hospital
2. Establish and strengthen the provision of quality comprehensive, highly specialized, and complex obstetric and gynaecologic care
 - a. Establish urogynaecologic and gynaecologic oncology services at tertiary hospitals
 - b. Build capacity amongst gynaecologists at secondary hospitals to handle oncological conditions
 - c. Build capacity amongst gynaecologists at secondary hospitals for obstetric fistulae repair
 - d. Establish an assisted fertility centre at Ndola Central Hospital and University Teaching Hospital
3. Establish and strengthen the provision of quality comprehensive, highly specialized, and complex anaesthesia care

- a. Procurement of capnography, ECG, pulse oximetry, and ventilatable anaesthesia machines for the provision of comprehensive general anaesthesia
- b. Procurement of necessary equipment, drugs, and monitoring for the provision of regional anaesthesia
- c. Train level 2 and 3 anaesthesia providers in pain management services on labour wards
- d. Development of admission and treatment protocols in all ICUs
- e. Implement admission and treatment protocols in all ICUS
- f. Review admission and treatment protocols in all ICUs
- g. Train nurses and doctors in the provision of out-of-theatre anaesthesia
- 4. Strengthen mobile health services
 - a. Conduct specialist outreach activities
 - b. Conduct district mobile outreach activities

3.2 INFRASTRUCTURE, EQUIPMENT, AND SUPPLIES

The provision of safe surgery, obstetrics, and anaesthesia is critically reliant on the availability and functional status of infrastructure, equipment, and supplies. Furthermore, to provide both essential and comprehensive care many consumables must be available consistently, which requires an efficient and flexible supply chain.

Infrastructure:

As of 2016 there were over 2000 health facilities in Zambia. Of these, 104 are first level hospitals, 28 are second-level hospitals, and 12 are third-level hospitals. It is at these facilities where people commonly seek surgery, obstetrics, and anaesthesia services. However, with the current infrastructure, there are challenges to access safe surgery, obstetrics, and anaesthesia. There is a need to take the necessary steps to support the existing system and ensure that future development of infrastructure occurs in a targeted manner. To ensure quality care provision, facilities must have constant availability of utilities such as clean water and electricity. Additionally, to enhance connectivity and communication all facilities should have internet access in both administrative and clinical areas. Also, transport systems must be in place and respond quickly and reliably when needed. In order to ensure these infrastructural needs, audits should be conducted annually to ensure adherence to set standards. The Ministry of Health will continue to monitor the utilization of infrastructure and rehabilitation funds for facilities to ensure prioritization of use.

Equipment:

Surgery, obstetrics, and anaesthesia all rely on complex equipment that can be expensive and challenging to procure, utilize, and maintain. In order to address these challenges, procurement of this equipment must actively seek input from the end-users as well as those providing maintenance support.

For easy management and maintenance there is a need to standardize equipment at the first and second-level facilities. However, third-level facilities, which provide specialized services, will require more complex equipment; this equipment could be procured outside of the standardized lists.

Supplies:

Surgical, obstetric, and anaesthesia medical-surgical supplies include all consumables and pharmaceuticals necessary to provide safe care. Essential surgeries cannot be provided without consumables such as sutures, dressings, or appropriate anaesthetic drugs. Also, oxygen and timely access to blood products are vital to ensure desired patient outcomes.

In addition to these basic supplies, complex and comprehensive services require wide-ranging and complete availability of consumables and drugs, which requires a resilient supply chain. Fields such as transplant, orthopaedics, or cardiothoracic surgery cannot be provided without dialysis supplies, orthopaedic implants, and cardiac implants, respectively, or comprehensive anaesthetic supplies. All of these supplies, and many more, are critical components of the surgical system, and strategies must be put in place to ensure a constant supply.

Surgical, Obstetric, and Anaesthetic Infrastructure

Objective:

1. Provide sustainable and appropriate infrastructure needed for the delivery of safe surgery, obstetrics, and anaesthesia at all levels of the health care system by 2021.

Strategies:

Level 1 Facility:

1. Ensure all level 1 facilities have standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care
 - a. Hold a coordination workshop with infrastructure unit to agree on the standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 1 hospitals
 - b. Provincial maintenance teams will conduct annual maintenance inspections of all level 1 hospitals
 - c. Rehabilitate existing level 1 facilities and buildings to meet the standards

Level 2 and Level 3 Facilities:

1. Ensure all level 2 and 3 facilities have infrastructure to provide safe and timely comprehensive surgical, obstetric, and anaesthesia care
 - a. Hold a coordination workshop to create standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 2 and 3 hospitals
 - b. Provincial maintenance teams will conduct annual maintenance inspections of all level 2, 3 hospitals
 - c. Rehabilitate existing level 2 and 3 facilities and buildings to meet the standards

Surgical, Obstetric, and Anaesthetic Equipment

Objective:

2. To ensure the availability of adequate, appropriate, and well-maintained surgical, obstetric, and anaesthetic equipment in accordance with the needs at that level.

Strategies:

Level 1 Facility:

1. Ensure all level 1 facilities have standard equipment to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care
 - a. Hold workshop to revise the standard list of equipment for essential surgery, obstetrics, and anaesthesia for level 1 facilities in collaboration with end users
 - b. Procure appropriate imaging equipment to support essential diagnostic services per facility level
 - c. Procure appropriate laboratory equipment to support essential diagnostic services per facility level
 - d. Procure anaesthetic machines with in-built oxygen concentrators

2. Strengthen equipment maintenance services at all level 1 facilities by conducting preventive maintenance of equipment for essential surgery, obstetrics, and anaesthesia services
 - a. Outsource maintenance services of vapouriser calibration during the period of this plan until capacity is built
 - b. Ensure all end users are trained to use the essential equipment

Level 2 and Level 3 Facilities:

1. Ensure all level 2 and 3 facilities have the appropriate equipment to provide safe and timely comprehensive surgical, obstetric, and anaesthesia care
 - a. Hold workshop to revise the standard list of equipment for surgery, obstetrics, and anaesthesia for level 2 facilities in collaboration with end users
 - b. Procure appropriate imaging equipment to support comprehensive diagnostic services per facility level
 - c. Procure appropriate laboratory equipment to support comprehensive diagnostic services per facility level
 - d. Procure appropriate rehabilitative equipment for all level 2 and 3 facilities
 - e. Procure equipment to support specialized and complex surgical services at level 3 hospitals
2. Strengthen equipment maintenance services at all level 2 and 3 facilities by conducting preventive maintenance of equipment for surgery, obstetrics, and anaesthesia services
 - a. Outsource maintenance services of vapouriser calibration during the period of this plan until capacity is built
 - b. Ensure all end users are trained to use the relevant equipment

Surgical, Obstetric, and Anaesthetic Supplies

Objective:

3. To ensure availability of quality and affordable supplies for safe surgery, obstetrics, and anaesthesia through efficient procurement and logistics management at all levels.

Strategy:

Level 1 Facility:

1. Ensure that all level 1 facilities have adequate stocks of essential medical and surgical supplies (commodity security) in order to provide safe essential surgery, obstetrics, and anaesthesia
 - a. Revise the standard list of supplies for essential surgery, obstetrics, and anaesthesia in the National Formulary in collaboration with end-users
 - b. Conduct a yearly audit to monitor supply levels and ensure efficiency of the supply chain to improve planning and forecasting for essential medical-surgical supplies and drugs
 - c. Strengthen systems for procurement of essential surgical, obstetric, and anaesthetic supplies, including implants, through framework contracts to ensure consistent access to affordable essential medical-surgical supplies and drugs

Level 2 and Level 3 Facilities:

1. Ensure that all level 2 and 3 facilities have adequate stocks of comprehensive medical and surgical supplies (commodity security) in order to provide safe comprehensive and complex surgery, obstetrics, and anaesthesia
 - a. Revise the standard list of supplies for comprehensive surgery, obstetrics, and anaesthesia in the National Formulary in collaboration with end-users
 - b. Conduct a yearly audit to monitor supply levels and ascertain the efficiency of the supply chain to improve planning and forecasting for essential medical-surgical supplies and drugs
 - c. Strengthen systems for procurement of comprehensive surgical, obstetric, and anaesthetic supplies, including implants, through framework contracts to ensure consistent access to affordable essential medical-surgical supplies and drugs

3.3 HUMAN RESOURCES FOR SURGICAL, OBSTETRIC, AND ANAESTHESIA

The inadequate surgical workforce (surgeons, anaesthetists, obstetricians, nurses, etc.) has been identified as a key barrier to providing the necessary surgical services for Zambia. All cadres associated with the surgical system, including those listed above, suffer from wholly inadequate numbers. The combined density of surgeons, obstetricians, and anaesthetists (SOA) in Zambia is 1.1 per 100,000 population. International standards set in 2015 for SOA recommend a minimum of 20 per 100,000 population. The gap is partially addressed in Zambia by task-sharing and broader scopes of practice of many healthcare providers. However the existing gap remains large. Further, a large percentage of the care provision is by non-national temporary care providers. Beyond the SOA providers, other important cadres involved in surgical care including, but not limited to, nurses, radiologists, and biomedical technicians also face deficits in human resources.

3.3.1 Human Resources Numbers and Training

Objective:

1. To increase the number of trained SOA providers and maintain staff records at all levels of health care in Zambia.

Strategies:

1. Expand the establishment to provide positions that will meet the demand for implementing the surgical, obstetric, and anaesthesia services
 - a. Revise the establishment for level 1, 2 and 3 hospitals that will enable provision of the SOA services at these hospitals
 - b. Lobby for treasury authority to be granted for these positions
 - c. Recruit and place personnel (Level 1: medical licentiate/general practitioner, general surgeon, midwife, theatre nurse, anaesthetic provider; Level 2: surgeon, obstetrician, doctor anaesthetist/anaesthetic provider, midwife, clinical care nurse, theatre nurse; Level 3: general surgeon, specialist surgeon, doctor anaesthetist, obstetrician, midwife, theatre nurse, critical care nurse) in the appropriate positions
2. Ensure equitable distribution of available SOA providers
 - a. Conduct a staff audit to identify the available human resources
 - b. Redistribute the human resources to needy areas
3. Improve conditions of services, bonding, and retention mechanisms
 - a. Design mechanisms to ensure SOA providers with specialized skills are placed in the appropriate salary scales
4. Undertake regular curriculum reviews and maintain standards of education
 - a. Define job descriptions and support the development of degree-level theatre nursing, midwifery, anaesthetic officer, and critical care nurse training program
 - b. Engage the universities and professional societies, CANECSA, COSECSA, and GNC to ensure that they help in redesigning curricula so they are able to fast track training of SOA providers
5. Link the human resource (HR) establishment register to the Health Professions Council-Zambia (HPCZ) and GNC register of practitioners

- a. Design a database that interfaces with regulatory bodies (HPCZ and GNC) to enable real time data retrieval of human resource availability in public, private, and the diaspora
6. Create and implement a costed training plan for SOA personnel (details in annexes)
 - a. Scale up training for each cadre, and identify the human resource areas that require training
 - b. Implement the identified training needs, and send personnel for training
 - c. Support training and increased capacity of biomedical technicians/engineers to ensure adequate maintenance of equipment. Continue current training program and incentivize placements to distribute graduates appropriately based upon equipment needs (amount, complexity, age, etc.)

3.3.2 Task-Sharing

Task-sharing was defined by the WHO in 2008 as “the rational redistribution of tasks among health workforce team from highly qualified health workers to health workers with shorter training and fewer qualifications.”

In Zambia, task-sharing is a critical component of the health workforce. This includes both medical licenciates and clinical officer anaesthetists/anaesthetic officers. They largely supplement the low numbers of SOA physician providers. While many are trained to perform certain types of care, there are other health providers who practice beyond their scope of training. The WHO supports the formal establishment of task-sharing; it is a productive method to more quickly scale-up human resources in Zambia as certain levels of specialization take long periods of time to fully train.

Objective:

1. To identify existing task-sharing practices and strengthen task-sharing training and support to personnel in level 1 hospitals, so as to increase the number of SOA providers.

Strategies:

1. Establish appropriate task-sharing. Identify existing task-sharing practices with formalized and robust lines for supervision and communication to allow for necessary referrals
 - a. Identify existing task-sharing practices and develop reporting system to enhance communications to the appropriate level
2. Define the scope of practice for non-physician providers in order to prevent “task creep”
 - a. Develop guidelines for each task-sharing cadre
3. Perform baseline outcomes assessments for both physician and non-specialists or task-sharers, first focusing on POMR. Ensure that task-sharers perform care with the same level of safety as their physician counterparts
 - a. Conduct comparative outcome assessments for POMR between task-sharers and physician providers
4. Increase capacity for radiology and pathology reads in order to avoid long wait-times
 - a. Develop and implement a short-term training program for 20 radiographers per year to provide point-of-care reads, to be expanded to their pre-service training in the future. Expand comparable training to pathology or histology services

3.3.3 Continuous Professional Development

Many cadres face requirements for continuous professional development (CPD) in order to receive relicensing. This is important to maintain standards of practice and ensure continued patient safety. However, such requirements do not always reflect the specific need of each cadre.

Objectives:

1. To ensure all SOA providers are updated in terms of their medical knowledge and skills required to provide safe care.

Strategies:

1. Recommend following international licensing standards that include requirements for continuous medical education (CME)
 - a. Work in collaboration with the College of Surgeons of East, Central, and Southern Africa (COSECSA), the College of Anaesthesiologists of East, Central, and Southern Africa (CANECSA), nurse training institutions, and universities to develop CPD courses
 - b. Provide CPD courses on the virtual platform
2. Encourage regulatory bodies to recommend standards for CMEs that are specific to cadre's scope of care
 - a. Link CPD courses to regulatory bodies so as to automatically award CPD points upon completion of that CPD
3. Provide advanced training in surgical and anaesthesia skills and perioperative care
 - a. Training of Trainers (ToT) in Advanced Life Support training in South Africa
 - b. Advanced Life Support Training by ToT trainers in Zambia
 - c. International training in laparoscopy and in vitro fertilization (IVF)
 - d. International laparoscopy and IVF trainers provide continued training for Zambian surgeons/obstetricians

3.4 HEALTH MANAGEMENT INFORMATION SYSTEMS

3.4.1 Information Management

There are various initiatives in place regarding patient data collection and maintenance. Patients who receive surgical care are recorded in the operative logs, however, patient histories, progression of care, discharge diagnoses, and discharge conditions are not routinely documented.

Anaesthesia registers were recently introduced into the theatre setting to document basic patient details, procedure information, complications, and mortality. These registers are currently at all level 1 hospitals. There is no equivalent means of documentation for surgery patients once they arrive to the ward to follow up on surgical complications after a procedure.

3.4.2 Electronic Medical Records

There is no systemic nation-wide electronic medical record in use that captures all patients. However, SmartCare was developed to provide care for HIV patients and has since been expanded to include both maternal and child health and cancer care. SmartCare patients have unique patient identifier numbers. The system relies on electricity to function and only requires internet for backups. Patients are given a card upon which their information is stored and may be accessed if hospitals are not networked. At this time, there is no electronic medical record system that includes surgery, obstetrics, or anaesthesia information.

Objective:

1. To systematically collect quality surgery, obstetrics, and anaesthesia data in a timely manner in order to provide information for decision making

Strategies:

1. Include Lancet and other SOA surgical indicators in a monthly health management information system (HMIS) report
 - a. Identify these indicators and propose them accordingly for approval
 - b. Train doctors and M&E officers in data analysis in order to utilize information from these indicators
2. Implement electronic surgical, obstetric, and anaesthesia registers to all hospitals, not just level 1
 - a. Create a register for M&E in collaboration with the Surgical Society of Zambia and Zambia Association of Obstetricians and Gynaecologists relevant to their practice and includes Lancet indicators, this should extend beyond 24 hours to include entire length of hospital stay until patient discharge
3. Expand SmartCare to include surgical, obstetric, and anaesthesia care
 - a. Train medical professionals in SmartCare to enter the data as they are seeing the patient and this information will then be linked to (DHIS-2) and HMIS
4. Computerize the surgical, obstetric and anaesthesia service provision
 - a. Procure and install computers at point-of-admission, out-patient department (OPD), theatre recovery wards, critical care/ICUs/HDUs, and wards to facilitate entry of patient information
5. Expand internet connectivity

- a. Create a central ehub at MOH and provide broad-band wireless internet to hospitals including the provision of ehealth records (SmartCare)

3.5 RESEARCH AND QUALITY IMPROVEMENT

3.5.1 Research

Baseline research on surgery, obstetric and anaesthesia care is lacking. Most research that is done has reportedly no impact and remains at the facility level without being used. Currently, the greatest described barrier for research is funding. As part of continuous medical education, evidence-based policy formulation and decision-making, more surgical, obstetric, and anaesthesia research needs to be conducted.

Objectives:

1. To identify surgery, obstetrics and anaesthesia priority areas for research and encourage the writing of research proposals for funding and implementation of research activity.

Strategies:

1. Build the research capacity and culture via research training programs
2. Focus efforts on obtaining funding opportunities for research
3. Develop research proposals or methodologies aimed to measure or collect data to assess the outlined National Health Priorities
 - a. Update baseline assessments for indicators
 - b. Expand Maternal Death Surveillance Response and Perinatal Death Surveillance Response systems to address national levels of perioperative deaths similar to the UK National Confidential Enquiry of Perioperative Deaths (NCEPOD)
4. Encourage research already conducted to be published in a peer reviewed journal and/or presented for knowledge dissemination. First focus on local opportunities for publication/conferences, such as Medical Journal of Zambia or East and Central African Journal of Surgery COSECSA

3.5.2 Data & Quality Improvement

Quality improvement is critical for continued growth and development of surgery, obstetrics, and anaesthesia. Utilization of research outputs, as well as regularly collected patient information, in order to reflect on hospital areas for improvement to help these sectors most efficiently and productively grow.

In the current system, there exists a revised performance assessment tool which annually evaluates every facility. It includes indicators reflecting supplies for the theatre, equipment availability, and an assessment for what procedures should be done at each hospital level. This may require expansion to capture additional surgical, obstetric, and anaesthesia indicators for care.

Data clerks are used to capture information however they are limited in number and scope of practice. Information gathered by data clerks and sent to the provincial level in HMIS reports is not assessed at the primary level. Further, these reports are not evaluated at any level to benefit patient care. Data clerks lack the expertise to perform statistical analyses to evaluate the data or use of it in quality improvement (QI)/quality assurance (QA) projects.

Surgical data already collected at the facility level is not always included in the monthly or quarterly reports nor is it readily available in collated manner. Further, outcomes of surgical procedures are not evaluated to correlate with standing facilities.

