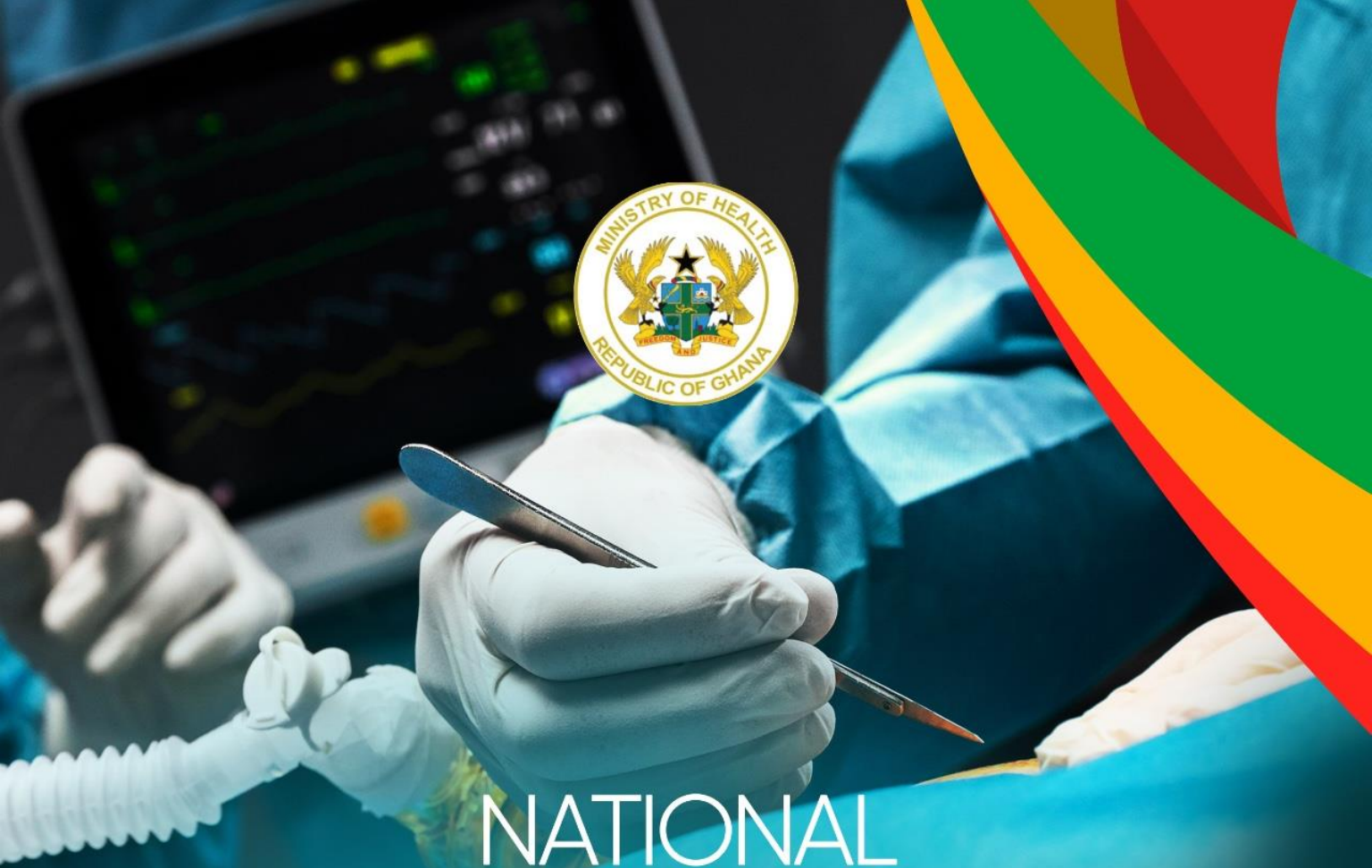

NATIONAL SURGICAL, OBSTETRIC & ANAESTHESIA PLAN FOR GHANA

(NSOAP)
2025-2029

SEPTEMBER 2024

MINISTRY OF HEALTH

NATIONAL SURGICAL, OBSTETRIC AND ANAESTHESIA PLAN

Accra, Ghana

Operation Smile Inc'. USA and Operation Smile Ghana


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ABBREVIATIONS

AHS	Africa Health Strategy
AI	Artificial Intelligence
CHAG	Christian Health Association of Ghana
CHPS	Community-based Health Planning and Services
CPD	Continuous Professional Development
CRA	Certified Registered Anaesthetist
DHIMS	District Health Information Management System
ECO	Emergency Critical and Operative
GBV	Gender-based Violence
GCPS	Ghana College of Physicians and Surgeons
GCNM	Ghana College of Nurses and Midwives
GCPHARM	Ghana College of Pharmacists
GDP	Gross Domestic Product
GHS	Ghana Health Service
GhILMIS	Ghana Integrated Logistics Management Information System
HeFRA	Health facilities Regulatory Agency
HPV	Human papilloma virus
IMR	Infant Mortality Rate
ICD	Institutional Care Division
ICU	Intensive Care Unit
IE&C	Information, Communication and Education
I-PAHC	Inpatient Patient Assessment of Health Care
LCoGS	Lancet Commission on Global Surgery
LHIMS	Lightwave Health Information Management System
LMIC	Lower-Income and Middle-Income Country
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MMR	Maternal Mortality Rate
MoH	Ministry of Health
NGO	Non-Governmental Organization
NHIA	National Health Insurance Authority

NHIS	National Health Insurance Scheme
NSOAP	National Surgical Obstetric and Anaesthesia Plan
OTIP	Obstetric Triage Implementation Package
PHC	Primary Health Care
POMR	Perioperative Mortality Rate
PPME	Policy, Planning, Monitoring and Evaluation
SDGs	Sustainable Development Goals
SOTA	Surgical, Obstetrics, Trauma and Anaesthesia
SSI	Surgical Site Infection
SWOT	Strength, Weaknesses, Opportunities and Threats
TWG	Technical Working Group
UHC	Universal Health Coverage
UNITAR	United Nations Institute for Training and Research
WHA	World Health Assembly
WHO	World Health Organization

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EXECUTIVE SUMMARY

Recognizing the importance of surgical, obstetric, trauma and anaesthesia (SOTA) services as indispensable components of national health systems; and critical to achieving Universal Health Coverage, there have been global calls for countries to develop comprehensive national plans to address quality and access gaps in these services. In 2015, the Lancet Commission on Global Surgery (LCoGS) reported that approximately 5 billion people globally lack access to surgery and several millions experienced catastrophic and impoverishing health expenditure due to out-of-pocket payment for surgical services. The Commission projected that between 2015 and 2030, the global economic loss due to surgical conditions will amount to 20.7 trillion dollars with the brunt of these losses borne by low-income and middle-income countries (LMICs). The LCoGS recommended the recognition of surgery as a critical component of global health and called on countries to develop coordinated plans to improve access and quality of surgery and improve surgical outcomes. Subsequent to this, the World Health Assembly (WHA) passed resolution WHA68.15, which also called for strengthening emergency and essential surgical care and anaesthesia as a component of Universal Health Coverage.