Nurses write incident reports as necessary for any complications later in the patient's stay. However, they may not always have the medical expertise of the surgeon or anaesthetist in their evaluations.

Objective:

1. To establish QI processes in surgery, obstetrics, and anaesthesia in order to improve the quality of this service

Strategies:

1. Institutionalize QI processes at all levels of surgical, obstetric and anaesthesia services.
 - a. Strengthen QI committees at every hospital.
 - b. Establish a QI chair at each facility who is the champion of improvement and primarily responsible for oversight of all facility specific data and subsequent reports to other levels.
2. Expand data clerk numbers and scope of responsibilities
 - a. Create, recruit, and train data entry clerks at all hospital levels
 - b. Train all data entry clerks specific to Lancet and other SOA indicators and the importance of data objectivity and quality improvement
 - c. Ensure that QI/QA positions are available at all levels of health care
3. Identify systems performance indicators for quality improvement projects. For example, the use of partograms – proportion of partograms that are completely filled in
4. Standardize incident forms, include check-boxes, and require they are filled out by SOA provider (not just the nurse)
5. Inclusion of Lancet and other SOA indicators into DHIS-2
6. Train all health professionals at first, second, and third level hospitals to use HMIS

3.6 LEADERSHIP AND GOVERNANCE

The overall objective over the medium term is to have exemplary leadership and good governance in the practice and delivery of surgical, obstetric, and anaesthesia services. Relevant personnel shall ensure efficiency, effectiveness, transparency, accountability, and equity in provision of services.

3.6.1 Institutional Framework

The health sector in Zambia is diverse and includes: public health sector; faith-based health sector; the private sector, both for- and not-for-profit health services; and traditional and alternative health service providers.

Core health service delivery facilities fall into five categories: Health Posts (HPs) and Health Centres (HCs) at the community level, level 1 hospitals at the district level, level 2 general hospitals, and level 3 tertiary hospitals. The referral system follows the same hierarchy. Additionally, mobile health services provide a significant amount of surgical care equivalent to Level 2 hospitals.

Since 1991, Zambia's approach to health sector organisation has focused on decentralisation of planning, management, and resources to the district level, where health services are delivered. This approach has also inevitably called for broader participation by all the key stakeholders, particularly the communities, in the governance of the health sector. However, surgical care remains largely centralized at level 2 and level 3 centres. The Basic National Health Care Package (BNHCP) describes the appropriate services to provide at each level of care, which includes emergency and essential surgery at all district hospitals. For this reason, strengthening the level 1 hospitals to be able to provide emergency essential surgical and obstetric care is paramount. This is in addition to the strengthening of comprehensive, complex, and highly specialized SOA services in secondary and tertiary hospitals. In order to do so, we must have appropriate and adequate human resources, equipment, and supplies with a supporting infrastructure.

3.6.2 Integration with the Wider Health System

The NSOASP has been developed to ensure access to emergency and essential surgical, obstetric, and anaesthesia care across Zambia and will link directly to the National Health Strategic Plan (NHSP) for 2017-2021. The plan has been developed with guidance from multiple stakeholders in consideration of existing strategic frameworks locally for Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS), Maternal and Child Health, and non-communicable diseases (NCDs). Whilst this plan is being implemented, integration with non-surgical, non-obstetric and non-anaesthetic providers will be important.

3.6.3 Stakeholder Analysis

Considering the workforce shortage and supply-chain difficulties faced by the Zambian Surgical System, collaboration and coordination amongst faith-based groups, public facilities, private facilities, and mining facilities, as well as CPs is crucial. Coordination and cooperation with their existing systems will ensure appropriate health care service delivery and system harmonization.

The table below summarizes the various stakeholders and their interests:

Stakeholder	Role of stakeholder	Current status	Interest in Issue	Influence	Position	Impact
General population and communities	• Be informed on emergency and essential surgical conditions –what it is, its presentation, how it is prevented • Seek screening, utilize preventive services, and early treatment • Share information about emergency and essential surgery and obstetric services • Engage in open dialogue to demystify surgery and reduce stigma	• Inadequate availability of information on surgical, obstetric, and anaesthesia services • Lack of dialogue regarding surgical, obstetric, and anaesthesia services	High	High	Supportive	Positive
Cabinet	• Provide overall policy direction on provision of essential and emergency SOA services and its implementation • Adequate resource allocation and mobilization for emergency and essential surgical, obstetric, and anaesthesia services • Ensuring the health and productivity of the population	• Lack of a national surgical, obstetric, and anaesthesia plan • Inadequate funding and structured support from partners	High	High	Supportive	Positive

Stakeholder	Role of stakeholder	Current status	Interest in Issue	Influence	Position	Impact
The Ministry of Health	• Provide information and services about safe SOA services to the Zambian population as close to the family residence as possible • Provision of infrastructure and equipment for screening, diagnosis, and treatment • Create framework contracts for procurement of medicines, medical, and surgical supplies	• Have identified the need to prioritize emergency and essential SOA care; efforts are being made to address these services	High	High	Supportive	Positive
Other government line ministries, statutory bodies, and other departments	• Information in curricula on emergency and essential SOA services • The Health Professions Council-Zambia (HPCZ) determines hospital accreditation and surgeon, anaesthetist, obstetrician, and support staff licensing. They monitor ethical conduct of professionals and the quality of training for training institutions • The General Nursing Council (GNC) supports staff licensing of all nursing practitioners • The MOH and Ministry of Education work to enforce specific legislation and regulations relevant to SOA training. • The Ministry of Home Affairs can offer support in improving road safety and rescue initiatives.	• Existence of inter-ministerial communication that assists policy approval	High	High	Supportive	Positive

Stakeholder	Role of stakeholder	Current status	Interest in Issue	Influence	Position	Impact
Professional Societies	• Provide a community and mentorship network for health providers. • Members play integral roles in policy development, training, research, and health system decision-making.	• The societies are in various levels of development for surgery, obstetrics, anaesthesia, nursing, and other members of the surgical system.	High	High	Supportive	Positive
Non-Governmental Organization (NGO) and Civil Societies	• The health sector-wide approach for CP and NGO coordination and optimization has worked well to identify key healthcare issues facing Zambia. As initiatives based upon the NSOASP develop, the CP should be apprised of opportunities to collaborate on future interventions that could make a meaningful impact for the health/surgical system • Promote delivery of quality and equitable SOA health services to communities. • Community participation in prevention and control programmes • Resource mobilization for emergency and essential SOA care, ensure drug availability by both government and private sector	• Organizations are not distributed equitably throughout Zambia • Low focus on funding for essential and emergency SOA programs	Low	High	Supportive	Positive

Stakeholder	Role of stakeholder	Current status	Interest in Issue	Influence	Position	Impact
Faith-based Organizations	Provision of safe and affordable emergency and essential SOA health services to the general public, including prevention, diagnosis, treatment and care	- The Churches Health Association of Zambia (CHAZ) plays a significant role in providing SOA services to Zambia - Involved in appropriate referral of patients to the next level - Tele-surgical mentoring services available in a few facilities	High	High	Supportive	Positive
Private Health Care Companies	- The relationship between private and public care providers must be fostered and methods of involving private leaders in public initiatives should be considered when appropriate - Some companies have hospitals that provide emergency and essential SOA care	- Private hospitals provide a significant portion of total healthcare in Zambia. Their services are not coordinated with the policies and initiatives created by the MoH - Although few in number, mining hospitals provide both general and specialized care to a large number of Zambian nationals	High	Low	Supportive	Positive

Stakeholder	Role of stakeholder	Current status	Interest in Issue	Influence	Position	Impact
Health Care Workers	• Have appropriate training, exposure and support in the prevention, early detection and management of emergency and essential SOA services for different cadres at all levels of care • Have a community health worker package that includes education regarding prevention, early detection, and control of emergency and essential SOA • Prompt referral to appropriate level and follow-up	• Inadequate knowledge of emergency and essential surgery, obstetrics, and anaesthesia in health care workers • Inadequate number of health care workers with formal training in SOA services	High	High	Integral	Positive
Suppliers of goods and services	• Supply in a fair, efficient, consistent, and transparent manner, quality goods and services to MoH for the control and management of emergency and essential surgery, obstetrics, and anaesthesia	• Procurement procedure is laborious and bureaucratic • No local manufacturers for most drugs and equipment • Non-adherence of suppliers to contracts • Government suppliers are only registered by the ZPPA • Apparent lack of understanding of the procurement act and terms of contracts by some suppliers • Challenges in obtaining drugs from international drug companies	High	Low	Supportive	Positive

Stakeholder	Role of stakeholder	Current status	Interest in Issue	Influence	Position	Impact
Traditional health practitioners /herbalists	Educate to recognise early symptoms of surgical, obstetric, and anaesthesia conditions in their clients and encourage appropriate and timely referral to health facility or liaise with community health workers	- Patients are delayed at this level and as a result, present very late at the public health facilities - Not empowered with surgical, obstetric, and anaesthetic information and services available	High	High	Moderately Supportive	Positive
International community	Provision of financial and technical support to the sector within the established policy, strategic framework, and priorities	Some are providing technical and /or financial support	High	High	Supportive	Positive
Traditional/ Community Leaders	Dissemination and enforcement of surgical, obstetric, and anaesthetic information to increase awareness	Not empowered with surgical, obstetric, and anaesthetic information and services available	High	High	Supportive	Positive

3.6.4 Policy, Legal, and Regulatory framework

The Constitution creates for the Government of Zambia an obligation to constantly improve access to health care services. The objective of this framework is to develop the MoH's strategy for meeting constitutional obligations as they relate to emergency and essential surgical, obstetric, and anaesthesia services.

The National Health Policy of 2013 provides a framework for health service delivery to which this strategic plan will be aligned. The National Health Resource for Health Strategic Plan provides an environment for building the human resource capacity for skilled and quality delivery of surgical, obstetric, and anaesthesia services. The E-Health strategy provides an opportunity to expand surgical, obstetric, and anaesthetic services to include telesurgical mentoring, e-patient record systems, continuous professional development courses, and so on.

While there are other available pieces of legislation providing legal and regulatory framework for quality health service delivery, there are gaps in policy focusing on provision of safe surgical, obstetric, and anaesthesia services in Zambia. The MoH will hereby focus on strengthening legal and regulatory framework for delivery of surgical, obstetric, and anaesthesia services to Zambia.

Objective:

1. To provide a coordinated framework upon which the NSOASP will be implemented and supported over the next 5 years.

Strategies:

1. Provide leadership at MoH, provincial, and district levels to coordinate the implementation of these surgical, obstetric, and anaesthesia services
 - a. Appoint a National Surgical Coordinator
 - b. Appoint a National Obstetric Coordinator
 - c. Appoint a National Anaesthesia Coordinator
2. Establish effective partner coordination mechanisms
 - a. Appoint the National Safe Surgery Obstetrics and Anaesthesia committee
 - b. Conduct quarterly meetings to ensure appropriate service delivery and system harmonization
 - c. Have monthly meetings of the subcommittee on surgical, obstetric, and anaesthesia of the service delivery technical working group
3. Strengthen legal and regulatory framework for provision of surgical, obstetric, and anaesthesia services.
 - a. Develop legislation to provide surgical, obstetric, and anaesthesia services (including issues of IVF, transplant, organ donation, biobanking, importation, and exportation of human tissue, etc)

3.7 FINANCE AND RESOURCE MOBILISATION

3.6.1 Funding for Surgical, Obstetric, and Anaesthesia Care

The health care system, specifically surgical, obstetric, and anaesthesia care, is funded through public (Government), private (households and employers), and external (donor partners) sources. Despite improvements in allocations to the health budget, funds are not sufficient to meet the need for the optimum package of health care or adequately cover the rising surgical, obstetric, and anaesthesia needs of the Zambian population. Approved budgets remain below what is required to provide the level of service needed, and government monthly allocations to specific hospitals or districts may be inadequate.

Currently, funds are allocated for surgical, obstetric, and anesthesia services, with a budget line at tertiary levels. However, at the district level, there is no budget line specific to surgical, obstetric, and anaesthesia; instead, allocations are made directly to the district and then to the hospital itself without consideration of the surgical burden. Allocations at all levels should involve a focused-assessment for surgical burden of disease and reflect the requirements of the district/province, as well as the hospital.

Given that a significant proportion of surgical, obstetric, and anaesthetic supplies are imported, currency fluctuations dramatically influence purchasing power for such equipment.

3.6.2 Universal Health Coverage and the Patient Perspective

User fees for primary care services were abolished in all primary care settings in 2006, including children under five-years-old, pregnant women, and patients over the age of 65. This includes primary surgical care services, emergency care, and referrals. Under this system, a greater number of those needing attention are able to seek care early. However, patient costs are not routinely monitored and assessed to ensure that out-of-pocket or in-hospital fees do not restrict access to care. For specialized services that are found at level 2 and 3 care institutions, patients share costs to access these services. However, social workers can provide exemptions for patients who are unable to pay for these fees. With the introduction of social health insurance, it is expected that the system will have built-in safeguards to ensure the intended effect of Universal Health Coverage is actualized.

3.6.3 Funding and Systems Perspectives for Surgical, Obstetric, and Anaesthesia

The MoH has dedicated budgets that go to secondary and tertiary hospitals to cover surgical and obstetric services, although the allocations are inadequate. There is no dedicated funding for the same at level 1 hospitals, and there is no dedicated funding at all levels for anaesthesia care. However, ultimately, there is no clear breakdown of how much is actually spent on surgical, obstetric, and anaesthesia care. Future use of funds should be tracked and documented to the level of service delivery through the use of automated accounting systems.

Compounding the challenge of inadequate funding, there is also poor understanding of the costing of surgical, obstetric, and anaesthesia services. This is evidenced in a study regarding cost of care from 2003-2004 obtained during the process of developing the National Health Care Package. However, this study neglects specific procedure costs, instead lumping all surgical care together

and since then, there has been no updated costing. Surgery, obstetrics, and anaesthesia specific costing at the level 1, 2, and 3 hospital level is necessary to help determine the appropriate allocations in conjunction with the burden of disease.

A substantial financial burden on the government results when patients are sent abroad for services they are unable to receive in-country. Hospital upgrades and modernization of services are required to reduce the number of patients going abroad for treatment. The training of specialists also needs to be considered so that local hospitals are equipped with appropriate, motivated, and well-trained health care workers. Furthermore, we should consider indicators reflecting type of care provided abroad in recommendations for scale up of local surgical services.

Objective:

1. Improve funding levels, and establish budget lines and systems for resource tracking for surgical, obstetric, and anaesthesia services in the country in order to achieve Universal Health Coverage.

Strategies:

1. Establish a tracking mechanism for funding of surgical, obstetric, and anaesthesia services
 - a. Establish electronic accounting systems for all levels that are linked to MoH headquarters
 - b. Conduct three-yearly surveys to establish the effectiveness of financing mechanisms supporting surgical, obstetric, and anaesthesia services
 - c. Include patient and cashier interviews along with system costs to determine true cost of surgical, obstetric, and anaesthesia services
2. Establish budget lines for surgery, obstetrics, and anaesthesia for district hospitals
 - a. Create recurrent departmental charges (RDCs) for district hospitals similar to secondary and tertiary hospitals
 - b. Create budget lines for surgery, obstetrics, and anaesthesia at level 1 hospitals as it is currently being done for level 2 and 3 hospitals
3. Improve funding for surgical, obstetric, and anaesthesia services
 - a. Increase the allocation to level 2 and 3 hospitals budget lines for surgery, obstetrics, and anaesthesia activities.

4.0 LOG FRAME

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
SERVICE DELIVERY					
Objective: To ensure all Zambians are able to receive safe, equitable and timely SOA care by a) the provision of essential and emergency care at the district level, b) the the provision of comprehensive care at the secondary level, c) the provision of highly specialized and complex care at the tertiary level	Number of procedures performed in an operating room / 100,000 population	Hospital theatre records and HMIS	1500	2500	6145
Output 1: Establish and strengthen the provision of quality essential and emergency surgical services at level one hospitals	Percentage of facilities at level 1 offering surgical care	MoH Annual Reports, hospital theatre records, and provincial health records	Unknown	40%	100%
	Percentage of facilities using WHO checklist for 80% of operations			80%	
	Percentage of facilities using Lifebox, SafeObs, and SafePeds reports			80%	
Output 2: Establish and strengthen the provision of quality essential and emergency obstetric and gynaecologic services at the district level	Percentage of facilities at level one offering obstetric and gynaecologic care	MoH Annual Reports, hospital theatre records, and provincial health records	Unknown	40%	100%

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
SERVICE DELIVERY					
Output 3: Establish and strengthen the provision of quality essential and emergency anaesthesia services at the district level	Percentage of facilities at level one offering anaesthesia care	MoH Annual Reports	Unknown	40%	100%
Output 4: Establish and strengthen the provision of quality comprehensive, highly specialized, and complex surgical care at level 2 and 3 hospitals	Number of comprehensive emergency care units/Trauma centers	Second- and Third-level Hospital Annual Reports, MoH Annual Reports, hospital theatre records, and provincial health records	1	4	10
	Number of facilities managing surgical oncologic conditions		7	17	36
	Number of facilities managing paediatric surgical patients		2	12	36
	Number of laparoscopic units		0	1	2
	Number of cardiac centres		0	1	2
	Number of level 2 facilities providing urology		0	10	29
	Number of level 2 facilities providing orthopaedic services		0	10	29
	Number of level 3 facilities providing maxillofacial services		1	3	7
	Number of facilities offering plastic and reconstructive services		1	1	2

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
SERVICE DELIVERY					
Output 4: Establish and strengthen the provision of quality comprehensive, highly specialized, and complex surgical care at level 2 and 3 hospitals	Number of facilities offering neurosurgical services		1	3	7
	Number of facilities offering a spinal surgery services		1	2	2
Output 5: Establish and strengthen the provision of quality comprehensive, highly specialized, and complex surgical care atlevel 2 and 3 hospitals	Number of facilities with urogynaecologic services		1	3	7
	Number of facilities gynaencologic oncology services at tertiary hospitals		1	3	7
	Number of level 2 facilities providing gynaeoncological care		0	15	29
	Number of level 2 facilities providing obstetric fistulae repair		0	15	29
	Number of facilities providing assisted fertility		0	1	2
Output 6: Establish and strengthen the provision of quality comprehensive, highly specialized, and complex anaesthesia care atlevel 2 and 3 hospitals	Number of facilities with capnography, ECG, pulse oximetry, and ventilatable anaesthesia machines	Second- and Third-level Hospital Annual Reports, MoH Annual Reports	20	25	36
	Number of facilities administering regional anaesthesia		1	18	36