Ghana's health sector has made remarkable strides in the provision of high quality, accessible, safe and equitable health services for its citizens and all persons living in Ghana. However, issues of lack of access to safe, affordable and timely surgical and anaesthesia care identified by the LCoGS have not been addressed. This underscores the need for a framework that supports scale-up of SOTA access in a coordinated and effective manner. In response to this, the Ministry of Health with support from its Agencies, development partners and other key stakeholders has developed this National Surgical, Obstetric and Anaesthesia Plan (NSOAP). This plan is aimed at improving the health outcomes of people living in Ghana by providing safe, high-quality and affordable SOTA care for all.

The NSOAP outlines goals, strategic objectives, strategic interventions, activities and indicators relating to the six domains of infrastructure, workforce, service delivery, financing, information management as well as governance and leadership. The plan serves as the blueprint for SOTA services in the country for the next five years (2025-2029). This NSOAP is focused on addressing disparities in access to SOTA care by targeting investments in infrastructure at Primary/District, Secondary/Regional and Tertiary/Teaching level hospitals. These include refurbishing surgical,

obstetric and anaesthesia infrastructure at existing health facilities, expanding the training of SOTA professionals and improving the surgical services across health facilities in the country. The plan has mechanisms for equitable distribution of the needed health professionals and strategies for retaining them particularly in underserved areas. The plan also takes into consideration strategies for leveraging technology to improve service delivery and for engaging communities for targeted outreach programs to improve access to services. Disparities in access to care will be resolved by bringing into focus neglected surgically treatable conditions such as structural birth defects, and gender-based violence cases requiring SOTA care. Quality of surgical care will be promoted and tracked as part of this NSOAP.

This NSOAP also gives attention to data management systems and research related to SOTA. It outlines some strategies for mobilizing resources such as government allocation, support from development partners and public-private partnerships. The NSOAP is expected to be coordinated at the national level through a Steering Committee with leadership at the various levels of health care and ultimate oversight from the Honourable Minister of Health. Monitoring and Evaluation of the NSOAP will be done through existing mechanisms at the national and subnational levels of the health sector. This will include half yearly and annual reviews as well as a mid-term and end term evaluation of the plan.

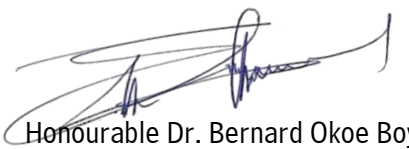
This NSOAP is designed to be in alignment with existing global, continental and national initiatives and policies. The plan is to be implemented not as a standalone plan but integrated into National policies as it finds expression in existing policies and strategies of the Ministry of Health including the Health Sector Medium-Term Development Plan and the National Health Policy.

FOREWORD

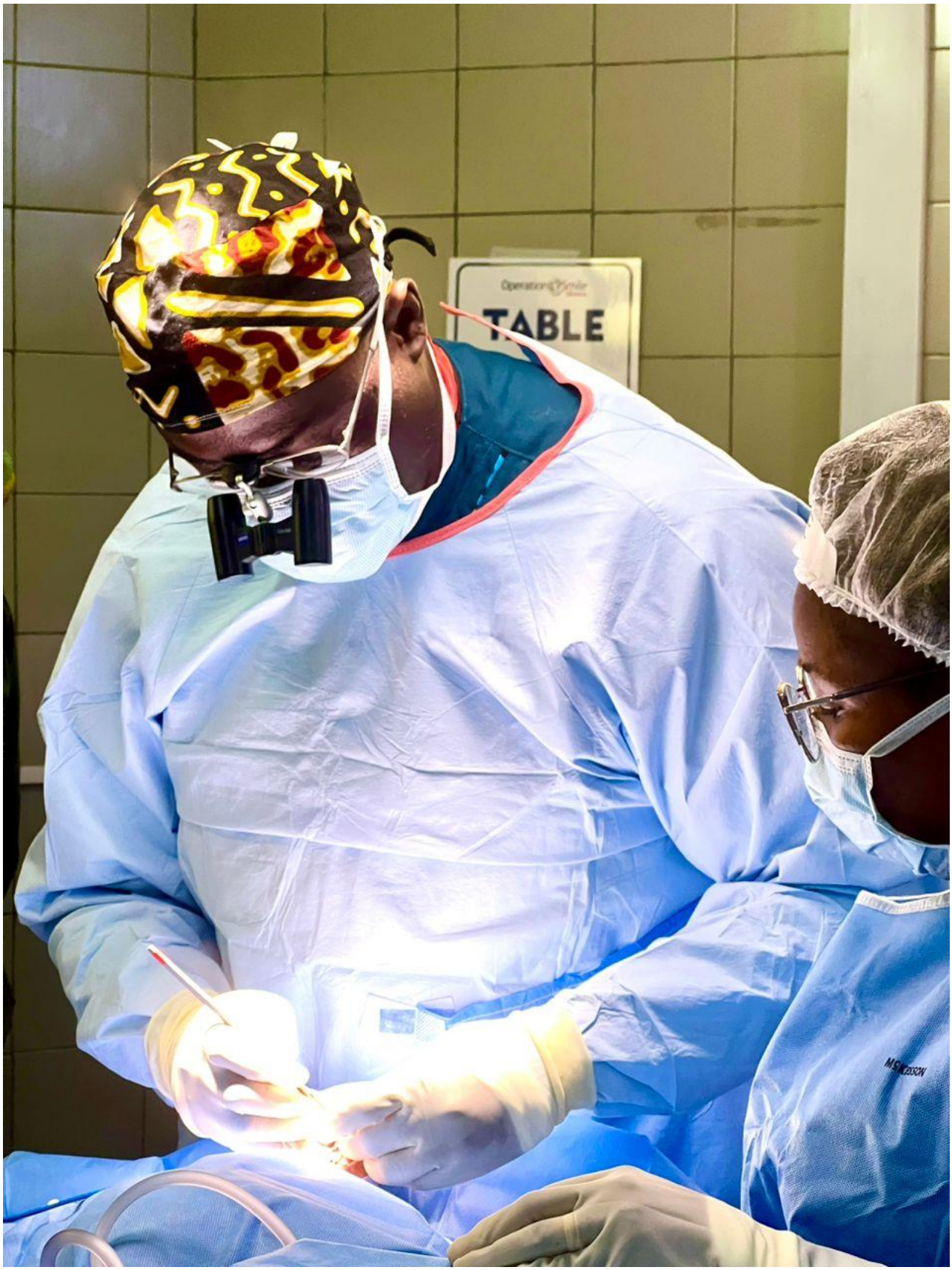
The first National Surgical, Obstetric and Anaesthesia Plan (NSOAP) for Ghana reflects the nation's aspiration to address the critical gaps in surgical, obstetric and anaesthesia care and improve the lives of citizens and all persons living in Ghana. This document indicates strategic interventions, concrete targets, clear strategic indicators, a detailed implementation plan and monitoring and evaluation framework to track progress and ensure accountability. The Ministry of Health considers the NSOAP as a crucial document which primarily aims at improving the health outcomes of people, particularly in surgical care, obstetrics, and anaesthesia services. The plan also takes into consideration the importance of addressing the social determinants of health such as poverty, gender inequality and lack of education which can have a critical impact on health outcomes. In this regard, access to safe, quality, and affordable surgical services is part of the tenets in developing the NSOAP for Ghana and this is considered a fundamental right of all people living in Ghana.

This comprehensive plan represents the massive efforts of various stakeholders including various health care professionals in the sixteen (16) regions of Ghana, policy makers and selected representatives from agencies of the Ministry of Health, who served on the NSOAP Technical Working Group (TWG).

The NSOAP represents a collective commitment to investing in the provision of high-quality, accessible and equitable surgical, obstetric and anaesthesia services for all persons living in Ghana. It would require multistakeholder collaboration including public private partnership and strong coordination at all levels for an effective implementation. In this view, I would like to express my profound gratitude to all who have contributed to the development of this plan and call upon all stakeholders to play active roles to ensure its successful implementation.



Honourable Dr. Bernard Okoe Boye
Minister of Health



TABLE

DEFINITIONS

Anaesthesiologist	Medical doctor with postgraduate training and Membership or Fellowship qualification in Anaesthesia
Bellwether Procedures	Three surgical procedures used as a proxy for performing essential surgery. These are laparotomy, caesarean delivery and treatment of open fractures
Catastrophic Expenditure	Direct out-of-pocket payments of greater than 40% of household income net of subsistence needs (or greater than 10% of household income)
Certified Registered Anaesthetist	A nurse with post basic training and certification in Anaesthesia
Critical Care Nurse	A nurse with post basic training in Critical Care Nursing
Critical Care Nurse Specialist	A nurse with post graduate training and Membership or Fellowship qualification in Critical Care Nursing
Disability Adjusted Life Years:	Measure of overall disease burden, expressed as the number of years lost due to ill health, disability or early death
Emergency Nurse	A nurse with post basic training in Emergency Nursing
Emergency Nurse Specialist	A nurse with post graduate training and Membership or Fellowship qualification in Emergency Nursing
Financial Risk Protection	Access to all needed quality health services without financial hardship
Major Surgical Procedure	Any surgical procedure conducted in an operating theatre under general, spinal or major regional anaesthesia
Medical Doctor	Medical graduate with undergraduate medical qualification of MBBS, MBChB, MD, or equivalent
Obstetrician	Medical doctor with postgraduate training and Membership or Fellowship qualification in Obstetrics and Gynaecology
Perioperative Mortality	Death on the day of surgery, before discharge from hospital, or within 30 days of a surgical procedure, whichever is sooner
Perioperative Nurse	A nurse with post basic training in Perioperative Care Nursing

Perioperative Nurse Specialist	A nurse with post graduate training and Membership or Fellowship qualification in Perioperative Care Nursing
Physician Assistant	A health worker who is not a medical doctor trained specifically to diagnose and manage basic medical conditions
Impoverishing Expenditure	Direct out-of-pocket payments that push the patient into poverty or push patient further into poverty
Specialist Surgical Workforce	Fully trained Physician Surgeons, Anaesthetists, and Obstetricians, synonymous with Consultant and Attending Surgeon, Anaesthetist, or Obstetrician
Surgeon	A Specialist Surgeon with postgraduate training and Membership or Fellowship qualification
Surgical, Obstetric and Anaesthesia care	The provision of operative, perioperative, and non-operative management; anaesthesia; and obstetric care for all surgical conditions
Surgical condition	Any disease, illness, or injury in which surgical care can potentially improve the outcome
Surgical volume	Number of surgical procedures per 100,000 population.
Surgical, obstetric, trauma and anaesthesia workforce	A network of associated surgical and anaesthetic personnel who work in concert to deliver surgical care. This includes but is not limited to all surgical, obstetric, trauma and anaesthesia providers, Nurses, Pathologists, Radiologists, Biomedical Scientists, Theatre Managers, Community Health Workers, Rehabilitation Specialists, Biomedical Technicians and Engineers

CHAPTER 1: INTRODUCTION

1.1 Background

Surgical, obstetric, trauma and anaesthesia (SOTA) care is essential for treating the multifaceted burden of infectious and non-communicable diseases (NCDs) faced by low-income and middle-income countries (LMICs). Despite being an integral component of robust and functional health systems, SOTA care has been largely left out of national and international health agendas. At the global level, development and delivery of surgical and anaesthesia care in LMICs have not featured prominently in global health discourse. Each year, an estimated 77.2 million disability-adjusted life-years (DALYs) could be averted by scaling up basic, live saving surgical care in LMICs[1]. The need for SOTA care in LMICs is projected to continue rising considerably into the future as diseases such as cancers, cardiovascular diseases, congenital anomalies as well as injuries from road traffic accidents increase[2]. These conditions, if not tackled effectively, will deprive LMICs of progress towards attainment of Universal Health Coverage (UHC) by 2030. Access to affordable, timely and safe SOTA care therefore needs to be prioritised for countries in these regions.