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
SERVICE DELIVERY					
Output 6: Establish and strengthen the provision of quality comprehensive, highly specialized, and complex anaesthesia care at level 2 and 3 hospitals	Number of facilities providing pain management services on labour wards		0	18	36
	Number of facilities providing paediatric anaesthesia		6	18	36
Output 6: Establish and strengthen the provision of quality comprehensive, highly specialized, and complex surgical care at level 2 and 3 hospitals	Number of facilities providing neonatal anaesthesia	Second- and Third-level Hospital Annual Reports, MoH Annual Reports	2	3	7
	Number of facilities providing cardiac anaesthesia		0	1	2
	Number of facilities providing renal anaesthesia		2	3	4
	Number of facilities with functioning ICUs		4	8	16
	Number of facilities with functioning neonatal ICUs		1	2	2
	Number of facilities with high-dependency units (HDUs)		9	18	36
	Number of facilities that received and are utilizing admission and treatment protocols to ICU/HDUs		0	8	16
	Number of facilities providing out-of-theatre anaesthesia		1	2	2

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
SERVICE DELIVERY					
Output 7: Strengthen Mobile Health Services	Number of annual specialist outreach activities performed	Outreach activity reports	12	18	24
	Number of annual district mobile outreach activities	Outreach activity reports	54	81	108
Output 8: Strengthening of countrywide mentorship for SOA care at the primary level	Number of mentorship tools developed	Surgery reports	0	6	12

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
INFRASTRUCTURE					
(a) Medical Products					
Objective 1: Provide sustainable infrastructure needed for the delivery of safe surgical, obstetric, and anaesthesia at all levels of the health care system	% of facilities meeting infrastructure standards	Inventory of functional equipment for surgical, obstetric, and anaesthesia Facility reports	Over 150 first-level and higher facilities exist	60% of facilities meeting infrastructure standards for surgical, obstetric, and anaesthesia available	80% of facilities meeting infrastructure standards for surgical, obstetric, and anaesthesia available
Output 1.1: Ensure all level 1 facilities have standard infrastructure to provide safe and timely essential and emergency SOA care	% of level 1 facilities meeting infrastructure standards	Inventory of functional equipment for surgical, obstetric, and anaesthesia at level 1 facilities Facility reports	Over 100 level 1 facilities exist	60% of facilities meeting infrastructure standardsfor surgical, obstetric, and anaesthesia available	80% of facilities meeting infrastructure standardsfor surgical, obstetric, and anaesthesia available
Output 1.2: Ensure all level 2 and 3 facilities have standard infrastructure to provide safe and timely essential and emergency SOA care	% of level 2 and 3 facilities meeting comprehensive and complex infrastructure standards.	Inventory of functional equipment for surgical, obstetric, and anaesthesia at level 2 and 3 facilities to medical stores Facility reports	Nearly 40 level 2 and 3 facilities exist	50% of facilities meeting comprehensive and complex infrastructure standards for surgical, obstetric, and anaesthesia available	80% of facilities meeting comprehensive and complex infrastructure standards for surgical, obstetric, and anaesthesia available

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
INFRASTRUCTURE					
(b) Equipment					
Objective 2: To ensure the availability of adequate, appropriate, and well-maintained, functionalsurgical, obstetric, and anaesthesia equipment in accordance with the set standards at each level	% of standard andfunctional equipment available	Inventory of functional equipment for surgical, obstetric, and anaesthesia Facility reports	50% of equipment for surgical, obstetric, and anaesthesia available per current list	60 % of equipment for surgical, obstetric, and anaesthesia available	80 % of equipment for surgical, obstetric, and anaesthesia available
Output 2.1: Ensure all level 1 facilities have standard and functional equipment to provide safe and timely essential and SOA care	% of level 1 facilities with standard and functional equipment	Inventory of functional equipmentfor surgical, obstetric, and anaesthesia Facility reports	50% of level 1 facilities with functional equipment for surgical, obstetric, and anaesthesia available per current list	60 % of level 1 facilities with functional equipment for surgical, obstetric, and anaesthesia available	80 % of level 1 facilities with functional equipment for surgical, obstetric, and anaesthesia available
Output 2.2: Strengthen equipment maintenance services at level 1 facilities by conducting preventive maintenance of equipment for SOA services	% of level 1 facilities that have equipment maintenance plans % of equipment that has been serviced and repaired according to standards	Inventory of functional equipmentfor surgical, obstetric, and anaesthesia Facility reports Service records	50% of essential equipment for surgical, obstetric, and anaesthesia have maintenance plans available per current list	60 % of essential equipment for surgical, obstetric, and anaesthesi have maintenance plans available	80 % of essential equipment for surgical, obstetric, and anaesthesia have maintenance plans available

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
INFRASTRUCTURE					
(b) Equipment					
Output 2.3: Ensure All level 2 and 3 facilities have standard and functional equipment to provide safe and timely essential and emergency SOA care	% of level 2 and 3 facilities with standard and functional equipment	List of comprehensive and complex equipment for surgical, obstetric, and anaesthesia Facility reports	60% of facilities with comprehensive and complex functional equipment for surgical, obstetric, and anaesthesia available per current list	80 % of facilities with comprehensive and complex functional equipment for surgical, obstetric, and anaesthesia available	90 % of facilities with comprehensive and complex functional equipment for surgical, obstetric, and anaesthesia available
Output 2.4: Strengthen equipment maintenance services at level 2 and 3 facilities by conducting preventive maintenance of equipment for SOA services	% of level 2 and 3 facilities that have equipment maintenance plans % of equipment that has been serviced and repaired according to standards	List of comprehensive and complex equipment for surgical, obstetric, and anaesthesia Facility reports	60% of level 2 and 3 facilities with equipment maintenance plans for surgical, obstetric, and anaesthesia available per current list	80 % of level 2 and 3 facilities that have equipment maintenance plansfor surgical, obstetric, and anaesthesia available	90 % of level 2 and 3 facilities that have equipment maintenance plansfor surgical, obstetric, and anaesthesia available

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
INFRASTRUCTURE					
(c) Supplies					
Objective 3: To ensure availability of quality, safe, and affordable essential supplies through efficient procurement and logistics management at all levels	% of facilities not reporting stock-outs of tracer supplies (tracer list in annexes)	List of supplies for surgical, obstetric, and anaesthesia Facility reports	50% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia	60% facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia	80% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia
Output 3.1: Ensure that all level 1 facilities have adequate stocks of essential medical and surgical supplies (commodity security) in order to provide safe and essential surgical, obstetric, and anaesthesia	% of facilities not reporting stock-outs of tracer supplies for essential SOA care(tracer list in annexes)	List of essential supplies for surgical, obstetric, and anaesthesia Facility reports	50% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia	60% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia	80% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia
Output 3.2: Ensure that all level 2 and 3 facilities have adequate stocks of essential medical and surgical supplies (commodity security) in order to provide safe and comprehensive surgical, obstetric, and anaesthesia	% of facilities not reporting stock-outs of tracer supplies for comprehensive SOA care	List of comprehensive supplies for surgical, obstetric, and anaesthesia Facility reports	50% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia	60% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia	80% of facilities not reporting stock-outsof tracer supplies for surgery, obstetrics, and anaesthesia

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
HUMAN RESOURCES					
Objective 1: To increase the number of trained SOA providers and maintain staff records at all levels of health care in Zambia	- Number of SOA providers trained - Availability of staff records	- Training reports - Approved training plans --Certificates of verification - Staff returns	1.1 per 100,000 population	1.8 per 100,000 population	2.2 per 100,000 population
Output 1.1: To expand the establishment to provide positions that will meet the demand for implementing the SOA services	Funded and expanded establishment	- Treasury of Authority (TA) available - Establishment register	% of SOA providers / Current establishment	TBA	TBA
Output 1.2: To ensure equitable distribution of available SOA providers	Availability of SOA providers at all levels	- Establishment registers - Staff returns - Arrival advice forms			
Output 1.3: Improve conditions of services, strengthen bonding, and retention mechanisms	- Percentage of officers serving bond after training - Percentage of officers serving in their required service areas	- Establishment registers - Staff returns	Currently no data, will use training plan as base		
Output 1.5: Link the HR information system to the HPCZ and GNC register of practitioners	Registers linked	- Proof of registers linked via physical inspection		100%	100%
Output 1.6: Create and implement a costed training plan for SOA personnel	Costed training plan developed	- Availability of costed training plan - Training registers		100%	100%

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
HUMAN RESOURCES					
Objective 2: Identifyexisting task-sharing practices and strengthen task-sharing training and support to personnel in level 1 hospitals, so as to increase the number of SOA providers	- Number of existing task-sharing programs - Number of health workers receiving training in task-sharing - Number of task-sharing programs strengthened - Training plan for task-sharing	- Training programs reports	Already done	100%	100%
Output 2.1: Establish appropriate task-sharing with formalized and robust lines for supervision and communication to allow for necessary referrals	- Number of task sharing manuals developed and disseminated	- Task-sharing manuals in facilities		100%	100%
Output 2.2: Define scope of practice for non-physician providers in order to prevent “task creep”	- Number of guidelines for scope of care	- Guidelines available at facilities		100%	100%
Output 2.3: Perform baseline outcomes assessments for both physician and non-specialists or task-sharers, first focusing on POMR; Ensure that task-sharers perform care with the same level of safety as their physician counterparts	- POMR for risk-matched procedures	- Comparison of POMR between physicians and task-sharers	Not currently measured	70%	100%

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
HUMAN RESOURCES					
Output 2.4: Increase capacity for radiology and pathology reads in order to avoid long wait-times; Develop short courses for radiographers to provide point of care reads, to be expanded to their pre-service training in the future	- Numbers of radiology/pathology staff performing reads in predetermined time - Develop guidelines for acceptable wait-times - Monitor radiology/pathology staff in accordance with - Training program for radiographers - Measure numbers of trained radiographers	- Guidelines developed with acceptable wait-times - Radiology short courses developed - Facility radiology registers	Current wait-times variable	100%	100%
Objective 3: Ensure all surgical, obstetric, and anaesthesia providers are updated in terms of their medical knowledge and skills required to provide safe care	- Number of SOA providers accessing CPDs - Number of practitioners with updated licensure	- HPCZ and GNC registers	100%	100%	100%
Output 3.1: Recommend following international licensing standards that include requirements for continuous medical education (CME)	- Number of SOA providers accessing CPDs - Number of practitioners with updated licensure	- HPCZ and GNC registers	100%	100%	100%
Output 3.2: Regulatory bodies should come up with recommended standards for CMEs that are specific to cadre’s scope of care	- Standards produced	- Relevant CME standards available	Recommended CME points are available	100%	100%

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
RESEARCH AND QUALITY IMPROVEMENT					
Objective 1: To identify SOA priority areas for research and encourage the writing of research proposals for funding and implementation of research activity	Number of research projects implemented Number of research papers published	Search engines PubMed National Health Research Authority (NHRA) publications register	Unknown		
Output 1.1: Build the research capacity and culture via research training programs	Number of SOA providers trained in research	Certificates for courses from HR audit			
Output 1.2: Focused efforts on obtaining funding opportunities for research	Number of funded research projects	National Health Research Authority (NHRA)			
Output 1.3: Develop research proposals or methodologies aimed to measure or collect data to assess the outlined National Health Priorities	Number of research projects	National Health Research Authority (NHRA)			
Output 1.4: Encourage research already conducted to be published in a peer reviewed journal and/or presented for knowledge dissemination.	Number of research paper published	Search engines PubMed National Health Research Authority (NHRA) publications register			

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
RESEARCH AND QUALITY IMPROVEMENT					
Objective 2: Establish quality improvement (QI) processes in surgery, obstetrics, and anaesthesia in order to improve the quality of this service	Number of hospitals with QI programs	QI assessment reports			
Output 2.1: Institutionalize QI processes at all levels of SOA services	Number of QI committee meetings held annually	QI assessment reports			
Output 2.2: Expand data clerk numbers and scope of responsibilities	Number of data clerks	HR registers			
Output 2.3: Identify system performance indicators for quality improvement projects	Report of system performance indicators identified	QI assessment reports			
Output 2.4: Encourage the use of incident forms	Number of incident report forms				
HMIS					
Objective 1: Systematically collect quality health SOA data in a timely manner in order for analysis and make this available for decision making.					
Output 1.1: Include surgical indicators in monthly HMIS reports	Presence of surgical indicators in reports	HMIS report			

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
HMIS					
Output 1.2: Implement electronic SOA registers to all hospitals (not just district level).	Number of hospitals with electronic surgery, obstetrics, and anaesthesia registers	HMIS			
Output 1.3: Expand SmartCare (electronic patient record system) to include surgical, obstetric, and anaesthesia	Number of hospitals with functional electronic patient record systems	Electronic health systems reports			
Output 1.4: Computerize the surgery, obstetrics, and anaesthesia service provision	Number of hospitals with functional networks to allow for electronic patient record systems	Electronic health systems reports and inventories			
Output 1.5: Expand internet connectivity	Number of hospitals connected to high speed internet	Electronic health systems reports and inventories			
FINANCING					
Objective 1: Improve funding levels	Financing strategy for SOA developed	Yearly Financial Reports	Currently does not exist	Financial strategy complete	Financial strategy implemented
Objective 2: Establish mechanisms for tracking SOA services related expenditure	Number of SOA expenditure reports	Quarterly financial reports, existence of IFMIS NAVISION systems	IFMIS currently used, NAVISION procured	Tracking mechanism established and in use in 60% of facilities	Tracking mechanisms established and in use in 80% of facilities

Results Chain	Indicators	Means of Verification	Base	Target	
				Mid term 2019	End term 2021
LEADERSHIP AND GOVERNANCE					
Objective 1: To strengthen emergency essential SOA services at all hospital levels	Number of district hospitals providing SOA services	Peer and Performance assessment reports	Unknown	40% of hospitals will have SOA services	60% of hospitals will have SOA services
Output 1.1: Provide leadership at MOH, provincial, and district levels to coordinate the implementation of these services.	-National Surgical Coordinator -National Obstetric Coordinator -National Anaesthesia Coordinator -At provincial level – clinical care specialists capacitated to implement SOA services	Performance assessments	Clinical care specialists National Anaesthesia Coordinator available Some anaesthetic providers	40% of hospitals will have SOA services	60% of hospitals will have SOA services
Output 1.2: Provide appropriate and adequate human resources	Number of SOA providers available at each level of care	HR registers	Unknown	40% of hospitals will have SOA services	60% of hospitals will have SOA services
Output 1.3: Support the supply-chain for medicines, medical, and surgical supplies for emergency and essential SOA care	Proportion of budget allocated to surgery, obstetrics, and anaesthesia services	Yellow book	Unknown	Fund 50% of total requirement	85% of total requirement
Output 1.4: To establish effective partner coordination mechanisms	Existence of a committee to coordinate SOA issues with CPs	Meeting minutes	Current committee	Committees still available	Committees still available

5.0 IMPLEMENTATION FRAMEWORK

The plan will be implemented through the existing health sector institutional framework. MoH will take the overall responsibility for coordinating and ensuring successful implementation and attainment of the objectives of this plan. However, several other key sector partners will also be involved in its implementation.

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
1. Service Delivery								
To ensure all Zambians are able to receive safe, equitable, and timely surgical, obstetric, and anaesthesia care by a) the provision of essential and emergency care at level 1 hospitals, b) the provision of comprehensive care at level 2 hospitals, c) the provision of highly specialized and complex care at level 3 hospitals	Establish and strengthen the provision of quality essential and emergency surgical services at level 1 hospitals	Strengthen capacity to care for trauma and injuries						
		Train providers in all 87 level 1 facilities on: 1) Use of WHO Checklist/Lifebox training 2) SafeObs 3) SafePeds (These 3 courses to be combined in a single training, 20 participants per training, 20 district facilities per year)	X	X	X	X	X	3,990,480
		Train providers in all 87 level 1 facilities on: - Trauma course (20 participants per training, 30 facilities per year)	X	X	X	X	X	5,985,720
		Establish pre-hospital emergency services that can provide safe and timely transport of patients to the appropriate level of care						240,000,000
		Strengthen capacity to recognize and refer surgical oncologic conditions and pediatric diseases						
		Train non-physician providers in: 1) Recognition of surgical oncologic conditions 2) Treatment of paediatric surgical emergencies and recognition of children with neonatal conditions, congenital malformations, and burns (These 2 interventions to be combined in a single training, 20 participants per training, 10 facilities per year)	X	X	X	X	X	3,120,240
		Strengthen the following programs: - neonatal screening program for congenital heart disease - rheumatic heart disease prevention program	X	X	X	X	X	125.050

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
1. Service Delivery								
To ensure all Zambians are able to receive safe, equitable, and timely surgical, obstetric, and anaesthesia care by a) the provision of essential and emergency care at level 1 hospitals, b) the the provision of comprehensive care at level 2 hospitals, c) the provision of highly specialized and complex care at level 3 hospitals	Establish and strengthen the provision of quality essential and emergency surgical services at level 1 hospitals	Strengthen care for burns and wounds						
		Provide comprehensive burn and wound care services, including the adoption of newer methods of wound care such as negative pressure wound therapy or skin grafting in 50% of districts.						3,000,000
		Community sensitization activities around burns prevention (annual) - media engagement - posters in under 5 clinic						-
		Strengthen care for genito-urinary conditions						
		Include essential urologic care in the basic surgery training package to allow level one surgeons to perform essential urologic care including relief of urinary obstruction with catheterization or suprapubic cystostomy	X	X	X	X	X	-
		Scale up urinary schistosomiasis screening and treatment programs						-
		Scale up prostate cancer screening programs	X	X	X	X	X	-
		Strengthen care for orthopedic services						
		Include essential orthopaedic care in the basic surgery training package to allow level one surgeons to manage acute and chronic osteomyelitis, perform arthrotomy for septic joints, and provide non-operative management of club feet	X	X	X	X	X	-
	Establish and strengthen the provision of quality obstetric services at level 1 hospitals	Include essential OBS/GYN care in the basic surgery training package to allow level one surgeons to provide emergency hysterectomy and recognize and refer gynaecologic oncologic conditions	X	X	X	X	X	-
		Provide OBS/GYN teams with: - EMONC training (1 per province per year) - focused antenatal care training	X	X	X	X	X	16,081,800
		Strengthen and support cervical cancer screening programs	X	X	X	X	X	
	Establish and strengthen the provision of quality essential and emergency anaesthesia services at level 1 hospitals	Provide anesthetic providers with training on: - Regional anaesthesia - Acute and chronic pain management (These 2 trainings to be combined, 20 participants per training, 2 provincial hospitals per year)	X	X	X	X	X	1,225,000