Promoting SOTA care as a global, continental or national priority will require significant buy-in from a cross section of political and social leaders. Gaining buy-in involves building a compelling, data-driven case about how SOTA care contributes to the health and economic well-being of a country. The importance of surgical services even within the Primary Health Care (PHC) system has been underscored by the Lancet Commission on Global Surgery (LCoGS)[3] and the World Health Assembly (WHA) resolution WHA68.15; "Strengthening emergency and essential surgical care and anaesthesia as a component of UHC"[4] and the Integrated Emergency Critical and Operative (ECO) care resolution (WHA 76.2)[5]. The LCoGS in their publication in 2015 showed that billions of people worldwide lacked access to surgery with further millions experiencing catastrophic and impoverishing health expenditure due to out-of-pocket payment for surgical services. The Commission also estimated that between 2015 and 2030, surgical conditions will account for a cumulative loss of 20.7 trillion dollars to the global economy. More than half of this loss is estimated to occur in LMICs, where surgical conditions could reduce annual gross domestic product (GDP) growth by as much as 2%[3]. The Commission highlighted the indispensability of surgery as part of

health care and recommended actions to embed surgery as an important component of the global health agenda with countries developing scalable solutions for quality SOTA care[3].

The availability, quality, and affordability of surgery must be prioritized for improvement by governments making major, targeted efforts to address the current surgical care crisis. These efforts must be led by Ministries of Health in the respective countries. Strategic planning that considers all six surgical system areas (infrastructure including medical products and technology, workforce, service delivery, information management, financing and governance and leadership) has been recommended for developing blueprints for improving and expanding access to SOTA care on a national scale. This health systems approach spearheaded by national governments, shifts the direction of surgical care development away from discrete vertical projects.

The Ministry of Health (MoH) of Ghana, recognizes emergency and essential SOTA care as critical components of its health system and crucial to attainment of UHC. In view of that and in alignment with global calls, the Ministry, working with its agencies and in collaboration with other sectors, civil society organizations, development partners and the private sector, has developed the National Surgical Obstetric and Anaesthesia Plan (NSOAP) for Ghana. This is to serve as a policy instrument through which equitable access to SOTA care can be expanded in the country using coordinated health policy efforts.

1.2 Country Background

1.2.1 Demographic and Socioeconomic Landscape

Administratively, Ghana Is divided into 16 regions and 261 Metropolitan, Municipal and District Assemblies. With a population of around 30.8 million individuals, Ghana maintains a balanced sex ratio, signalling an equal distribution of males and females within its populace[6]. The country's population growth rate of 2.1% per annum indicates a steady increase, while an average life expectancy of 64.53 years in 2023 reflects the anticipated lifespan for new-borns in Ghana (Table 1). Notably, approximately 35.3% of the population comprises individuals under the age of 15, underscoring the significant presence of children in the demographic landscape. Ghana's urban population increased from 50.9% in 2010 to 56.7% in 2021[6]. The urban population, totalling 17,472,530 people, highlights the substantial urbanization within Ghana[6]. Ghana's population age structure is transitioning from one dominated by children to a population dominated by the youth. The working age bracket of 15-64 years constitute 60.4% of the total population[6]. The proportion of the population living below the poverty line dropped by more than half from 52.7% in 1991 to 24.2% in 2013, thereby achieving the Millennium Development Goal (MDG) 1 target[7]. However, annual rate

of reduction in poverty has since slowed down significantly. With approximately a quarter (23.4%) of the Ghanaian population earning wages below the national poverty line and current GDP estimated as US$2,238.2 per capita[7,8], Ghana faces economic challenges, which are reflected in the country's poor state of health. Also, gains made in health and economic indicators are skewed towards urban settings showing inequity in health and development outcomes. These indicators collectively illuminate Ghana's demographic composition, economic status, and prevalent socioeconomic obstacles, providing crucial insights for policy makers tasked with addressing issues ranging from poverty alleviation to healthcare and urban development initiatives. Additionally, these statistics highlight the need for strategic planning in SOTA to optimize the scarce available resources. The NSOAP is therefore timely in this regard.

Table 1. Key Demographic and Socioeconomic Indicators for Ghana

Indicator	Status
Population	30,832,019
Sex Ratio (Males per Female)	1:1
Average Annual Population Growth Rate	2.1
Life Expectancy at Birth*	64.53
Proportion of Population Age less than 15 years (%)	35.3
Urban Population	17,472,530
Proportion of Population below Poverty Levels* (%)	24.2
GDP per capita (USD)*	2,238.2

Source: World Bank 2024*; Ghana Population and Housing Census 2021

1.2.2 Health and Development progress

The health of Ghanaians has continued to improve since Ghana gained independence in 1957. Health indicators including Maternal Mortality Rate (MMR), Infant Mortality Rate (IMR), and mortality rate in children under-5 years old provide insights into the health status of women and children in Ghana and carry significant implications for NSOAP. Ghana's MMR stands at 310 deaths per 100,000 live births, indicating challenges in accessing quality maternal healthcare services[9]. Other key indicators linked to SOTA care including infant and under-5 mortality rates have equally improved over the years. Infant Mortality Rate has decreased from 64 deaths per 1,000 live births in 2003 to 28 deaths per 1,000 live births in 2022, and under-5 mortality rate has decreased from 111 deaths per 1,000 live births in 2003 to 40 deaths per 1,000 live births in 2022[10] (Table 2).

Table 2. Health Indicators for Ghana

Indicator	Status
Maternal Mortality Rate*	310 deaths per 100,000 live births[9]
Under-5 Mortality Rate	40 deaths per 1000 live births
Infant Mortality Rate	28 deaths per 1000 live births
Neonatal Mortality Rate	17 deaths per 1000 live births

Source: Maternal Health Survey, 2017* and Demographic and Health Survey, 2022

1.2.3 The Impact of COVID-19 on Surgical Care

In Ghana, the COVID-19 pandemic interrupted most vital healthcare services. Hospitals postponed most elective surgical procedures for weeks and even months. In Ghana, an estimated 14,549 surgeries, including 1,405 cancer procedures, were cancelled during the initial phase of the COVID-19 pandemic[11]. Hospitals were expected to perform twenty percent more surgical procedures each week than they did before the epidemic to clear this backlog. It was estimated at the time that the backlog would be cleared in about 45 weeks with this arrangement[11,12]. However, every extra week of disruption, resulted in the cancellation of additional procedures, which greatly increased the amount of time needed to clear the backlog. This resulted in worsening the already existing surgical access gap. At present, surgical teams continue to work hard to clear the backlog of surgical cases worsened by the COVID-19 pandemic.