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
1. Service Delivery								
To ensure all Zambians are able to receive safe, equitable, and timely surgical, obstetric, and anaesthesia care by a) the provision of essential and emergency care at level 1 hospitals, b) the provision of comprehensive care at level 2 hospitals, c) the provision of highly specialized and complex care at level 3 hospitals	Establish and strengthen the provision of quality comprehensive, highly specialized, and complex surgical care at level 2 and 3 hospitals	Mentorship visits for level 2 providers - surgical oncology care (10 mentors will divide into 5 teams, each team will visit 2 provincial hospitals per year)	X		X		X	817,000
		Mentorship for level 2 providers - pediatric care (10 mentors will divide into 5 teams, each team will visit 2 provincial hospitals per year)		X		X		817,000
		Establish comprehensive emergency care/trauma centres	X	X	X	X	X	22,600,000
		Establish urology and orthopaedic services at all level 2 hospitals and maxillofacial services at all level 3 hospitals	X	X	X	X	X	3,500,000
		Establish plastic and reconstructive services at Ndola Central Hospital and University Teaching Hospital	X	X	X	X	X	11,000,000
		Establish a spinal surgery service at Ndola Central Hospital and strenghten the spinal surgery service at University Teaching Hospital	X	X	X	X	X	8,000,000
		Establish laparoscopic surgery at two teaching hospitals		X	X	X	X	100,000,000
		Equipment to support cardiac centre in Lusaka	X	X	X	X	X	50,000,000
	Establish and strengthen the provision of quality comprehensive, highly specialized, and complex obstetric care at level 2 and 3 hospitals	Establish urogynaecologic and gynaecologic services at tertiary hospitals	X	X	X	X	X	7,500,000
		Implement mentorship tools, including: - basic care of gynaecologic oncological conditions (5 days per hospital, 2 times a year in each province) - obstetric fistula care	X	X	X	X	X	1,693,800
		Fund an assisted fertility centre at Ndola Central Hospital and University Teaching Hospital			X		X	50,744,970
	Establish and strengthen the provision of quality comprehensive, highly specialized, and complex anaesthesia care at level 2 and 3 hospitals	Train level 2 and 3 anaesthesia providers in pain management on labour wards (2 hospitals per year)	X	X	X	X	X	480,000
		Development of admission and treatment protocols in all ICUs (one time)	X					91,180
		Implement admission and treatment protocols in all ICUs (10 provincial hospitals, 5 per year)	X	X				257,500
		Review admission and treatment protocols in all ICUs (year 3 and 5)			X		X	38,360
Train nurses and doctors in the provision of out-of-theatre anaesthesia (UTH, Ndola - every other year)				X		X	491,190	
Strengthen mobile health services	Conduct specialist outreach activities (once every 2 months per province)	X		X		X	-	
	Conduct district mobile outreach activities (1.5 visits per month per province)	X	X	X	X	X	-	
Service Delivery Total								531,559,290

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
2. Human Resources								
Increase the number of trained surgical, obstetric, and anaesthesia providers and maintain staff records at all levels of health care in Zambia	Expand the establishment to provide positions that will meet the demand for implementing the surgical, obstetric, and anaesthesia services	Review the costed establishment for first, second, and third level hospitals that will enable provision of the surgical, obstetric, and anaesthesia services at these hospitals	X					205,320.00
		Lobby for treasury authority to be granted to fund establishment of SOA positions	X	X	X	X	X	-
		Recruit and place SOA personnel (Level 1: medical licentiate/general practitioner, obstetrician, general surgeon, midwife, theatre nurse, anaesthetic provider; Level 2: surgeon, obstetrician, doctor anaesthetist/anaesthetic provider, midwife, clinical care nurse, theatre nurse; Level 3: general surgeon, specialist surgeon, doctor anaesthetist, obstetrician, midwife, theatre nurse, critical care nurse), in the appropriate positions	X	X	X	X	X	-
	Ensure equitable distribution of available SOA resource	Conduct a staff audit every other year using staff assignment and return logs to identify the available human resources		X		X		-
		Redistribute the human resources to needy areas	X	X	X	X	X	-
	Improve conditions of services, bonding, and retention mechanisms	Design mechanisms to ensure SOA providers with specialized skills are placed in the appropriate salary scales	X					-
	Undertake curriculum reviews and maintain standards of education for training programs	Define job descriptions and support the development of degree-level theatre nursing, midwifery, anaesthetic officer, and critical care nurse training programs	X	X				62,200
		Engage the universities and professional societies, CANECSA, COSECSA, and GNC to ensure that they help in redesigning curricula so they are able to fast track training of SOA providers	X					62,200
	Link the HR establishment register to the HPCZ and GNC register of practitioners	Design a database that interfaces with regulatory bodies (HPCZ and GNC) to enable real time data retrieval of human resource availability in public, private, and the diaspora	X					61,600
	Create and implement a costed training plan for SOA personnel	Create training plans, and scale up training for each SOA cadre, including biomedical technicians/engineers, and identify the human resource areas that require training and send personnel for training (Find details of workforce needed and cost of training in annexes)	X	X	X	X	X	612,252,925

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
2. Human Resources								
Identify safety of existing task-sharing practices and strengthen task-sharing training and support to personnel in district hospitals, so as to increase the number of SOA providers	Establish appropriate task-sharing with formalized and robust lines for supervision and communication to allow for necessary referrals	Identify existing task-sharing practices and develop reporting system to enhance communications to the appropriate level	X					173,480
	Define the scope of practice for non-physician providers in order to prevent "task creep"	Develop guidelines for each task-sharing cadre	X					104,710.00
	Increase capacity for radiology and pathology reads in order to avoid long wait-times	Develop and implement a short-term training program for 20 radiographers per year to provide point of care reads, to be expanded to their pre-service training in the future. Expand comparable training to pathology or histology services	X	X	X	X	X	11,476,820
	Perform baseline assessments	Conduct comparative outcome assessments for POMR between task-sharers and physician providers	X	X	X	X	X	-
Ensure all surgical, obstetric, and anaesthesia providers are updated in terms of their medical knowledge and skills required to provide safe care	Recommend following international licensing standards that include requirements for continuous medical education (CME) for SOA providers	Work in collaboration with the College of Surgeons of East, Central and Southern Africa (COSECSA), the College Of Anaesthesiologists of East Central and Southern Africa (CANECSA), and other universities and nurse training institutions to develop CPD courses	X	X				22,616
		Provide CPD courses on the virtual platform	X	X				162,140
	Regulatory bodies should come up with recommended standards for CMEs that are specific to cadre's scope of care	Link CPD courses to regulatory bodies so as to automatically award CPD points upon completion of that CPD	X					65,140
	Provide advanced training in surgical and anaesthesia skills and perioperative care	Training of Trainers (ToT) in Advanced Life Support training in South Africa	X		X			340,992
		Advanced Life Support Training by ToT trainers in Zambia				X	X	2,756,680
		International training in laparoscopy and in vitro fertilization	X					1,347,000
		International laparoscopy and IVF trainers provide continued training for Zambian surgeons/obstetricians	X					1,796,000
	Human Resources Total							486,146,523.00

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
3. Medical Products and Infrastructure								
a) Infrastructure								
Provide sustainable infrastructure needed for the delivery of safe surgery, obstetrics, and anaesthesia at all levels of the health care system	Ensure all level 1 facilities have standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care	Hold a coordination workshop with infrastructure unit to create standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 1 hospital (2 workshops in year 1 and a midterm evaluation in year 3)	X		X			-
		Maintenance teams will conduct annual maintenance inspections of all level 1 hospitals (Quarter 3)	X	X	X	X	X	-
		Rehabilitate existing level 1 facilities to include adequate infrastructure and equipment to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 1 hospitals	X	X	X	X	X	450,156,270
	Ensure all level 2 and 3 facilities have comprehensive infrastructure to provide safe and timely comprehensive surgical, obstetric, and anaesthesia care	Hold a coordination workshop with infrastructure group to create standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 2, 3 hospitals (2 workshops in year 1 and a midterm evaluation in year 3)	X		X			-
		Maintenance teams will conduct annual maintenance inspections of all level 2, 3 hospitals (In quarter 3 every year)	X	X	X	X	X	-
		Rehabilitate existing level 2, 3 facilities and buildings to meet the standards (assuming 25% need no improvements, 25% need minor improvements, 25% need moderate improvements, 25% need major improvements)	X	X	X	X	X	514,309,768
Infrastructure Totals							964,466,037	
b) Equipment								
To ensure the availability of adequate, appropriate, and well-maintained surgical, obstetric, and anaesthetic equipment in accordance with the needs at that level	Ensure all level 1 facilities have standard equipment to provide safe, and timely essential and emergency surgical, obstetric, and anaesthesia care	Hold workshop to revise the standard list of essential equipment for surgery, obstetrics, and anaesthesia for first level facilities in collaboration with end users	X		X			171,270
		Procure appropriate imaging equipment to support diagnostic services per facility level	X				X	46,831,032
		Procure laboratory equipment to support diagnostic services per facility level	X				X	64,911,754
		Procure capnography, ECG, pulse oximetry, and ventilatable anaesthesia machines with built-in oxygen concentrators for the provision of comprehensive general anaesthesia	X					-
	Strengthen equipment maintenance services at level 1 facilities by conducting preventive maintenance of essential equipment for surgical, obstetric, and anaesthesia services	Outsource maintenance services of vapouriser calibration during the period of this plan until capacity is built	X	X	X	X	X	30,000
		Ensure all end users are trained to use the essential equipment	X	X	X	X	X	-

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
3. Medical Products and Infrastructure								
b) Equipment								
To ensure the availability of adequate, appropriate, and well-maintained surgical, obstetric, and anaesthetic equipment in accordance with the needs at that level	Ensure all level 2 and 3 facilities have standard equipment to provide safe and timely comprehensive surgical, obstetric, and anaesthesia care	Hold workshop to revise the standard list of essential equipment for surgery, obstetrics, and anaesthesia for second and third level facilities in collaboration with end users	X					171,270
		Procure appropriate laboratory equipment to support diagnostic services at level 2 and 3 facilities		X			X	47,938,754
		Procure appropriate imaging equipment to support diagnostic services at level 2 and 3 facilities					X	343,222,324
		Procure appropriate rehabilitative equipment for all level 1, 2, and 3 facilities	X				X	140,023,653
		Ensure all end users are trained to use the comprehensive equipment	X	X	X	X	X	-
Equipment Totals								643,300,057
c) Supplies								
To ensure availability of quality, safe, and affordable supplies through efficient procurement and logistics management at all levels	Ensure that all level 1 facilities have adequate stocks of essential medical and surgical supplies (commodity security) in order to provide safe surgical, obstetric, and anaesthesia	Revise the standard list of essential supplies in the national formulary for surgery, obstetrics, and anaesthesia in collaboration with end-users	X	X	X			171,270
		Conduct a yearly audit to monitor supply levels and ascertain the efficiency of the supply chain to improve planning and forecasting for essential medical-surgical supplies and drugs	X	X	X	X	X	-
		Strengthen systems for procurement of essential surgical, obstetric, and anaesthesia supplies, including implants, through framework contracts to ensure consistent access to affordable essential medical-surgical supplies and drugs, and cervical cancer screening supplies	X	X	X	X	X	250,000,000
	Ensure that all level 2 and 3 facilities have adequate stocks of comprehensive medical and surgical supplies (commodity security) in order to provide safe surgery, obstetrics, and anaesthesia	Revise the standard list of comprehensive supplies for surgery, obstetrics, and anaesthesia in collaboration with end-users	X					-
		Conduct a yearly audit to monitor supply levels and ascertain the efficiency of the supply chain to improve planning and forecasting for comprehensive medical-surgical supplies and drugs	X	X	X	X	X	-
		Procure necessary equipment, drugs, and monitoring for the provision of regional anaesthesia at level 2 and 3 hospitals	X	X	X	X	X	17,236,632
		Strengthen systems for procurement of comprehensive surgery, obstetrics, and anaesthesia supplies, including implants, through framework contracts to ensure consistent access to affordable comprehensive medical-surgical supplies and drugs	X	X	X	X	X	-
Supplies Totals								267,407,902
Medical Products and Infrastructure Total								1,875,173,997

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
4. Health Information and Research								
a) Health Information								
Systematically collect quality health surgery, obstetrics, and anaesthesia data in a timely manner in order to provide information for decision-making	Include Lancet and other SOA indicators in monthly HMIS reports	Hold meeting to identify SOA HMIS indicators and propose them accordingly for approval	X		X			166,042
		Train doctors and M&E officers in data analysis in order to utilize information from these indicators		X				952,000
	Implement electronic surgical, obstetric, and anaesthesia registers to all hospitals	Create a register for Monitoring and Evaluation in collaboration with the Surgical Society of Zambia and Zambia Association of Obstetricians and Gynaecologists relevant to their practice that includes Lancet surgical indicators. This should extend beyond 24 hours to include entire length of hospital stay (until patient discharge)	X					112,771
	Expand SmartCare to include surgical, obstetric, and anaesthesia care	Train medical professionals in the use of smart care to enter the data as they are seeing the patient and this information will then be linked to DHIS-2 and HMIS		X				914,500
	Computerize the surgery, obstetrics, and anaesthesia service provision	Procure and install computers at point of admission, out-patient department (OPD), in-patient department, theater recovery wards, critical care/ICUs/HDUs, and wards to facilitate entry of patient information	X					52,500,000
	Expand internet connectivity	Create a central ehub at MOH and provide broad-band wireless internet to hospitals for the interconnection of ehealth records (SmartCare)	X	X				14,400,000
Health Information Totals								69,045,313
b) Research								
To identify surgical, obstetric, and anaesthesia priority areas for research and encourage the writing of research proposals for funding and implementation of research activity	Build the research capacity and culture via research training programs	Focus efforts on finding funding opportunities for research	X	X	X	X	X	-
		Train research units in hospitals in proposal writing and conducting research		X		X		641,130
		Identification of research priorities	X					165,345
	Develop research proposals or methodologies aimed to measure or collect data to assess the outlined National Health Priorities	Update baseline assessments for indicators	X					-
		Expand Maternal Death Surveillance Response and Perinatal Death Surveillance Response systems to address national levels of perioperative deaths, similar to the UK National Confidential Enquiry of Perioperative Deaths (NCEPOD)	X					-
		Encourage research already conducted to be published in a peer-reviewed journal and/or presented for knowledge dissemination. First focus on local opportunities for publications, such as Medical Journal of Zambia or COSECSA Journal	X	X	X	X	X	-
Research Totals								806,475
c) Data Quality and Improvement								
Establish quality improvement (QI) processes in surgery, obstetrics, and anaesthesia in order to improve the quality of this service	Institutionalize QI processes at all levels of surgery, obstetrics, and anaesthesia services	Strengthen QI committees at every hospital.	X					-
		Establish a QI chair at each facility who is the champion of improvement and primarily responsible for oversight of all facility specific data and subsequent reports to other levels	X	X	X	X	X	-

Objective	Key Strategies	Indicators	Time Frame					Costs (ZMW)
			17	18	19	20	21	
4. Health Information and Research								
c) Data Quality and Improvement								
Establish quality improvement (QI) processes in surgery, obstetrics, and anaesthesia in order to improve the quality of this service	Expand data clerk numbers and scope of responsibilities	Create, recruit, and train data entry clerks at all hospital levels	X		X			1,756,200
		Train all data entry clerks specific to Lancet and other SOA indicators and the importance of data objectivity and quality improvement	X		X			-
	Strengthen DHIS-2 and HMIS data collection	Include Lancet, system performance indicators, and other SOA indicators into HMIS and DHIS-2	X					-
		Train all health professionals at first, second, and third level hospitals to use HMIS	X					-
		Encourage research from performance indicators	X	X	X	X	X	-
	Encourage the use of incident forms	Standardize incident forms, include check-boxes and require that incident forms are filled out by seon/obstetrician/anaesthetist (not just the nurse)	X					76,940
Data Quality and Improvement Totals							1,833,140	
Health Information and Research Total								71,684,928
5. Health Care Financing								
Improve funding levels	Establish a tracking mechanism for funding of surgical, obstetric, and anaesthesia services in order to achieve universal health coverage	Establish electronic accounting systems for all levels that are linked to ministry of health headquarters	X					3,750,000
		Conduct three-yearly surveys to establish the effectiveness of financing mechanisms supporting surgical obstetric and anaesthesia services	X			X		61,475
		Include patient interviews and cashier interviews along with system costs to determine true cost of surgical and anaesthesia services	X					-
	Establish budget lines for surgery, obstetrics, and anesthesia for district hospitals	Create recurrent departmental charges (RDCs) for district hospital as it is with secondary and tertiary hospitals	X	X	X	X	X	-
		Create budget lines for surgery, obstetrics, and anaesthesia at district level hospitals as it is currently being done for secondary and tertiary hospitals	X	X	X	X	X	-
	Improve funding for surgical, obstetric, and anaesthesia services	Lobby to increase the allocation to level 2 and 3 hospitals budget lines for surgery, obstetrics, and anaesthesia activities.	X	X	X	X	X	-
Health Care Financing Totals							3,811,475	

6. Leadership & Governance								
Provide exemplary leadership and good governance in the practice and delivery of surgical, obstetric, and anaesthesia services. Relevant personnel shall ensure efficiency, effectiveness, transparency, accountability, and equity in provision of services	Provide leadership at MOH, provincial, and district levels to coordinate the implementation of these services	Appoint National Surgical Coordinator	X					-
		Appoint National Obstetric Coordinator	X					-
		Appoint National Anaesthesia Coordinator	X					-
	Establish effective partner coordination mechanisms	To appoint the National Safe Surgery Obstetrics and Anaesthesia committee	X					-
		Have quarterly coordination meetings with partners to ensure appropriate care delivery and system harmonization (annual consultative meeting)	X	X	X	X	X	158,500
		Have monthly meetings of the subcommittee on surgical, obstetric, and anaesthesia of the service delivery technical working group	X	X	X	X	X	60,000
Leadership & Governance Totals								218,500

Total Cost Summary	
	Cost (ZMW)
Service Delivery	531,559,290
Human Resources	630,889,823
Medical Products and Infrastructure	1,875,173,997
a) Infrastructure	964,466,037
b) Equipment	643,300,057
c) Supplies	267,407,902
Health Information and Research	71,684,928
a) Health Information	69,045,313
b) Research	806,475
c) Data Quality and Improvement	1,833,140
Financing	3,811,475
Leadership and Governance	218,500

TOTAL COST (ZMW)**3,113,338,013**

Most Critical Areas		
		Cost (ZMW)
Service Delivery	Establish laparoscopic surgery at two teaching hospitals	100,000,000
	Establish pre-hospital emergency services that can provide safe and timely transport of patients to the appropriate level of care	240,000,000
Human Resources	Create training plans, and scale up training for each SOA cadre, including biomedical technicians/engineers, and identify the human resource areas that require training and send personnel for training (Find details of workforce needed and cost of training in annexes)	612,252,925
Infrastructure	Rehabilitate existing level 1 facilities to include adequate infrastructure and equipment to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 1 hospitals	450,156,269
	Rehabilitate existing level 2, 3 facilities and buildings to meet the standards (assuming 25% need no improvements, 25% need minor improvements, 25% need moderate improvements, 25% need major improvements)	514,309,767
	Strengthen systems for procurement of essential surgical, obstetric, and anaesthesia supplies, including implants, through framework contracts to ensure consistent access to affordable essential medical-surgical supplies and drugs, and cervical cancer screening supplies	250,000,000
	Procure appropriate imaging equipment to support diagnostic services at level 2 and 3 facilities	343,222,324
	Procure appropriate rehabilitative equipment for all level 1, 2, and 3 facilities	140,023,653
	Procure laboratory equipment to support diagnostic services per facility level	64,911,754
Health Information and Research	Procure and install computers at point of admission, out-patient department (OPD), in-patient department, theater recovery wards, critical care/ICUs/HDUs, and wards to facilitate entry of patient information	52,500,000
Most Critical Areas Total (ZMW)		2,767,376,694

6.0 MONITORING AND EVALUATION

Monitoring and evaluation of the implementation of the plan will be conducted through appropriate existing and new systems, procedures and mechanisms.

NSOASP Indicators

MoH and the sector partners will harmonise sector performance indicators and use these as the basis for monitoring and joint reviews. Indicators will include: sector performance benchmarks and triggers for sector budget support, output and process indicators to assess service delivery (quality, access, efficiency), and indicators of health status (impact).

Monitoring

MoH will be responsible for coordinating health sector monitoring and reviews. The QI/QA department will utilize routinely collected data—specific to surgery—to undergo continuous monitoring.

Evaluation

There will be annual evaluation retreats aimed to directly assess progress made towards surgical and anaesthesia systems strengthening. Stakeholders will jointly agree on the timing, terms of reference, and composition of these review mission.

7.0 ANNEXES

7.1 HUMAN RESOURCES

Recommended Establishment for Ideal Staffing Levels:

	Level 1 Hospital	Level 2 Hospital	Level 3 Hospital
Surgeons (total)			
General Surgery	2	10	5
Surgical Oncology	0	0	4
Paediatric Surgery	0	2	5
Head & Neck Surgery	0	2	5
Oral-Maxillofacial Surgery	0	2	5
Plastic Surgery	0	2	4
Cardiothoracic Surgery	0	0	4
Transplant Surgery	0	0	4
Vascular Surgery	0	0	4
Urology Surgery	0	2	5
Orthopaedic Surgery	2	2	5
Neurosurgery	0	1	5
ENT	0	2	5
Ophthalmology			
Anaesthesia Providers (total)			
Physician Anaesthetist	0	10	20
Intensivists			6
Clinical Officer Anaesthetist / Anaesthetic Officer	6	10	10
Obstetricians/Gynaecologists	1	2	10
Junior resident medical officers	0	20	50
Senior resident medical officers	5	20	0
Medical Licentiates	10	0	0
Radiology (total)			
Radiology Physician	0	1	5
Radiology Technician	2	6	12
Pathology			
Pathology Physician	0	1	5
Pathology Scientist			
Nursing			
Registered			
Theatre	8	16	30
Critical Care	12	20	40
Midwives			
Physiotherapy			

Physiotherapist			
Physiotherapist Technologist			
Biomedical Professionals			
Biomedical Technicians/Engineers			
Biomedical Scientists			
Laboratory Technicians			
Data Clerks			

Current Situation: Framework for Evaluation

POSITION	Baseline (total)	Total Need	Deficit
Surgeons (total)			
1 st level	0	336	336
2 nd level	18	1230	1212
3 rd level	79	820	741
Total	67 - above numbers are based upon services available due to individual surgeons providing both general and specialized care	2386	2319
General Surgery			
1 st level	0	168	168
2 nd level	16	840	824
3 rd level	34	420	386
Total	50	1428	1378
Surgical Oncology			
1 st level	0	0	0
2 nd level	0	0	0
3 rd level	0	32	32
Total	0	32	32
Paediatric Surgery			
1 st level	0	0	0
2 nd level	0	60	60
3 rd level	4	40	36
Total	4	100	96
Head & Neck Surgery			
1 st level	0	0	0
2 nd level	0	60	60
3 rd level	2	40	38
Total	2	100	98
Oral-Maxillofacial Surgery			
1 st level	0	0	0

2 nd level	0	60	60
3 rd level	1	40	39
Total	1	100	99
Plastic Surgery			
1 st level	0	0	0
2 nd level	0	60	60
3 rd level	0	32	32
Total	0	92	92
Cardiothoracic Surgery			
1 st level	0	0	0
2 nd level	0	0	0
3 rd level	3	32	29
Total	3	32	29
Transplant Surgery			
1 st level	0	0	0
2 nd level	0	0	0
3 rd level	1	32	31
Total	1	32	31
Vascular Surgery			
1 st level	0	0	0
2 nd level	0	0	0
3 rd level	0	32	32
Total	0	32	32
Urology Surgery			
1 st level	0	0	0
2 nd level	0	60	60
3 rd level	9	40	31
Total	9	100	91
Orthopaedic Surgery			
1 st level	0	168	168
2 nd level	2	60	58
3 rd level	23	40	17
Total	25	268	243
Neurosurgery			
1 st level	0	0	0
2 nd level	0	30	30
3 rd level	2	40	38
Total	2	70	68
Ophthalmology			
1 st level			
2 nd level			
3 rd level			
Total			
Anaesthesia Providers (total)			
1 st level	49	504	455
2 nd level	45	600	555

3 rd level	33	340 Includes need for subspecialty physician anesthesia providers	307
Total	127	1444	1317
Physician Anaesthetist			
1 st level	0	0	0
2 nd level	7	300	293
3 rd level	15	160	145
Total	22	460	438
Clinical Officer Anaesthetist / Anaesthetic Officer			
1 st level	49	504	455
2 nd level	38	300	262
3 rd level	18	180	162
Total	105	984	879
Intensivists			
1 st level	0	0	0
2 nd level	0	0	0
3 rd level	0	48	48
Total	0	48	48
Obstetricians/Gynaecologists			
1 st level	Unknown	84	
2 nd level	Unknown	60	
3 rd level	Unknown	80	
Total	36	224	188
Medical Licentiates			
1 st level	Unknown	840	
2 nd level	Unknown	0	
3 rd level	Unknown	0	
Total	170	840	670
Radiology			
Radiology Physician			
1 st level		0	
2 nd level		30	
3 rd level		40	
Total		70	
Radiology Technician			
1 st level		168	
2 nd level		180	
3 rd level		96	
Total		444	
Pathology			
Pathology Physician			

1 st level		0	
2 nd level		30	
3 rd level		40	
Total		70	
Pathology Scientist			
1 st level			
2 nd level			
3 rd level			
Total			
Nursing			
Registered			
1 st level			
2 nd level			
3 rd level			
Total			
Theatre			
1 st level	51	672	621
2 nd level	57	480	423
3 rd level	82	900	818
Total	190	2052	1862
Critical Care			
1 st level		1008	
2 nd level		600	
3 rd level		320	
Total		1928	
Midwives			
1 st level			
2 nd level			
3 rd level			
Total			
Anaesthetists			
1 st level			
2 nd level			
3 rd level			
Total			
Physiotherapy			
Physiotherapist			
1 st level			
2 nd level			
3 rd level			
Total			
Physiotherapist Technologist			
1 st level			
2 nd level			
3 rd level			
Total			

Biomedical Professionals			
Biomedical Technicians/Engineers			
1 st level			
2 nd level			
3 rd level			
Total			
Biomedical Scientist			
1 st level			
2 nd level			
3 rd level			
Total			
Laboratory Technologist			
1 st level			
2 nd level			
3 rd level			
Total			
Data Clerks			
1 st level			
2 nd level			
3 rd level			
Total			

Training of Providers:

Type of Provider	Period of Training (years)	Type of Program	Cost of Training (total K/year)	Number of 2015 Graduates
Surgeons				
General Surgery	4-5 years	Masters/Fellowship	45,000	6 persons
Surgical Oncology	2-4 years	Masters/Fellowship	~200,000	0 persons
Paediatric Surgery	4-5 years ¹	Masters/Fellowship		0 persons
Head & Neck Surgery	5 years (?)	Masters/Fellowship		0 persons
Oral-Maxillofacial Surgery	2 years (?)	Masters/Fellowship		0 persons
Plastic Surgery	5 years ¹	Masters/Fellowship		0 persons
Cardiothoracic Surgery	5 years ¹	Masters/Fellowship		0 persons
Transplant Surgery	???	Masters/Fellowship		0 persons
Vascular Surgery	???	Masters/Fellowship		0 persons
Urology Surgery	4-5 years ¹	Masters/Fellowship		0 persons

Orthopaedic Surgery	4-5 years ¹	Masters/Fellowship		5 persons
Neurosurgery	5 years ¹	Masters/Fellowship		0 persons
Ophthalmology	4 years ¹	Masters/Fellowship		0 persons
Anaesthesia Providers				
Physician Anaesthetist	6 years	Masters	45,000	3 persons
Clinical Officer Anaesthetist / Anaesthetic Officer*	2 years ²	Advanced Diploma	25,000	7 persons
Anaesthetic Officer (specialization)*	4 years ²	Degree		N/A
Cardiac Anaesthetists				
Obstetric anaesthetists				
Paediatric anaesthetists				
Pain management specialists				
Intensivists				0 persons
Obstetricians/Gynaecologists	4 years	Masters	45,000	4 persons
Medical Licentiates	4 years	Degree	32,890	28 persons
Radiology				
Radiology Physician	???	Degree/Fellowship		0 persons
Radiology Technologist	3 years	Diploma		
Radiographer	3 years or 4 years ²	Degree		14 persons
Pathology				
Pathology Physician	4 years	Masters	45,000	2 persons
Pathology Scientist	2 years	Masters	45,000	
Nursing				
Registered	3 years	Diploma		1347 persons
Registered	4 years ¹ or 3 years ²	Degree		
Theatre	1 year ²	Certificate	15,750	30 persons
Critical Care	1 year	Advanced Diploma	15,750	
Midwives	1 year or 3 years ¹	Certificate	11,200	

Physiotherapy				
Physiotherapist	3 years or 5 years ¹	Degree	45,000	
Physiotherapist Technologist	3 years	Diploma		
Biomedical Professional				
Biomedical Technicians/Engineers	3 years ²	Diploma	33,505.00 (in Zambia) 136,000.00 (Internationally)	
Biomedical Scientist	3 years or 5 years ¹	Degree	45,000	
Laboratory Technologist	3 years	Diploma		
Data Clerks	On the job	Grade 12/Certificate		

¹ Direct-entry program

² In-service training

* As of May 2016, these programs have been approved but not yet started training providers

The following cadres do not yet have any training programs offered in-country: surgical oncology, head and neck surgery, oral-maxillofacial surgery, plastic surgery, cardiothoracic surgery, transplant surgery, vascular surgery, neurosurgery, radiology, or any subspecialties of anaesthesia. These costs for training are variable. All other cadres can receive training in Zambia at one or more sites.

In-country costs above include direct fees and allowances but do not include any equipment/material or administrative/program costs. As a result, the true amount required to train individuals is beyond that listed and remains currently unknown.

3.2 INFRASTRUCTURE EQUIPMENT AND SUPPLIES

Tracer list for medications and supplies

No	Description of Item	Dosage Form	Strength	Unit
1	Insulin, soluble	Injection	100 IU/ML	Each
2	Insulin, lente	Injection	100 IU/ML	Each
3	Examination Gloves Medium	Disposable Latex	Non-sterile	100
4	Examination Gloves Large	Disposable latex	Non-sterile	100
5	Surgical Gloves, size 7.5		Sterile	50
6	Surgical Gloves, size 8		Sterile	50
7	Needle	Disposable	21G	100
8	Needle	Disposable	23G	100
9	Syringe	Disposable	5ML	100
10	Paracetamol	Tablets	2 mg	1000
11	Oxytocin	Injection	10 IU/ML	Each
12	Sulphadoxine + Pyrimethamine	Tablets	500/25MG	1000
13	Ketamine	Injection	50MG/ML	Each
14	Pethidine	Injection	50MG/ML	Each
15	Gentamicin	Injection	40MG/ML	Each
16	Halothane	Inhalation	250ML	Bottle
17	Lidocaine Dental Cartridge			Each
18	Hydrocortisone	Injection	100MG	Each
19	Diazepam	Tablets	5MG	100
20	Diazepam	Injection	5MG/ML	Each
21	Amoxicillin	Tablets	250MG	1000
22	Ciprofloxacin	Tablets	250MG	100
23	Phenobarbitone	Tablets	30mg	1000
24	Pancuronium	Injection	4MG/2ML	Each
25	Aminophylline	Injection	25MG/ML	Each
26	Dextrose	Injection	50%	Each
27	Bandage	P.O.P		Roll
28	Solution Giving Set	Disposable		Each

3.3.1 HUMAN RESOURCES NUMBERS AND TRAINING

Human Resources Needs and Costing

Training over the next 5 years focusing on district hospital	Current	3 year goal	5 year goal	Total Need	Length of Training (Years)	Cost per provider per year	Total Cost of Training
General surgeons	97		87	184	4	45100	33,193,600.00
OBGYN	46		132	178	4	45100	32,111,200.00
Physician Anaesthetist	13		61	74	4	45100	13,349,600.00
Midwife	3008		3660	3660	1	28505	104,328,300.00
Cardiac nurse	1	20	20	40	1	325762.5	13,030,500.00
Intensive care nurse	115	120	130	250	1	325762.5	81,440,625.00
Clinical Officer	105		708	708	2	35000	49,560,000.00
Biomedical Equipment Technician	60		645	645	3	33505	64,832,175.00
Paramedics	0	20	80	100	1	126000	12,600,000.00
Surgical Oncology	0		6	6	4	325762.5	7,818,300.00
Pediatric Surgery	2		6	6	4	45100	1,082,400.00
Plastic Surgery	0		6	6	4	325762.5	7,818,300.00
Cardiac Surgery	0		3	3	6	325762.5	5,863,725.00
Transplant	1		3	3	4	325762.5	3,909,150.00
Vascular	0		3	3	4	325762.5	3,909,150.00
Neurosurgery	2	5	12	17	4	325762.5	22,151,850.00
Orthopedic	15		38	38	4	45100	6,855,200.00
ENT	1		6	6	4	325762.5	7,818,300.00
Urology	8	21	42	63	4	45100	11,365,200.00
Ophthalmology	28		43	43	4	45100	7,757,200.00
Radiology	7		48	48	4	325762.5	62,546,400.00
Pathology	5		10	10	4	45100	1,804,000.00
Cardiac anesthesia	0	4	8	12	4	325762.5	15,636,600.00
Pediatric anesthesia	1	4	9	13	4	325762.5	16,939,650.00
Intensive care physicians	0	10	20	30	4	325762.5	39,091,500.00
TOTAL COST OF WORKFORCE TRAINING							612,252,925.00

Full Costing Details

SERVICE DELIVERY

Train providers in all 87 level 1 facilities on:

- 1) Use of WHO Checklist/Lifebox training
- 2) SafeObs
- 3) SafePeds

(These 3 courses to be combined in a single training, 20 participants per training, 20 district facilities per year)

Input	Qty	Unit Cost	Days	Frequency	Total
DSA	5.00	800.00	7.00	100.00	2,800,000.00
No venue - will use on-site conference room					
Fuel - year 1: Northwest, Luapula	1,000.00	1.67	2.00	20.00	66,800.00
Fuel - year 2: Muchinga, Northern	1,000.00	1.67	2.00	20.00	66,800.00
Fuel - year 3: Eastern, Southern	600.00	1.67	2.00	20.00	40,080.00
Fuel - year 4: Lusaka, Western	500.00	1.67	2.00	20.00	33,400.00
Fuel - year 5: Central, Copperbelt	500.00	1.67	2.00	20.00	33,400.00
Lunch & refreshments	20.00	50.00	5.00	100.00	500,000.00
Printing, stationery	1.00	4,500.00	1.00	100.00	450,000.00
Total					3,990,480.00

Train providers in all 87 level 1 facilities on:

- Trauma course

(20 participants per training, 30 facilities per year)

Input	Qty	Unit Cost	Days	Frequency	Total
DSA	5.00	800.00	7.00	150.00	4,200,000.00
No venue - will use on-site conference room					
Fuel - year 1: 3 district hospitals per province	1,000.00	1.67	2.00	30.00	100,200.00
Fuel - year 2: 3 district hospitals per province	1,000.00	1.67	2.00	30.00	100,200.00
Fuel - year 3: 3 district hospitals per province	600.00	1.67	2.00	30.00	60,120.00
Fuel - year 4: 3 district hospitals per province	500.00	1.67	2.00	30.00	50,100.00
Fuel - year 5: 3 district hospitals per province	500.00	1.67	2.00	30.00	50,100.00
Lunch & refreshments	20.00	50.00	5.00	150.00	750,000.00
Printing, stationery	1.00	4,500.00	1.00	150.00	675,000.00
Total					5,985,720.00

Establish pre-hospital emergency services that can provide safe and timely transport of patients to the appropriate level of care

Input	Qty	Unit Cost	Days	Frequency	Total
ambulances	60.00	800,000.00	1.00	5.00	240,000,000.00
Total					240,000,000.00

Train non-physician providers in:

1) Recognition of surgical oncologic conditions

2) Treatment of paediatric surgical emergencies and recognition of children with neonatal conditions, congenital malformations, and burns

(These 2 interventions to be combined in a single training, 20 participants per training, 10 facilities per year)

Input	Qty	Unit Cost	Days	Frequency	Total
Consultancy	5.00	2,000.00	1.00	30.00	300,000.00
DSA for participants	20.00	800.00	5.00	30.00	2,400,000.00
Venue	1.00	1,000.00	5.00	30.00	150,000.00
Fuel - year 1	1,000.00	1.67	2.00	10.00	33,400.00
Fuel - year 2	1,000.00	1.67	2.00	10.00	33,400.00
Fuel - year 3	600.00	1.67	2.00	10.00	20,040.00
Fuel - year 4	500.00	1.67	2.00	10.00	16,700.00
Fuel - year 5	500.00	1.67	2.00	10.00	16,700.00
Lunch & refreshments	20.00	50.00	5.00	30.00	150,000.00
Total					3,120,240.00

Strengthen the following programs:

- neonatal screening program for congenital heart disease

- rheumatic heart disease prevention program

Input	Qty	Unit Cost	Days	Frequency	Total
Venue	1.00	1,000.00	5.00	10.00	50,000.00
Fuel - year 2	1,000.00	1.67	2.00	5.00	16,700.00
Fuel - year 4	500.00	1.67	2.00	5.00	8,350.00
Lunch & refreshments	20.00	50.00	5.00	10.00	50,000.00
Total					125,050.00

Provide comprehensive burn and wound care services, including the adoption of newer methods of wound care such as negative pressure wound therapy or skin grafting in 50% of districts.