1.2.4 Structure of Ghana's Health System

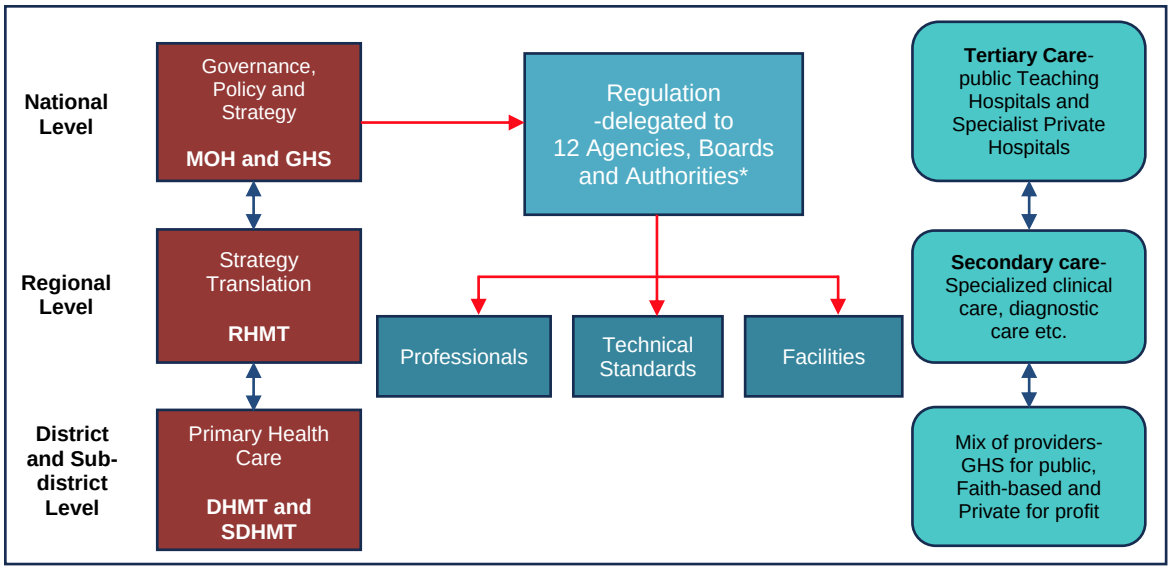
Ghana's health sector is under the leadership of the Minister of Health. The MoH is responsible for formulating health policies and strategies for the entire country. It implements its mandate primarily through its Agencies which perform health care service delivery, health financing, regulatory as well as research and training functions.

The Ghana Health Service (GHS), the largest public health delivery service agency of the MoH was established under the Ghana Health Services and Teaching Hospitals Act 525 of 1996 to implement National policies on health delivery at the Regional, District Sub-district and Community levels. Teaching hospitals, also established under Act 525 are autonomous Agencies under the MoH responsible for providing advanced level care. These hospitals have their own Board of Directors.

Ghana has a National Health Insurance Scheme (NHIS) provided by the National Health Insurance Authority (NHIA), another agency of the MoH. There are other private health insurance policies provided by other companies. These insurance schemes provide a cover for health services for its insured members, thus reducing out-of-pocket expenditure on health. Health insurance coverage for the population is 68.8% with higher coverage for females (72.6%) than males (64.5%)[6].

Health care delivery is organized at three levels: Primary (District), Secondary (Regional) and Tertiary (Teaching hospital) levels (Figure 1). The primary level is further structured into District level hospital, Sub-district Health centre and Community-based Health Planning and Services (CHPS) at the Community level. Regional hospitals serve as referral centres for health facilities from the District level and below. Tertiary and specialized care is provided by Teaching hospitals and Specialist private hospitals, which serve as training centres for health professionals.

The Private not-for-profit such as the Christian Health Association of Ghana (CHAG) and Ahmadiyya Muslim Mission as well as Quasi-governmental institutions, Private-for-profit and Civil Society Organizations complement government's efforts in health service delivery. Health facilities are licensed and monitored by the Health Facility Regulatory Agency (HeFRA), another Agency of the MoH. HeFRA establishes and monitors the minimum standards for all levels of health care facilities including private health facilities.



*The 12 regulatory bodies are: i) Health Facilities Regulatory Agency (HeFRA), ii) Food and Drugs Authority (FDA), iii) Medical and Dental Council (MDC), iv) Nurses and Midwives Council (NMC), v) Pharmacy Council (PC), vi) Allied Health Professions Council (AHPC), vii) Psychology Council, viii) Traditional Medicine Practice Council, ix) Ghana College of Surgeons and Physicians, x) Ghana College of Pharmacists, xi) Ghana College of Nurses and Midwives, and xii) Mortuaries and Funeral Facilities Agency.

Source: Health Sector Medium-Term Development Plan 2022-2025

Figure 1. Structure of the Ghana's Health System

As of June 2024, there were a total of 10,598 health facilities in Ghana made up of 80.0% government facilities, 15.6% private facilities and 3.1% of CHAG facilities (Table 3). These facilities include six Teaching hospitals, 10 Regional hospitals, 259 District hospitals and 501 other hospitals.

Table 3. Ownership of health facilities by organizational unit, Ghana, 2024

Region	Government	Private	CHAG	Quasi-Government	Other Faith-Based	Mines	Total
Ahafo	175	17	9	0	1	1	**203**
Ashanti	1324	353	85	10	5	1	**1778**
Bono	373	67	26	5	0	0	**471**
Bono East	363	46	8	0	2	0	**419**
Central	693	123	22	23	1	0	**862**
Eastern	1067	117	27	3	0	1	**1215**
Greater Accra	984	534	11	37	3	0	**1569**
North East	128	6	6	1	0	0	**141**
Northern	504	54	16	7	0	0	**581**
Oti	241	11	6	0	0	0	**258**
Savannah	238	8	12	0	0	0	**258**
Upper East	563	54	22	2	0	0	**641**
Upper West	542	17	18	1	2	0	**580**
Volta	489	55	20	1	0	0	**565**
Western	511	139	21	14	1	8	**694**
Western North	286	51	21	1	1	3	**363**
Total	**8481**	**1652**	**330**	**105**	**16**	**14**	**10598**
Percentage of Total	80.02	15.59	3.11	0.99	0.15	0.13	100.00

Source: DHIMS 2, 2024

1.3 Background to National Surgical, Obstetric and Anaesthesia Plans

In 2015, the LCoGS reported that an estimated 5 billion people lack access to safe, affordable and timely SOTA care globally[3]. That same year, the WHA resolution WHA68.15. which emphasized the vital role that crucial surgical and anaesthetic care play in attaining UHC was also unanimously adopted by member countries[4]. These sparked a wave of efforts aimed at expanding access to SOTA care through coordinated health policy efforts. The recommendation for countries is to have a plan to drive these efforts. The NSOAP has since emerged as a policy framework to address this need.

The Sustainable Development Goals (SDGs), which advocate for a more comprehensive, systems-based approach to development, are in line with this resolution and the United Nations' transition

from the MDGs to SDGs. Without a concentrated effort to greatly enhance the SOTA care systems, it will be impossible to achieve SDG 3, which aims to ensure healthy lives and promote well-being for everyone of all ages. Promoting access to safe and affordable surgical care also impacts on the achievement of SDGs 1, 5, 8, 9, 10, 16 and 17[13].

The NSOAP development process used data and tools specific to SOTA services through a collaborative and consultative stakeholder approach to develop a plan that seeks to improve SOTA care in alignment with existing policies and initiatives on a national scale. The policy direction of this plan is to establish the current SOTA situation regarding the domains recommended by the LCoGS, identify gaps related to these domains and achieve set goals within the next five (5) years.

- Infrastructure
- Workforce
- Service delivery
- Information Management
- Financing
- Governance and Leadership

1.4 Rationale for the Plan

Recognizing the importance of SOTA services as indispensable components of national health systems, and critical to achieving UHC, there have been global calls for countries to develop comprehensive national plans to address quality and access gaps in these services[3].

Though Ghana's health sector has made remarkable strides in the provision of healthcare to the population with regards to surgical and other medical problems requiring hospital care, issues of lack of access to safe, affordable and timely surgical and anaesthesia care identified by the LCoGS have not been addressed. A significant proportion of health facilities within Ghana lack the needed infrastructure to provide emergency and surgical care. Additionally, there is a substantial shortage of adequate numbers of trained surgeons to perform surgical and operative procedures at the referral hospitals especially at the district level. These challenges underscore the need for a framework that support scale-up of SOTA care and access to these services in a coordinated and effective manner.

In response to this and to drive Ghana closer to achieving global health priorities such as the Sustainable Development Goals and UHC, there is a need to develop a well-informed, costed and realistic NSOAP in line with Ghana's overall National Health Policy, the GHS Strategic Plan, the Public Health Workforce Strategic Plan and the Human Resources for Health strategies of the country.

This NSOAP will be the blueprint to guide the achievement of strategic priorities across the six surgical system areas (infrastructure including medical products, and technology, workforce, service delivery, information management, finance and leadership and governance. It will serve as policy instrument for improving the health outcomes of people living in Ghana, particularly in SOTA care by providing safe, high-quality and affordable surgical services. Overall, this NSOAP will shift the direction of surgical care development away from discrete vertical projects and will be instrumental to enhance Ghana's surgical care on a national scale.

1.5 Purpose of the Plan

The purpose of this NSOAP is to address identified SOTA service delivery gaps based on the assessment of the current SOTA services situation in Ghana. The intended users for this plan are the key stakeholders in the health sector.

1.6 Policy and Strategic Environment

This Strategy derives motivation from global and continental policy frameworks and initiatives as well as the Vision, Mission and Goals of Ghana's National Health Policy (NHP) 2020 and other relevant policy documents.

1.6.1 Global Strategies and Initiatives

A. Integrated Emergency Critical and Operative (ECO) Care Resolution (WHA 76.2)

The ECO care resolution represents an integrated people-centred continuum. This requires services that are linked to communities through primary care including effective communication, transportation, referral and counter-referral mechanisms. The ECO care resolution represents a powerful call for action to strengthen health systems, especially at the primary health care level to deliver high-quality emergency, critical and operative care[35].

B. Lancet Commission on Global Surgery's Recommendations

The need for NSOAPs was brought to the fore by work done by LCoGS. In 2015, the Commission revealed that close to 5 billion people worldwide lack access to safe, timely and affordable surgery when needed and that an additional 143 million surgical procedures are needed in LMICs each year to save lives and prevent disability. The Commission further proposed recommendations to countries including development of a National Plan to support scale-up of access to surgical care in a coordinated manner[3]. Indicators previously used to monitor surgical conditions and delivery of SOTA care were not uniform across countries. Cognizance of the challenges of lack of standardized metrics

for global surgery surveillance and its implication on comparability and utilization of the limited available data, six core indicators were recommended to countries to monitor their progress towards attainment of minimum benchmarks for equitable, affordable and high-quality SOTA care. All six indicators are included in the World Health Organization (WHO) Core Health indicators and four of them included in the World Bank Development indicators.

C. Other Global Standards and Guidelines

This NSOAP also draws on global standards and guidelines such as the WHO Global Guidelines for the Prevention of Surgical Site Infections; WHO Guidelines for Safe Surgery; WHO Safe Surgical Checklist; United States Centers for Disease Control and Prevention (USCDC) Updated Guideline for the Prevention of Surgical Site Infection; as well as the WHO Generic Essential Emergency Equipment Checklist.

1.6.2 Continental Strategies and Initiative

A. Africa Health Strategy 2016-2030

The Africa Health Strategy (AHS) 2016-2030 by the African Union focuses on strengthening health systems and increasing investments in healthcare to reduce morbidity and mortality and address the social determinants of health. The AHS prioritizes training more healthcare professionals including SOTA professionals. It also has investment in health care infrastructure as one of its priorities. It prioritizes improving access to surgical equipment, operating theatres and essential medications as well as equitable access to SOTA care. It recognizes the use of data for tracking progress and decision-making[14]. This NSOAP aligns perfectly with the priorities of the AHS 2016-2030. This NSOAP seeks to invest in human resources for health by training and retaining SOTA professionals in the country; contribute to attainment of UHC by ensuring that SOTA services are accessible to all; and improve the overall health system through strengthening infrastructure, health information systems and supply chain management for SOTA care.