Input	Qty	Unit Cost	Days	Frequency	Total
wound care supplies	50.00	60,000.00	1.00	1.00	3,000,000.00
Total					3,000,000.00

Community sensitization activities around burns prevention (annual)

- media engagement

- posters in under 5 clinic

Input	Qty	Unit Cost	Days	Frequency	Total
Media	1.00	0.00	3.00	1.00	0.00
Design and print posters	174.00	5.00	1.00	1.00	870.00
Total					0.00

Include essential urologic care in the basic surgery training package to allow level one surgeons to perform essential urologic care including relief of urinary obstruction with catheterization or suprapubic cystostomy

Input	Qty	Unit Cost	Days	Frequency	Total
Administrative - does not require costing					0.00
Total					0.00

Scale up urinary schistosomiasis screening and treatment programs					
Input	Qty	Unit Cost	Days	Frequency	Total
Program already exists and is costed in another strategic plan					0.00
Total					0.00

Scale up prostate cancer screening programs					
Input	Qty	Unit Cost	Days	Frequency	Total
Program already exists and is costed in another strategic plan					0.00
Total					0.00

Include essential orthopaedic care in the basic surgery training package to allow level one surgeons to manage acute and chronic osteomyelitis, perform arthrotomy for septic joints, and provide non-operative management of club feet					
Input	Qty	Unit Cost	Days	Frequency	Total
Administrative - does not require costing					0.00
Total					0.00

Include essential OBS/GYN care in the basic surgery training package to allow level one surgeons to provide emergency hysterectomy and recognize and refer gynecologic oncologic conditions					
Input	Qty	Unit Cost	Days	Frequency	Total
Administrative - does not require costing					0.00
Total					0.00

Provide OBS/GYN teams with: - EMONC training (1 per province per year) - focused antenatal care training					
Input	Qty	Unit Cost	Days	Frequency	Total
DSA for trainers	6.00	800.00	7.00	50.00	1,680,000.00
Venue	1.00	1,000.00	15.00	50.00	750,000.00
Allowances	20.00	800.00	15.00	50.00	12,000,000.00
Fuel - year 1: Northwest, Luapula	1,000.00	1.67	15.00	10.00	250,500.00
Fuel - year 2: Muchinga, Northern	1,000.00	1.67	15.00	10.00	250,500.00
Fuel - year 3: Eastern, Southern	600.00	1.67	15.00	10.00	150,300.00
Fuel - year 4: Lusaka, Western	500.00	1.67	15.00	10.00	125,250.00
Fuel - year 5: Central, Copperbelt	500.00	1.67	15.00	10.00	125,250.00
Lunch & refreshments	20.00	50.00	15.00	50.00	750,000.00
Total					16,081,800.00

Strengthen and support cervical cancer screening programs

Input	Qty	Unit Cost	Days	Frequency	Total
Consumables	140.00	56,417.88			7,898,502.55
Total					7,898,502.55

Provide anesthetic providers with training on:

- Regional anaesthesia

- Acute and chronic pain management

(These 2 trainings to be combined, 20 participants per training, 2 provincial hospitals per year)

Input	Qty	Unit Cost	Days	Frequency	Total
DSA for trainers	5.00	800.00	7.00	10.00	280,000.00
DSA for trainees	20.00	800.00	5.00	10.00	800,000.00
Venue	1.00	1,000.00	5.00	10.00	50,000.00
Lunch & refreshments	20.00	50.00	5.00	10.00	50,000.00
Printing, stationery	1.00	4,500.00	1.00	10.00	45,000.00
Total					1,225,000.00

Mentorship visits for level 2 providers

- Surgical oncology care

(10 mentors will divide into 5 teams, each team will visit 2 provincial hospitals per year)

Input	Qty	Unit Cost	Days	Frequency	Total
DSA for mentors	2.00	800.00	5.00	50.00	400,000.00
Fuel	1,000.00	1.67	2.00	50.00	167,000.00
Lunch & refreshments	20.00	50.00	5.00	50.00	250,000.00
Total					817,000.00

Mentorship for level 2 providers

- Paediatric care

(10 mentors will divide into 5 teams, each team will visit 2 provincial hospitals per year)

Input	Qty	Unit Cost	Days	Frequency	Total
DSA for mentors	2.00	800.00	5.00	50.00	400,000.00
Fuel	1,000.00	1.67	2.00	50.00	167,000.00
Lunch & refreshments	20.00	50.00	5.00	50.00	250,000.00
Total					817,000.00

Establish comprehensive emergency care/trauma centres

Input	Qty	Unit Cost	Days	Frequency	Total
Construction of Units.	5.00	2,500,000.00	180.00	1.00	12,500,000.00
Procurement of Equipment	5.00	2,000,000.00	180.00	1.00	10,000,000.00
User Training	100.00	2,000.00	5.00		100,000.00
Total					22,600,000.00

Establish urology and orthopaedic services at all level 2 hospitals and maxillofacial services at all level 3 hospitals

Input	Qty	Unit Cost	Days	Frequency	Total
Equipment procurement (operating sets)	28.00	125,000.00	1.00	1.00	3,500,000.00
Total					3,500,000.00

Establish plastic and reconstructive services at Ndola Central Hospital and University Teaching Hospital

Input	Qty	Unit Cost	Days	Frequency	Total
Equipment procurement	2.00	3,000,000.00		1.00	6,000,000.00
Theatre renovations	2.00	1,000,000.00		1.00	2,000,000.00
Wound care consumables	2.00	1,500,000.00		1.00	3,000,000.00
Total					11,000,000.00

Establish a spinal surgery service at Ndola Central Hospital and strengthen the spinal surgery service at University Teaching Hospital					
Input	Qty	Unit Cost	Days	Frequency	Total
Equipment procurement	2.00	3,000,000.00	1.00	1.00	6,000,000.00
Theatre renovations	2.00	1,000,000.00	1.00	1.00	2,000,000.00
Total					8,000,000.00

Establish laparoscopic surgery at two teaching hospitals					
Input	Qty	Unit Cost	Days	Frequency	Total
Laparoscopy equipment	1.00	50,000,000.00	1.00	2.00	100,000,000.00
Total					100,000,000.00

Equipment to support cardiac centre in Lusaka					
Input	Qty	Unit Cost	Days	Frequency	Total
Equipment to support cardiac centre in Lusaka	1.00	50,000,000.00	1.00	1.00	50,000,000.00
Total					50,000,000.00

Establish urogynaecologic and gynaecologic services at tertiary hospitals					
Input	Qty	Unit Cost	Days	Frequency	Total
Costs of urogynaecologic and gynaecologic services scale up	12.00	125,000.00	1.00	5.00	7,500,000.00
Total					7,500,000.00

Implement mentorship tools, including: - Basic care of gynaecologic oncological conditions (5 days per hospital, 2 times a year in each province) - Obstetric fistula care					
Input	Qty	Unit Cost	Days	Frequency	Total
DSA for facilitators	2.00	800.00	6.00	100.00	960,000.00
Fuel - year 1	700.00	1.67	2.00	100.00	233,800.00
Lunch & refreshments	20.00	50.00	5.00	100.00	500,000.00
Total					1,693,800.00

Fund an assisted fertility centre at Ndola Central Hospital and University Teaching Hospital					
Input	Qty	Unit Cost	Days	Frequency	Total
Clinical equipment	2.00	5,048,262.00	1.00	1.00	10,096,524.00
Laboratory equipment	2.00	4,061,250.00	1.00	1.00	8,122,500.00

					0
Miscellaneous equipment (power generator, computer, fridge)	2.00	1,926,600.00	1.00	1.00	3,853,200.00
Other: centrifuge, liquid nitrogen	2.00	114,285.00	1.00	1.00	228,570.00
Disposable consumables	2.00	1,230,060.00	1.00	1.00	2,460,120.00
Disposable lab equipment	2.00	992,028.00	1.00	1.00	1,984,056.00
Imaging equipment	2.00	12,000,000.00			24,000,000.00
Total					50,744,970.00

Train level 2 and 3 anaesthesia providers in pain management on labour wards (2 hospitals per year)					
Input	Qty	Unit Cost	Days	Frequency	Total
DSA trainers	5.00	800.00	3.00	10.00	120,000.00
venue	1.00	1,000.00	2.00	10.00	20,000.00
DSA	20.00	800.00	2.00	10.00	320,000.00
Lunch	20.00	50.00	2.00	10.00	20,000.00
Total					480,000.00

Development of admission and treatment protocols in all ICUs (one time)

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	1.00	5,000.00
DSA	20.00	800.00	5.00	1.00	80,000.00
Stationery	20.00	59.00	1.00	1.00	1,180.00
Lunch/tea breaks	20.00	50.00	5.00	1.00	5,000.00
Total					91,180.00

Implement admission and treatment protocols in all ICUs (10 provincial hospitals, 5 per year)

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	10.00	50,000.00
DSA	5.00	800.00	5.00	10.00	200,000.00
Tea breaks	20.00	75.00	5.00	1.00	7,500.00
Fuel	1,000.00	1.67	2.00	10.00	33,400.00
Total					257,500.00

Review admission and treatment protocols in all ICUs (year 3 and 5)

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	2.00	10,000.00
DSA	2.00	800.00	5.00	2.00	16,000.00
Lunch/tea breaks	20.00	50.00	5.00	2.00	10,000.00
Stationery	20.00	59.00	1.00	2.00	2,360.00
Total					38,360.00

Train nurses and doctors in the provision of out-of-theatre anaesthesia (UTH, Ndola - every other year)

Input	Qty	Unit Cost	Days	Frequency	Total
DSA for Trainers	5.00	800.00	5.00	5.00	100,000.00
Conference	1.00	1,000.00	5.00	5.00	25,000.00

DSA for trainees	20.00	800.00	5.00	5.00	400,000.00
Fuel (contingency)	700.00	1.67	2.00	5.00	11,690.00
Stationery	20.00	59.00	5.00	5.00	29,500.00
Tea breaks	20.00	50.00	5.00	5.00	25,000.00
Total					491,190.00

Conduct specialist outreach activities (once every 2 months per province)

Input	Qty	Unit Cost	Days	Frequency	Total
Costs are covered In Mobile Health Services Plan					0.00
Total					0.00

Conduct district mobile outreach activities (1.5 visits per month per province)

Input	Qty	Unit Cost	Days	Frequency	Total
Costs are covered In Mobile Health Services Plan					0.00
Total					0.00

HUMAN RESOURCES

Review the costed establishment for first, second, and third level hospitals that will enable provision of the surgical, obstetric, and anaesthesia services at these hospitals

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	10.00	1.00	10,000.00
Allowances	20.00	800.00	10.00	1.00	160,000.00
Fuel (contingency)	6,000.00	1.67	1.00	1.00	10,020.00
Stationery	20.00	59.00	10.00	1.00	11,800.00
Driver	3.00	450.00	10.00	1.00	13,500.00
Total					205,320.00

Lobby for treasury authority to be granted to fund establishment of SOA positions

Input	Qty	Unit Cost	Days	Frequency	Total
No associated costs					0.00
Total					0.00

Recruit and place SOA personnel (Level 1: medical licentiate/general practitioner, obstetrician, general surgeon, midwife, theatre nurse, anaesthetic provider; Level 2: surgeon, obstetrician, doctor anaesthetist/anaesthetic provider, midwife, clinical care nurse, theatre nurse; Level 3: general surgeon, specialist surgeon, doctor anaesthetist, obstetrician, midwife, theatre nurse, critical care nurse), in the appropriate positions

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required - can be done within MoH					
Total					0.00

Conduct a staff audit every other year using staff assignment and return logs to identify the available human resources

Input	Qty	Unit Cost	Days	Frequency	Total
Will be done at MoH - no major costs					
Total					0.00

Redistribute the human resources to needy areas

Input	Qty	Unit Cost	Days	Frequency	Total
No major cost - done in office					0.00
Total					0.00

Design mechanisms to ensure SOA providers with specialized skills are placed in the appropriate salary scales

Input	Qty	Unit Cost	Days	Frequency	Total
Incentivization funding will come from the Ministry of Finance					
Total					0.00

Define job descriptions and support the development of degree-level theatre nursing, midwifery, anaesthetic officer, and critical care nurse training programs

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	3.00	1.00	3,000.00
Allowances	20.00	800.00	3.00	1.00	48,000.00
Fuel (contingency)	6,000.00	1.67	1.00	1.00	10,020.00
Stationery	20.00	59.00	1.00	1.00	1,180.00
Total					62,200.00

Engage the universities and professional societies, CANECSA, COSECSA, and GNC to ensure that they help in redesigning curricula so they are able to fast track training of SOA providers

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	3.00	1.00	3,000.00
Allowances	20.00	800.00	3.00	1.00	48,000.00
Fuel (contingency)	6,000.00	1.67	1.00	1.00	10,020.00
Stationery	20.00	59.00	1.00	1.00	1,180.00
Total					62,200.00

Design a database that interfaces with regulatory bodies (HPCZ and GNC) to enable real time data retrieval of human resource availability in public, private, and the diaspora

Input	Qty	Unit Cost	Days	Frequency	Total
DSA for Team conference to review consultant's work and create database training	10.00	800.00	7.00	1.00	56,000.00
Fuel (contingency)	3,000.00	1.67	1.00	1.00	5,010.00
Stationery	10.00	59.00	1.00	1.00	590.00
Total					61,600.00

Create training plans, and scale up training for each SOA cadre, including biomedical technicians/engineers, and identify the human resource areas that require training and send personnel for training (Find details of workforce needed and cost of training in appendix)

Input	Qty	Unit Cost	Days	Frequency	Total
See "Human Resources" Sheet for costing details					0.00
Total					612,252,925.00

Identify existing task-sharing practices and develop reporting system to enhance communications to the appropriate level

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	4.00	4.00	16,000.00
Allowances	10.00	800.00	4.00	4.00	128,000.00
Fuel (contingency)	3,000.00	1.67	1.00	4.00	20,040.00

Stationery	10.00	59.00	4.00	4.00	9,440.00
Total					173,480.00

Develop guidelines for each task-sharing cadre

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	7.00	1.00	7,000.00
Allowances	15.00	800.00	7.00	1.00	84,000.00
Fuel (contingency)	4,500.00	1.67	1.00	1.00	7,515.00
Stationery	15.00	59.00	7.00	1.00	6,195.00
Lunch					0.00
Total					104,710.00

Develop and implement a short-term training program for 20 radiographers per year to provide point of care reads, to be expanded to their pre-service training in the future. Expand comparable training to pathology or histology services

Input	Qty	Unit Cost	Days	Frequency	Total
Laboratory technologist DSA	87.00	600.00	28.00	5.00	7,308,000.00
Radiographer DSA	20.00	600.00	28.00	5.00	1,680,000.00
Stationery	107.00	59.00	28.00	5.00	883,820.00
Training/facilitation costs	107.00	3,000.00	1.00	5.00	1,605,000.00
Total					11,476,820.00

Conduct comparative outcome assessments for POMR between task-sharers and physician providers

Input	Qty	Unit Cost	Days	Frequency	Total
To be done using HMIS, should not require costing					0.00
Total					0.00

Work in collaboration with the College of Surgeons of East, Central and Southern Africa (COSECSA), the College Of Anaesthesiologists of East Central and Southern Africa (CANECSA), and other universities and nurse training institutions to develop CPD courses

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	2.00	1.00	2,000.00
Allowances	12.00	800.00	2.00	1.00	19,200.00
Stationery	12.00	59.00	2.00	1.00	1,416.00
Total					22,616.00

Provide CPD courses on the virtual platform

Input	Qty	Unit Cost	Days	Frequency	Total
Consultancy	1.00	2,000.00	45.00	1.00	90,000.00
DSA for Team conference to review consultant's work and create database training	10.00	800.00	7.00	1.00	56,000.00
Fuel (contingency)	3,000.00	1.67	1.00	1.00	5,010.00
Stationery	10.00	59.00	7.00	1.00	4,130.00
Conference	1.00	1,000.00	7.00	1.00	7,000.00
Total					162,140.00

Link CPD courses to regulatory bodies so as to automatically award CPD points upon completion of that CPD

Input	Qty	Unit Cost	Days	Frequency	Total
Consultancy					0.00
DSA for Team conference to review consultant's work and create database training	10.00	800.00	7.00	1.00	56,000.00
Fuel (contingency)	3,000.00	1.67	1.00	1.00	5,010.00
Stationery	10.00	59.00	7.00	1.00	4,130.00
Total					65,140.00

Training of Trainers (ToT) in Advanced Life Support training in South Africa

Input	Qty	Unit Cost	Days	Frequency	Total
Travel	6.00	10,000.00	1.00	2.00	120,000.00
DSA	6.00	4,104.00	4.00	2.00	196,992.00
Program costs (in SA)	6.00	2,000.00	1.00	1.00	12,000.00
Learner's training (in SA)	6.00	2,000.00	1.00	1.00	12,000.00
Total					340,992.00

Advanced Life Support Training by ToT trainers in Zambia

Input	Qty	Unit Cost	Days	Frequency	Total
Design course for Zambian context (cost for workshop and training materials)	1.00	2,000,000.00	1.00	1.00	2,000,000.00
DSA for trainers	6.00	800.00	5.00	10.00	240,000.00
DSA for trainees	20.00	800.00	3.00	10.00	480,000.00
Venue	1.00	1,000.00	3.00	10.00	30,000.00
Fuel - year 2	1,000.00	1.67	2.00	2.00	6,680.00
Fuel - year 3	1,000.00	1.67	2.00	2.00	6,680.00
Fuel - year 4	600.00	1.67	2.00	2.00	4,008.00
Fuel - year 5	500.00	1.67	2.00	2.00	3,340.00
Lunch & refreshments	20.00	50.00	3.00	10.00	30,000.00
Printing, stationery	1.00	4,500.00	1.00	10.00	45,000.00
Total					2,756,680.00

International training in laparoscopy and in vitro fertilization

Input	Qty	Unit Cost	Days	Frequency	Total
Travel	6.00	20,000.00	1.00	1.00	120,000.00
Accommodations	6.00	5,000.00	1.00	1.00	30,000.00
Allowances	6.00	3,650.00	30.00	1.00	657,000.00
Program costs	6.00	90,000.00	1.00	1.00	540,000.00
Total					1,347,000.00

International laparoscopy and IVF trainers provide continued training for Zambian surgeons/obstetricians

Input	Qty	Unit Cost	Days	Frequency	Total
Travel	2.00	20,000.00	1.00	4.00	160,000.00
Accommodations	2.00	5,000.00	1.00	4.00	40,000.00
Allowances	2.00	3,650.00	30.00	4.00	876,000.00
Program costs	2.00	90,000.00	1.00	4.00	720,000.00
Total					1,796,000.00

INFRASTRUCTURE

a) Infrastructure

Hold a coordination workshop with infrastructure unit to create standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 1 hospital (2 workshops in year 1 and a midterm evaluation in year 3)					
Input	Qty	Unit Cost	Days	Frequency	Total
Standard Level 1 list already created					
Total					0.00

Maintenance teams will conduct annual maintenance inspections of all level 1 hospitals (Quarter 3)					
Input	Qty	Unit Cost	Days	Frequency	Total
Will be performed by provincial teams - no additional costing necessary					
Total					0.00

Rehabilitate existing level 1 facilities to include adequate infrastructure and equipment to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 1 hospitals

Input	Qty	Unit Cost	Days	# of Hospitals	Total
Cost to create Surgical/Obstetric Operating Theatre	2.00	1,129,859.00	1.00	34.00	76,830,412.00
Cost to upgrade Surgical/Obstetric Operating Theatre	2.00	677,915.40	1.00	50.00	67,791,540.00
Cost to create 15 bed HDU	1.00	2,300,000.00	1.00	84.00	193,200,000.00
Anesthesia machine, complete	2.00	250,000.00	1.00	84.00	42,000,000.00
Ventilator, adult 1 set per room	2.00	127,400.00	1.00	84.00	21,403,200.00
Pulse oximeter, 1 per room	2.00	2,519.00	1.00	84.00	423,192.00
Operation table, general 1 set per room	2.00	31,924.00	1.00	84.00	5,363,232.00
Operation light, ceiling mounted, double head 1 set per room	2.00	70,394.00	1.00	84.00	11,826,192.00
Electrosurgical unit, general purpose 1 set per room	2.00	8,654.00	1.00	84.00	1,453,872.00
Patient monitor with ECG, SpO2, NIBP, Temp 1 set per room	2.00	8,045.00	1.00	84.00	1,351,560.00
Suction unit, mobile, 2x3litre bottle 1 set per room	2.00	1,339.00	1.00	84.00	224,952.00
Resuscitator, pulmonary, manual, adult, complete 1 set per room	2.00	58,800.00	1.00	84.00	9,878,400.00
Infusion pump 1 set per room	2.00	13,781.25	1.00	84.00	2,315,250.00
Blood warmer 1 set per room	2.00	6,501.00	1.00	84.00	1,092,168.00
Patient warmer 1 set per room	2.00	10,584.00	1.00	84.00	1,778,112.00
Laryngoscope set, complete 1 set per room	2.00	284.20	1.00	84.00	47,745.60
Thermometer, electronic 1 set per room	2.00	196.00	1.00	84.00	32,928.00
Tourniquet, pneumatic 1 set per room	2.00	15,386.00	1.00	84.00	2,584,848.00
Instruments table 1 set per room	2.00	37.00	1.00	84.00	6,216.00
Bowl, wash, on stand, single, 4 litre 1 set per room 10	2.00	2,626.40	1.00	84.00	441,235.20
Cart, instrument, Mayo 1 set per room	2.00	37.00	1.00	84.00	6,216.00
Infusion stand, 5 legs with caster 1 set per room	2.00	1,033.80	1.00	84.00	173,678.74
Mayo table 1 set per room	2.00	439.00	1.00	84.00	73,752.00
Kick bucket 1 set per room	2.00	325.00	1.00	84.00	54,600.00
Scale for swab weighing 1 set per room	2.00	980.00	1.00	84.00	164,640.00
Stethoscope 1 set per room	2.00	637.00	1.00	84.00	107,016.00
Stool, surgeon's, adjustable, antistatic, cushion 1 set per room	2.00	41.00	1.00	84.00	6,888.00

Instruments set for general surgery 2 sets per room	4.00	17,199.00	1.00	84.00	5,778,864.00
Cesarean instrument set	4.00	11,147.50	1.00	84.00	3,745,560.00
ECG Machine, 12 lead on mobile trolley	1.00	88,812.50	1.00	29.00	2,575,562.50
					450,156,269.54

Hold a coordination workshop with infrastructure group to create standard infrastructure to provide safe and timely essential and emergency surgical, obstetric, and anaesthesia care at all level 2, 3 hospitals (2 workshops in year 1 and a midterm evaluation in year 3)

Input	Qty	Unit Cost	Days	Frequency	Total
Standard list already created for level 2, 3					
Total					0.00

Maintenance teams will conduct annual maintenance inspections of all level 2, 3 hospitals (In quarter 3 every year)

Input	Qty	Unit Cost	Days	Frequency	Total
Will be performed by provincial teams - no additional costing necessary					0.00
Total					0.00

Rehabilitate existing level 2, 3 facilities and buildings to meet the standards (assuming 25% need no improvements, 25% need minor improvements, 25% need moderate improvements, 25% need major improvements)

Input	Qty	Unit Cost	Days	Hospitals	Total
Cost of upgrading existing Operating Theatres at level 2 facilities	1.00	677,915.40	1.00	29.00	19,659,546.60
Cost of upgrading existing Operating Theatres at level 3 facilities	1.00	3,389,577.00	1.00	5.00	16,947,885.00
Creation of Level 2 ICU with 10% of hospital beds	1.00	4,600,000.00	1.00	10.00	46,000,000.00
Creation of Level 3 ICU with 10% of hospital beds	1.00	9,200,000.00	1.00	8.00	73,600,000.00
Creation of Level 3 HDU with 20% of hospital beds	1.00	4,600,000.00	1.00	8.00	36,800,000.00
Delivery room					0.00
Delivery bed 1 set per ward	4.00	27,440.00	1.00	22.00	2,414,720.00
Cardio tocograph 1 set per patient	4.00	11,760.00	1.00	22.00	1,034,880.00
Pulse oximeter 1 set per room	1.00	2,519.00	1.00	22.00	55,418.00
Doppler detector 1 set per room	1.00	4,900.00	1.00	22.00	107,800.00
Oxygen cylinder with inhalation set or oxygen concentrator 1 set per patient	1.00	4,900.00	1.00	22.00	107,800.00
Suction unit, electrical, single bottle 1 set per patient	4.00	1,339.00	1.00	22.00	117,832.00
Examination light 2 per department	2.00	866.00	1.00	22.00	38,104.00
Infusion stand, 5 legs with caster 1 set per patient	4.00	1,033.80	1.00	22.00	90,974.58
Weighing scale 2 per ward	4.00	5,880.00	1.00	22.00	517,440.00
Radiant warmer 1 per room	1.00	4,900.00	1.00	22.00	107,800.00
Infusion pump 1 per room	1.00	13,781.25	1.00	22.00	303,187.50
Emergency trolley 2 per ward	2.00	1,932.00	1.00	22.00	85,008.00
Delivery trolley 1 per room	1.00	7,350.00	1.00	22.00	161,700.00
Antenatal wards					
Cardio tocograph 2 sets per ward	2.00	11,760.00	1.00	22.00	517,440.00
Doppler detector 1 set per ward	1.00	4,900.00	1.00	22.00	107,800.00
Bed, 3-section, high/low adjustable, complete with mattress	15.00	27,440.00	1.00	22.00	9,055,200.00
Bedside table 1 per inpatient	15.00	1,960.00	1.00	22.00	646,800.00

Bedside cabinet 1 per inpatient	15.00	2,450.00	1.00	22.00	808,500.00
Oxygen cylinder with inhalation set or Oxygen concentrator	15.00	4,900.00	1.00	22.00	1,617,000.00
Suction unit, electrical, single bottle 1 set per ward	1.00	1,339.00	1.00	22.00	29,458.00
Infusion stand, 5 legs with caster 1 set per 2 patient.	8.00	1,033.80	1.00	22.00	181,949.15
Infusion pump 2 units per ward	2.00	13,781.25	1.00	22.00	606,375.00
Emergency trolley 4 per ward	4.00	1,932.00	1.00	22.00	170,016.00
Weighing scale 2 of each per ward	2.00	5,880.00	1.00	22.00	258,720.00
Pulse oximeter 1 set per room	1.00	2,519.00	1.00	22.00	55,418.00
Anesthesia machine, complete	7.00	250,000.00	1.00	29.00	50,750,000.00
Ventilator, adult 1 set per room	7.00	127,400.00	1.00	29.00	25,862,200.00
Pulse oximeter 1 per room	7.00	2,519.00	1.00	29.00	511,357.00
Operation table, general 1 set per room	7.00	31,924.00	1.00	29.00	6,480,572.00
Operation light, ceiling mounted, double head 1 set per room	7.00	70,394.00	1.00	29.00	14,289,982.00
Electrosurgical unit, general purpose 1 set per room	7.00	8,654.00	1.00	29.00	1,756,762.00
Patient monitor with ECG, SpO2, NIBP, Temp 1 set per room	7.00	8,045.00	1.00	29.00	1,633,135.00
Suction unit, mobile, 2x3litre bottle 1 set per room	7.00	1,339.00	1.00	29.00	271,817.00
Resuscitator, pulmonary, manual, adult, complete 1 set per room	7.00	58,800.00	1.00	29.00	11,936,400.00
Infusion pump 1 set per room	7.00	13,781.25	1.00	29.00	2,797,593.75
Blood warmer 1 set per room	7.00	6,501.00	1.00	29.00	1,319,703.00
Patient warmer 1 set per room	7.00	10,584.00	1.00	29.00	2,148,552.00
Laryngoscope set, complete 1 set per room	7.00	284.20	1.00	29.00	57,692.60
Thermometer, electronic 1 set per room	7.00	196.00	1.00	29.00	39,788.00
Tourniquet, pneumatic 1 set per room	7.00	15,386.00	1.00	29.00	3,123,358.00
Instruments table 1 set per room	7.00	37.00	1.00	29.00	7,511.00
Bowl, wash, on stand, single, 4 litre 1 set per room 10	7.00	2,626.40	1.00	29.00	533,159.20
Cart, instrument, Mayo 1 set per room	7.00	37.00	1.00	29.00	7,511.00
Infusion stand, 5 legs with caster 1 set per room	7.00	1,033.80	1.00	29.00	209,861.81
Mayo table 1 set per room	7.00	439.00	1.00	29.00	89,117.00
Kick bucket 1 set per room	7.00	325.00	1.00	29.00	65,975.00
Scale for swab weighing 1 set per room	7.00	980.00	1.00	29.00	198,940.00
Stethoscope 1 set per room	7.00	637.00	1.00	29.00	129,311.00
Stool, surgeon's, adjustable, antistatic, cushion 1 set per room	7.00	41.00	1.00	29.00	8,323.00
Instruments set for general surgery 2 sets per room	14.00	17,199.00	1.00	29.00	6,982,794.00
Cesarean instrument set	14.00	11,147.50	1.00	29.00	4,525,885.00
ECG Machine, 12 lead on mobile trolley	1.00	88,812.50	1.00	29.00	2,575,562.50
Hysteroscope	1.00	76,440.00	1.00	29.00	2,216,760.00
Cystoscope	1.00	30,380.00	1.00	29.00	881,020.00
Colposcope	1.00	77,420.00	1.00	29.00	2,245,180.00
ICU					0.00
ICU Bed, 3-section, high/low adjustable, complete with mattress, electrical control 1 per inpatient	25.00	12,250.00	1.00	18.00	5,512,500.00
Bedscale 1 per ICU	1.00	29,400.00	1.00	18.00	529,200.00
BP machine 1 per bed	1.00	122.00	1.00	18.00	2,196.00
Examination light 1 per bed	1.00	866.00	1.00	18.00	15,588.00

Oxygen flow meter with humidifier 1 per bed	25.00	196.00	1.00	18.00	88,200.00
Patient monitor with ECG, NIBP, Temp., Respiration, SpO2, and IBP module 1 per bed	25.00	8,045.00	1.00	18.00	3,620,250.00
Central Monitoring system 1 per ICU department	1.00	153,125.00	1.00	18.00	2,756,250.00
Pulse oximeter 1 per bed	1.00	2,519.00	1.00	18.00	45,342.00
Stethoscope 1 per bed	25.00	637.00	1.00	18.00	286,650.00
Suction unit, electrical, single bottle 1 per bed	25.00	1,339.00	1.00	18.00	602,550.00
Kick bucket 1 per 5 patients	5.00	325.00	1.00	18.00	29,250.00
Reclining chair 1 per ICU	1.00	1,990.67	1.00	18.00	35,832.13
Sharp waste disposal unit 1 per 2 bed	13.00	294.00	1.00	18.00	68,796.00
Infusion stand, 5 legs with caster 1 per bed	25.00	1,033.80	1.00	18.00	465,210.90
Infusion pump 1 per bed	25.00	13,781.25	1.00	18.00	6,201,562.50
Syringe pump 1 per bed	25.00	12,250.00	1.00	18.00	5,512,500.00
Ventilator, adult, complete with humidifier and patient circuit 1 per bed	25.00	127,400.00	1.00	18.00	57,330,000.00
Blood gas & electrolyte analyzer 1 per ICU	1.00	418,031.25	1.00	18.00	7,524,562.50
Defibrillator 1 per ICU	1.00	122,500.00	1.00	18.00	2,205,000.00
Emergency trolley 2 per ICU	2.00	1,932.00	1.00	18.00	69,552.00
Oxygen cylinder with inhalation set or oxygen concentrator or Piped Oxygen) 1 per bed	25.00	4,900.00	1.00	18.00	2,205,000.00
ECG Machine, 12 lead on mobile trolley 1 per ICU	1.00	88,812.50	1.00	18.00	1,598,625.00
Laryngoscope set, complete in carry case 2 per ICU	2.00	284.20	1.00	18.00	10,231.20
Respirator 1 per 2 patients	13.00	275,625.00	1.00	18.00	64,496,250.00
Mobile examination Light, , 2 per ICU	2.00	7,840.00	1.00	18.00	282,240.00
Nebulizer, Ultrasonic 2 per ICU	2.00	5,538.37	1.00	18.00	199,381.39
Mobile X-ray 1 per ICU	1.00	912,000.00	1.00	18.00	16,416,000.00
Total					514,309,767.71

b) Equipment

Hold workshop to revise the standard list of essential equipment for surgery, obstetrics, and anaesthesia for first level facilities in collaboration with end users

Input	Qty	Unit Cost	Days	Frequency	Total
Conference Facilities	1.00	1,000.00	5.00	1.00	5,000.00
Accommodation & Meal Costs/person/day in Central Province	20.00	640.00	5.00	1.00	64,000.00
Allowances for Officers	20.00	800.00	5.00	1.00	80,000.00
Allowances for Drivers	5.00	450.00	5.00	1.00	11,250.00
Fuel	6,000.00	1.67	1.00	1.00	10,020.00
Stationary	1.00	1,000.00	1.00	1.00	1,000.00
Total					171,270.00

Procure appropriate imaging equipment to support diagnostic services per facility level

Input	Qty	Unit Cost	Days	Frequency	Total
Actinic marker 1 A1	1.00	4,362.00	1.00	54.00	235,548.00
Film processor, automatic 1 A2	1.00	50,620.00	1.00	54.00	2,733,480.00
Darkroom safety light holder 2 B	1.00	1,000.00	1.00	54.00	54,000.00
Lead apron 1 for patient, 1 for staff	2.00	2,500.00	1.00	54.00	270,000.00
Protective lead shield or screen 1 A1	1.00	9,005.00	1.00	54.00	486,270.00
Quality assurance kit not done by group not rated	1.00	100,195.00	1.00	54.00	5,410,530.00

Ultrasound scanner with printer 1 A2	1.00	45,276.00	1.00	84.00	3,803,184.00
X-Ray film viewing box (negatoscope) 1 A1	1.00	1,950.00	1.00	54.00	105,300.00
X-Ray loading bench (Film hopper) 1 A1	1.00	4,680.00	1.00	54.00	252,720.00
X-ray unit, fixed 1 A1	1.00	100,000.00	1.00	54.00	5,400,000.00
X-ray unit, mobile 1	1.00	520,000.00	1.00	54.00	28,080,000.00
Total					46,831,032.00

Procure laboratory equipment to support diagnostic services per facility level

Input	Qty	Unit Cost	Days	Frequency	Total
Anaerobic jar	1	6,742.40	1.00	50.00	337,120.00
Analytical balance	1	24,500.00	1.00	50.00	1,225,000.00
Autoclave for laboratory, medium	1	56,000.00	1.00	50.00	2,800,000.00
Binocular microscope	2	25,000.00	1.00	50.00	2,500,000.00
Blood bank refrigerator	1	16,058.62	1.00	50.00	802,930.80
Bunsen burner	1	588.00	1.00	50.00	29,400.00
Centrifuge, small	1	32,907.00	1.00	50.00	1,645,350.00
Chemistry analyser	1	250,000.00	1.00	50.00	12,500,000.00
Differential counter	1	122,500.00	1.00	50.00	6,125,000.00
Flammable liquid cabinet	1	200,000.00	1.00	50.00	10,000,000.00
Haematology analyser	1	441,000.00	1.00	50.00	22,050,000.00
Hot air oven	1	3,332.00	1.00	50.00	166,600.00
Hot plate, controlled temperature not done by group	1	789.77	1.00	50.00	39,488.40
Laboratory incubator, medium	1	10,486.36	1.00	50.00	524,318.20
Laboratory refrigerator/freezer	1	16,058.62	1.00	50.00	802,930.80
Microhaematocrit centrifuge	1	32,907.00	1.00	50.00	1,645,350.00
Micropipettes, automated not done by group	2	196.00	1.00	50.00	19,600.00
pH meter	1	6,468.00	1.00	50.00	323,400.00
Roller/mixer	1	5,000.00	1.00	50.00	250,000.00
RPR rotator	1	4,851.00	1.00	50.00	242,550.00
Spirit lamp	2	392.00	1.00	50.00	39,200.00
Water bath	1	4,420.51	1.00	50.00	221,025.35
Water distiller	1	12,449.82	1.00	50.00	622,490.75
Total					64,911,754.30

Procure capnography, ECG, pulse oximetry, and ventilatable anaesthesia machines with built-in oxygen concentrators for the provision of comprehensive general anaesthesia

Input	Qty	Unit Cost	Days	Frequency	Total
costed with OR/ICU equipment					
Total					0.00

Outsource maintenance services of vapouriser calibration during the period of this plan until capacity is built