1.6.3 National policies and priorities

A. National Health Policy and other Policy Instruments

This NSOAP aims to contribute significantly to the achievement of healthy lives for all people living in Ghana through an enabling policy framework that recognizes, empowers and brings together, in a coordinated manner, all stakeholders to promote, restore and maintain good health for all people living in Ghana. Ghana's "National Health Policy and "The UHC Roadmap (2020–2030)" both emphasize equitable access to quality primary care services for the population[15,16]. In order to guarantee equity and better health outcomes of care, this NSOAP (2025–2029) will heavily rely on

existing national policies and priorities in the public health landscape during its development and implementation.

- National Health Policy, 2020 (NHP, 2020)
- Health Sector Medium-Term Development Plan (2022-2025)
- Ghana's Roadmap for Attaining Universal Health Coverage (2020 – 2030)
- Policy and Guidelines for Hospital Accident and Emergency Services in Ghana (2011)
- National Blood Policy: Safe and Adequate Blood for All (2020)
- National Health Insurance Act, 2012 (Act 852)
- National Medical Oxygen Policy (2023)
- Public Health Workforce Strategic Plan (2021)
- Ghana Pharmaceutical Traceability Strategy (2023-2028)
- Medical Equipment Policy and Guidelines (2018)
- Environmental Sanitation Policy (2010)
- Public Health Act, 2012 (Act 851)
- Mental Health Policy (2019-2030)
- Mental Health Act, 2012 (Act 846);
- Human Resources for Health Strategic Plan (2018)

B. Primary Health Care Strategy

In Ghana, PHC means essential health care made universally accessible to individuals and acceptable to them, through their full participation and at a cost the individual, community and country can afford. PHC addresses the broader determinants of health and focuses on the comprehensive and interrelated aspects of physical, mental, and social well-being.

The GHS has adopted a model for the implementation of PHC known as the CHPS initiative. The CHPS initiative characterizes the key strategy for delivering healthcare at the doorstep of individuals which is beneficial to communities located over 5 kilometres from health facilities. This includes health education and promotion strategies which could facilitate the prevention of conditions amenable to surgical care. In Ghana, geographic access is a major barrier to health care. About 70% of the population resides in communities that are over 5 kilometres from the nearest health facility. Childhood mortality in such communities is 40 per cent higher than in communities located within 5 kilometres of health facilities. The NSOAP addresses access to quality surgical, obstetric, trauma and anaesthesia care even at the PHC level.

C. Institutional Care Department and Surgery

The Institutional Care Division (ICD) is mandated by the GHS to provide supervision for all clinical care activities in Ghana. The Division is responsible for the development, support, monitoring, and review of comprehensive clinical care services. The activities of the Division involve formulating and developing clinical care policies, and standard guidelines for clinical practice, supporting its implementation, monitoring clinical care services to ensure compliance with the standards and the provision of effective, efficient, and safe service delivery in all GHS facilities and agencies to which services may be contracted. The ICD spearheads the structured Obstetric Triage Implementation Package (OTIP) project. The OTIP is a formalized and systematic way of recognizing the seriously ill obstetric patient and prioritizing their care. In terms of governance, the ICD is the main department which would oversee SOTA care in Ghana.

1.7 NSOAP Development Process

The NSOAP was developed under the leadership of the Minister of Health working through the NSOAP Technical Working Group (TWG) which was inaugurated in March 2020. The United Nations Institute for Training and Research (UNITAR) National Surgical, Obstetric and Anaesthesia Planning Manual (Edition 2020) was used as guide in development of the NSOAP[17]. This NSOAP was developed in alignment with global, continental and national initiatives. These include the LCoGS recommendation and WHA resolution at the global level[3,4], the Africa Health Strategy 2016-2030 launched by the African Union at the continental level[14] and the UHC Roadmap[15], National Health Policy[16], and its Priority Operational Plan at the national level. The NSOAP aims to support the National Health Policy's objective to "improve surgical services through providing adequate resources." and encourage the usage and accessibility of reasonably priced, high-quality assistive technologies and gadgets.

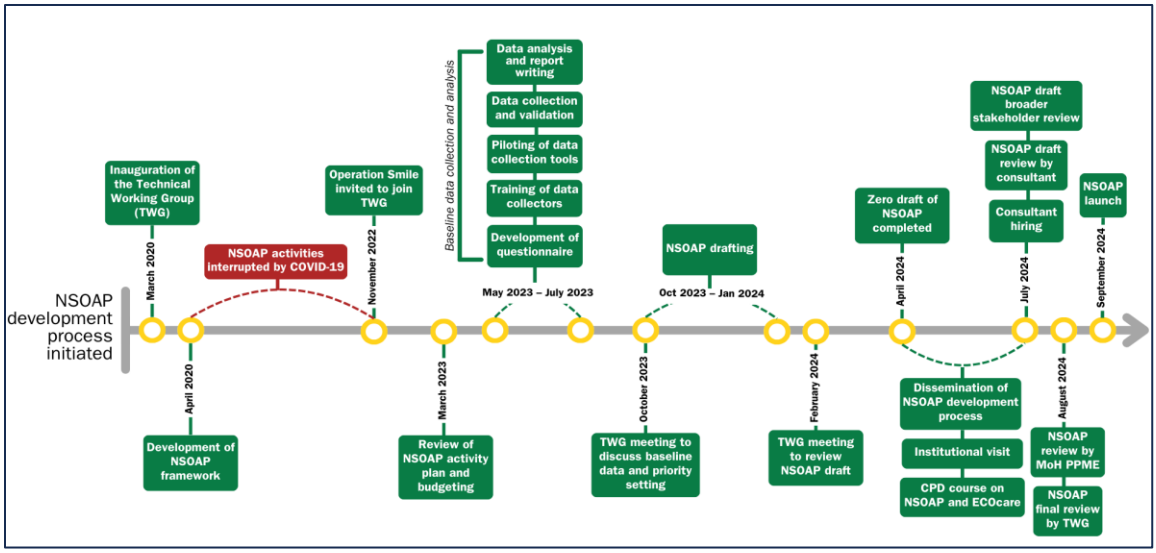


Figure 2. NSOAP development process in Ghana

1.7.1 Ministry Support and Ownership

The NSOAP development began with buy-in and ownership from the MoH, which leads health policy development. The MoH provided the necessary leadership for the NSOAP development. As the entity that has the most comprehensive knowledge and understanding of the country's health priorities and health care landscape including resource capacities and bandwidth for implementation, the MoH's support is key in ensuring the NSOAP aligns with existing policies and current priorities.