Input	Qty	Unit Cost	Days	Frequency	Total
Calibration of vapouriser	30.00	200.00	1.00	5.00	30,000.00

Total					30,000.00
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Ensure all end users are trained to use the essential equipment

Input	Qty	Unit Cost	Days	Frequency	Total
Training to be performed on the job	-	-	-	-	-
Total					0.00

Hold workshop to revise the standard list of essential equipment for surgery, obstetrics, and anaesthesia for second and third level facilities in collaboration with end users

Input	Qty	Unit Cost	Days	Frequency	Total
Conference Facilities	1.00	1,000.00	5.00	1.00	5,000.00
Accommodation & Meal Costs/person/day in Central Province	20.00	640.00	5.00	1.00	64,000.00
Allowances for Officers	20.00	800.00	5.00	1.00	80,000.00
Allowances for Drivers	5.00	450.00	5.00	1.00	11,250.00
Fuel	6,000.00	1.67	1.00	1.00	10,020.00
Stationary	1.00	1,000.00	1.00	1.00	1,000.00
Total					171,270.00

Procure appropriate laboratory equipment to support diagnostic services at level 2 and 3 facilities

Input	Qty	Unit Cost	Days	Frequency	Total
Hematology analyzer 1 unit per laboratory	1	441,000.00	1.00	15.00	6,615,000.00
Hematology Binocular microscope 2 unit per laboratory	2	25,000.00	1.00	15.00	750,000.00
Hematology Slide Staining machine 1 set per laboratory	1	73,500.00	1.00	15.00	1,102,500.00
Hematology Coagulation analyzer 1 set per laboratory	1	275,625.00	1.00	15.00	4,134,375.00
Hematology Electrophoresis set 1 set per laboratory	1	69,580.00	1.00	15.00	1,043,700.00
Hematology Fridge 1 set per laboratory	1	16,058.62	1.00	15.00	240,879.24
Hematology Water bath 1 set per laboratory	1	4,420.51	1.00	15.00	66,307.61
Hematology Centrifuge 1 set per laboratory	1	32,907.00	1.00	15.00	493,605.00
Hematology Differential Counter 1 set per laboratory	1	122,500.00	1.00	15.00	1,837,500.00
Microbiology Biosafety cabinet 2 set per laboratory	2	200,000.00	1.00	15.00	6,000,000.00
Microbiology Incubator 1 set per laboratory	1	10,486.36	1.00	15.00	157,295.46
Microbiology Binocular Microscope 1 set per laboratory	1	25,000.00	1.00	15.00	375,000.00
Microbiology Bunsen Burner 1 set per laboratory	1	588.00	1.00	15.00	8,820.00
Microbiology Autoclave 1 set per laboratory	1	56,000.00	1.00	15.00	840,000.00
Microbiology Hotplate 1 set per laboratory	1	789.77	1.00	15.00	11,846.52
Microbiology Centrifuge 1 set per laboratory	1	32,907.00	1.00	15.00	493,605.00
Parasitology Binocular microscope 1 set per laboratory	1	25,000.00	1.00	15.00	375,000.00
Parasitology Centrifuge 1 set per laboratory	1	32,907.00	1.00	15.00	493,605.00
Biochemistry Clinical Chemistry Analyser 1 set per laboratory	1	250,000.00	1.00	15.00	3,750,000.00
Biochemistry Centrifuge 1 set per laboratory	1	32,907.00	1.00	15.00	493,605.00
Biochemistry Fridge 1 set per laboratory	1	16,058.62	1.00	15.00	240,879.24
Biochemistry Distiller 1 set per laboratory	1	12,449.82	1.00	15.00	186,747.23
Biochemistry Blood gas analyser 1 set per laboratory	1	339,570.00	1.00	15.00	5,093,550.00
Histopathology Embedding machine 1 set per laboratory	1	198,352.00	1.00	15.00	2,975,280.00
Histopathology Microtome 1 set per laboratory	1	78,636.76	1.00	15.00	1,179,551.42

Histopathology Water bath 1 set per laboratory	1	4,420.51	1.00	15.00	66,307.61
Histopathology Slide warmer 1 set per laboratory	1	1,176.00	1.00	15.00	17,640.00
Histopathology Staining machine 1 set per laboratory	1	39,200.00	1.00	15.00	588,000.00
Histopathology Microscope 1 set per laboratory	1	25,000.00	1.00	15.00	375,000.00
Histopathology Tissue Processor 1 set per laboratory	1	98,000.00	1.00	15.00	1,470,000.00
Histopathology Oven 1 set per laboratory	1	3,332.00	1.00	15.00	49,980.00
Histopathology Safety Cabinet 1 set per laboratory	1	200,000.00	1.00	15.00	3,000,000.00
Immunology/Serology ELISA system 1 set per laboratory	1	196,000.00	1.00	15.00	2,940,000.00
Immunology/Serology Shaker 1 set per laboratory	1	5,000.00	1.00	15.00	75,000.00
Immunology/Serology Incubator 1 set per laboratory	1	10,486.36	1.00	15.00	157,295.46
Immunology/Serology Fridge 1 set per laboratory	1	16,058.62	1.00	15.00	240,879.24
Total					47,938,754.01

Procure appropriate imaging equipment to support diagnostic services at level 2 and 3 facilities

Input	Qty	Unit Cost	Days	Frequency	Total
Fixed X-ray Unit 1 set per department	1.00	100,000.00	1.00	16.00	1,600,000.00
Mobile X-ray unit 1 set per department	1.00	520,000.00	1.00	16.00	8,320,000.00
C-arm X-ray Unit 1 set per department	1.00	400,000.00	1.00	31.00	12,400,000.00
Fluoroscopy Unit 1 set per department	1.00	3,420,000.00	1.00	31.00	106,020,000.00
Ultrasound equipment 1 set per department	1.00	781,718.46	1.00	15.00	11,725,776.93
Actinic marker 1 set per department	1.00	4,362.00	1.00	31.00	135,222.00
Mammography unit 1 set per department	1.00	2,940,000.00	1.00	31.00	91,140,000.00
Automatic film processor 1 set per department	1.00	50,620.00	1.00	31.00	1,569,220.00
Lead Aprons 4 set per department	4.00	5,390.00	1.00	31.00	668,360.00
X-Ray Film Views 1 set per department	1.00	1,950.00	1.00	31.00	60,450.00
CT Scan 1 set per department	1.00	2,934,945.00	1.00	31.00	90,983,295.00
Doppler 1 set per department	1.00	600,000.00	1.00	31.00	18,600,000.00
Total					343,222,323.93

Procure appropriate rehabilitative equipment for all level 1, 2, and 3 facilities

Input	Qty	Unit Cost	Days	Frequency	Total
Level 3 facilities	3.00	1,250,211.19	1.00	1.00	3,750,633.56
Level 2 facilities	22.00	1,250,211.19	1.00	1.00	27,504,646.14
Level 1 facilities	87.00	1,250,211.19	1.00	1.00	108,768,373.36
Total					140,023,653.06

Ensure all end users are trained to use the comprehensive equipment

Input	Qty	Unit Cost	Days	Frequency	Total
Training to be performed on-the-job					
Total					0.00

c) Supplies

Revise the standard list of essential supplies in the national formulary for surgery, obstetrics, and anaesthesia in collaboration with end-users

Input	Qty	Unit Cost	Days	Frequency	Total
Conference Facilities	1.00	1,000.00	5.00	1.00	5,000.00
Accommodation & Meal Costs/person/day in Central Province	20.00	640.00	5.00	1.00	64,000.00
Allowances for Officers	20.00	800.00	5.00	1.00	80,000.00
Allowances for Drivers	5.00	450.00	5.00	1.00	11,250.00
Fuel	6,000.00	1.67	1.00	1.00	10,020.00
Stationary	1.00	1,000.00	1.00	1.00	1,000.00
Total					171,270.00

Conduct a yearly audit to monitor supply levels and ascertain the efficiency of the supply chain to improve planning and forecasting for essential medical-surgical supplies and drugs

Input	Qty	Unit Cost	Days	Frequency	Total
Will be performed by provincial teams - no additional costing necessary					
Total					0.00

Strengthen systems for procurement of essential surgical, obstetric, and anaesthesia supplies, including implants, through framework contracts to ensure consistent access to affordable essential medical-surgical supplies and drugs, and cervical cancer screening supplies

Input	Qty	Unit Cost	Days	Frequency	Total
Budget for medicine and consumables	1.00	50,000,000.00	1.00	5.00	250,000,000.00
Total					250,000,000.00

Revise the standard list of comprehensive supplies for surgery, obstetrics, and anaesthesia in collaboration with end-users

Input	Qty	Unit Cost	Days	Frequency	Total
Combined with conference for revising essential list for level 1					
Total					0.00

Conduct a yearly audit to monitor supply levels and ascertain the efficiency of the supply chain to improve planning and forecasting for comprehensive medical-surgical supplies and drugs

Input	Qty	Unit Cost	Days	Frequency	Total
Will be performed by provincial teams - no additional costing necessary					
Total					0.00

Procure necessary equipment, drugs, and monitoring for the provision of regional anaesthesia at level 2 and 3 hospitals

Input	Qty	Unit Cost	Days	Frequency	Total
Ultrasound machine	1.00	424,300.80	1.00	40.00	16,972,032.00
Nerve stimulator	1.00	6,615.00	1.00	40.00	264,600.00
Total					17,236,632.00

Strengthen systems for procurement of comprehensive surgery, obstetrics, and anaesthesia supplies, including implants, through framework contracts to ensure consistent access to affordable comprehensive medical-surgical supplies and drugs

Input	Qty	Unit Cost	Days	Frequency	Total
Is a legislative effort does not have capital expenses					
Total					0.00

HEALTH INFORMATION AND RESEARCH

a) Health Information

Hold meeting to identify SOA HMIS indicators and propose them accordingly for approval

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	2.00	10,000.00
Allowances	15.00	800.00	6.00	2.00	144,000.00
Fuel (contingency)	150.00	1.67	2.00	2.00	1,002.00
Stationery	10.00	59.00	3.00	2.00	3,540.00
Lunch	15.00	50.00	5.00	2.00	7,500.00
Total					166,042.00

Train doctors and M&E officers in data analysis in order to utilize information from these indicators

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	3.00	10.00	30,000.00
Allowances	25.00	800.00	4.00	10.00	800,000.00
Fuel (contingency)	400.00	1.67	10.00	10.00	66,800.00
Stationery	10.00	59.00	3.00	10.00	17,700.00
Lunch	25.00	50.00	3.00	10.00	37,500.00
Total					952,000.00

Create a register for Monitoring and Evaluation in collaboration with the Surgical Society of Zambia and Zambia Association of Obstetricians and Gynaecologists relevant to their practice that includes Lancet surgical indicators. This should extend beyond 24 hours to include entire length of hospital stay (until patient discharge)

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	7.00	1.00	7,000.00
Allowances	15.00	800.00	8.00	1.00	96,000.00
Fuel (contingency)	150.00	1.67	2.00	1.00	501.00
Stationery	10.00	59.00	3.00	1.00	1,770.00
Lunch	15.00	50.00	5.00	2.00	7,500.00
Total					112,771.00

Train medical professionals in the use of smart care to enter the data as they are seeing the patient and this information will then be linked to DHIS-2 and HMIS

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	3.00	10.00	30,000.00
Allowances	25.00	800.00	4.00	10.00	800,000.00
Fuel (contingency)	400.00	1.67	10.00	10.00	66,800.00
Stationery	10.00	59.00	3.00	10.00	17,700.00
Total					914,500.00

Procure and install computers at point of admission, out-patient department (OPD), in-patient department, theater recovery wards, critical care/ICUs/HDUs, and wards to facilitate entry of patient information

Input	Qty	Unit Cost	Days	Frequency	Total
Smart care software	1,500.00	5,000.00	1.00	5.00	37,500,000.00
Computers	1,500.00	10,000.00	1.00	1.00	15,000,000.00

Total					52,500,000.00
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Create a central ehub at MOH and provide broad-band wireless internet to hospitals for the interconnection of ehealth records (SmartCare)

Input	Qty	Unit Cost	Days	Frequency	Total
monthly internet charge	12.00	30,000.00	1.00	5.00	1,800,000.00
Internet connectivity	1.00	200,000.00	12.00	5.00	12,000,000.00
Computers	10.00	10,000.00	1.00	1.00	100,000.00
Internet equipment					500,000.00
Infrastructure					2,000,000.00
Servers	2.00	40,000.00	1.00	1.00	80,000.00
Total					14,400,000.00

b) Research

Focus efforts on finding funding opportunities for research

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					0.00
Total					0.00

Train research units in hospitals in proposal writing and conducting research

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	2.00	10,000.00
Allowances	50.00	800.00	6.00	2.00	480,000.00
Fuel (contingency)	16,000.00	1.67	2.00	2.00	106,880.00
Stationery	50.00	59.00	5.00	3.00	44,250.00
Total					641,130.00

Identification of research priorities

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	1.00	5,000.00
Allowances	25.00	800.00	6.00	1.00	120,000.00
Fuel (contingency)	1,600.00	1.67	10.00	1.00	26,720.00
Stationery	25.00	59.00	5.00	1.00	7,375.00
Lunch	25.00	50.00	5.00	1.00	6,250.00
Total					165,345.00

Update baseline assessments for indicators

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

Expand Maternal Death Surveillance Response and Perinatal Death Surveillance Response systems to address national levels of perioperative deaths, similar to the UK National Confidential Enquiry of Perioperative Deaths (NCEPOD)

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					

Total					0.00
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Encourage research already conducted to be published in a peer-reviewed journal and/or presented for knowledge dissemination. First focus on local opportunities for publications, such as Medical Journal of Zambia or COSECSA Journal

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

c) Data Quality and Improvement
Strengthen QI committees at every hospital.

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

Establish a QI chair at each facility who is the champion of improvement and primarily responsible for oversight of all facility specific data and subsequent reports to other levels

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required - appointment					
Total					0.00

Create, recruit, and train data entry clerks at all hospital levels

Input	Qty	Unit Cost	Days	Frequency	Total
Level 1 data clerks (2 per hospital, 104 level 1 hospitals)	2.00	600.00	4.00	104.00	499,200.00
Level 2 data clerks (5 per hospital, 28 level 2 hospitals)	5.00	600.00	4.00	28.00	336,000.00
Level 3 data clerks (20 per hospital, 12 level 3 hospitals)	20.00	600.00	4.00	12.00	576,000.00
Conference	6.00	1,000.00	1.00	1.00	6,000.00
Fuel	180,000.00	1.67	1.00	1.00	300,600.00
Trainer DSA	12.00	800.00	4.00	1.00	38,400.00
Total					1,756,200.00

Train all data entry clerks specific to Lancet and other SOA indicators and the importance of data objectivity and quality improvement

Input	Qty	Unit Cost	Days	Frequency	Total
QI chair at each facility can train data clerks					
Total					0.00

Include Lancet, system performance indicators, and other SOA indicators into HMIS and DHIS-2

Input	Qty	Unit Cost	Days	Frequency	Total
Can be done at MoH - no additional cost					
Total					0.00

Train all health professionals at first, second, and third level hospitals to use HMIS

Input	Qty	Unit Cost	Days	Frequency	Total
Can be done at MoH - no additional cost					
Total					0.00

Encourage research from performance indicators

Input	Qty	Unit Cost	Days	Frequency	Total
Can be done at MoH - no additional cost					
Total					0.00

Encourage research from performance indicators

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

Standardize incident forms, include check-boxes and require that incident forms are filled out by surgeon/obstetrician/anaesthetist (not just the nurse)

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	1.00	5,000.00
DSA	15.00	800.00	5.00	1.00	60,000.00
Fuel	4,500.00	1.67	1.00	1.00	7,515.00
Stationary	15.00	59.00	5.00	1.00	4,425.00
Total					76,940.00

FINANCING

Establish electronic accounting systems for all levels that are linked to ministry of health headquarters

Input	Qty	Unit Cost	Days	Frequency	Total
Networking					500,000.00
Navision licence	130.00	5,000.00	1.00	5.00	3,250,000.00
Total					3,750,000.00

Conduct three-yearly surveys to establish the effectiveness of financing mechanisms supporting surgical obstetric and anaesthesia services

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	5.00	2.00	10,000.00
Allowances	15.00	800.00	15.00	1.00	180,000.00
Fuel (contingency)	800.00	1.67	2.00	9.00	24,048.00
Stationery	5.00	59.00	5.00	1.00	1,475.00
DSA	5.00	800.00	5.00	1.00	20,000.00
Consultancy	1.00	2,000.00	20.00	1.00	40,000.00
Total					61,475.00

Include patient interviews and cashier interviews along with system costs to determine true cost of surgical and anaesthesia services

Input	Qty	Unit Cost	Days	Frequency	Total
Surveys to be done as part of DHS					
Total					0.00

Create recurrent departmental charges (RDCs) for district hospital as it is with secondary and tertiary hospitals

Input	Qty	Unit Cost	Days	Frequency	Total
Has already been created					
Total					0.00

Create budget lines for surgery, obstetrics, and anaesthesia at district level hospitals as it is currently being done for secondary and tertiary hospitals

Input	Qty	Unit Cost	Days	Frequency	Total
Previously costed					
Total					0.00

Lobby to increase the allocation to level 2 and 3 hospitals budget lines for surgery, obstetrics, and anaesthesia activities.

Input	Qty	Unit Cost	Days	Frequency	Total
Lobbying effort to increase budget allocation for SOA - no costing required					
Total					0.00

LEADERSHIP AND GOVERNANCE

Appoint National Surgical Coordinator

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

Appoint National Obstetric Coordinator

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

Appoint National Anaesthesia Coordinator

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

To appoint the National Safe Surgery Obstetrics and Anaesthesia committee

Input	Qty	Unit Cost	Days	Frequency	Total
No costing required					
Total					0.00

Have quarterly coordination meetings with partners to ensure appropriate care delivery and system harmonization (annual consultative meeting)

Input	Qty	Unit Cost	Days	Frequency	Total
Conference	1.00	1,000.00	4.00	5.00	20,000.00
Allowances				1.00	0.00
Fuel (contingency)				1.00	0.00
Stationery	75.00	59.00	4.00	5.00	88,500.00
Lunch	50.00	50.00	4.00	5.00	50,000.00
Total					158,500.00

Have monthly meetings of the subcommittee on surgical, obstetric, and anaesthesia of the service delivery technical working group

Input	Qty	Unit Cost	Days	Frequency	Total
Conference				1.00	0.00

Allowances				1.00	0.00
Fuel (contingency)				1.00	0.00
Stationery				1.00	0.00
Refreshments	20.00	50.00	12.00	5.00	60,000.00
Total					60,000.00