1.7.2 Engagement of Stakeholders

Under the leadership of the MoH, key stakeholders were identified to support the development of the NSOAP and ensure that the views and expertise of diverse groups is represented. The scope, action plan, and deadlines for the development of the NSOAP were decided upon by the MoH in coordination with other stakeholders. The stakeholders made up of concerned professional societies, health financing regulators, academia, Non-Governmental Organizations (NGOs), policy experts, health care workers and MoH leadership convened for the first time to decide on the best course of action for completing the objective.

1.7.3 Establishment of the Technical Working Group

In order to support the MoH in defining priorities in the delivery of SOTA care, as well as to supervise the development of the NSOAP, a TWG was established during the stakeholder conference. The MoH, Academia, Health Professional Associations, Health Financing Regulators, Service Providers, Anaesthesia Specialists, Public Health Experts, Surgical Experts, Policy Experts, Specialists in

Research, Statistics and Information Management, as well as Human Resources Experts make up the TWG. The Chief Director of the MoH officially launched the TWG in March 2020.

1.7.4 Designing the NSOAP Development Framework

The TWG started working virtually using the Zoom platform due to the COVID-19 pandemic. The TWG developed the NSOAP framework which was then presented to the Honourable Minister of Health for his review and approval. The framework included a proposal for baseline assessment and situation analysis of the SOTA landscape in Ghana to identify best practices and identify gaps. The baseline assessment adopted a purposive sampling technique to assess the surgical situation in Ghana. The country was divided into nine zones based on availability of Teaching hospitals and other major referral hospitals across the country. Sixty health facilities covering Teaching, Regional, and District hospitals were selected for the baseline assessment.

1.7.5 Development and Pretesting of Baseline Assessment Tool

The TWG developed an assessment tool covering the six domains of the NSOAP [17]. The baseline data collection tools were pretested at two District Hospitals (1 Public and 1 Faith-based) to identify biases in the question, improve clarity of the questions and refine interview techniques.

1.7.6 Baseline Assessment and Situation Analysis

The evaluation and understanding of the existing surgical, obstetric, trauma and anaesthesia landscape was the next in the NSOAP development procedure. This was done through a participatory stakeholder engagement. This included collection of baseline data from selected health facilities, desk review and interview of subject matter experts.

The country was partitioned into 9 zones based on the Teaching Hospitals and major Regional and District hospitals within a particular catchment area. With each teaching hospital and major hospital around which the zoning was done serving as a hub, a minimum of five hospitals made up of government, faith-based and private were selected to reflect the spokes of the hub (using the Network of Practice approach). A total of 60 health facilities were selected from the 9 zones based on the hub-and-spokes approach. (Annex 1) Six teams were trained on the data collection tool and then deployed across the country to collect data on the key thematic areas using the baseline assessment tool, an adaptation of the validated Surgical Assessment Tool developed by the Harvard Program in Global Surgery and Social Change and the WHO. Data were collected by a self-administered tool followed by health facility validation conducted through direct observation during health facility visits, in-person interviews of key hospital staff and review of health facility records. The data collected were cleaned and analysed to generate baseline information regarding the key domains of the NSOAP.

Existing information and data including data from the baseline assessment was used to perform a comprehensive assessment of the status SOTA care in the country. National documents and reports on health such as the Ghana Harmonized Health Facility Assessment 2022-2023 as well as other published and grey literature were used to complement situation analysis. A narrative review of the state of surgery, obstetrics and anaesthesia care in Ghana provided a rich source of information to complement the situation analysis[18]. The Strength, Weaknesses, Opportunities and Threats (SWOT) analysis of the SOTA system was carried out. The situation analysis provided a base information on the existing situation of SOTA care, an evidence-based quantification of the actual SOTA needs and provides a foundation for priority setting.

1.7.7 Prioritization and Strategic Priority Development

The prioritization was done through a series of consultative stakeholder engagements. The TWG had a series of meetings and subject matter experts were engaged to identify the priority areas. A narrative review done on state of surgery, obstetrics, trauma and anaesthesia care in Ghana was reviewed and used to complement information from the baseline assessment done by the TWG and stakeholder engagement efforts.

Prioritization was done using the information from the situation analysis. The identified gaps were synthesized during a brainstorming session around the six domains to generate the strategic objectives. The strategic objectives were then used as the basis for the formulation of the strategic interventions. The strategic objectives covered all the six domains of the NSOAP.

1.7.8 NSOAP Writing and Review

The TWG had a series of meetings to put together a draft zero of the NSOAP document after the findings from the baseline assessment had been analysed and situation analysis completed. The TWG, Senior officials from the Directorate of Policy, Planning, Monitoring and Evaluation (PPME), and other representatives then met to review the first draft of the plan. A Consultant was engaged to complete the development and finalization of the NSOAP for launching. The Consultant conducted a desk review of existing documents including the draft NSOAP, national policy documents, published and grey literature on SOTA care in Ghana and other jurisdictions[18–42]. Further engagement with stakeholders was carried out to have a better understanding of the identified gaps and plans for addressing the gaps. The engagement also sought to ensure that stakeholders views were reflected in the NSOAP. The NSOAP was reviewed further by the members of TWG and officials of the MoH PPME Division.

1.7.9 Costing and Budgeting

The costing of the NSOAP was done based on the planned activities, targets and assumptions on the needs and cost of products and services. The costing was done for each domain of the NSOAP. The

total cost of implementing of the NSOAP was derived by summing up the cost for each of the six domains taking into consideration an. inflation factor based on the nature of the activity.

1.7.10 Stakeholder Validation Workshops

A multi-stakeholder workshop was held to validate the NSOAP. The document was reviewed by stakeholders to ensure data integrity and accuracy of information. The NSOAP was updated based on comments from the validation workshop and the final document submitted.

1.8 Guiding Principles

The NSOAP will be implemented under the following guiding principles:

- ***Safety***: To guarantee that patients are shielded from preventable difficulties throughout SOTA procedures in order to maximize positive results
- ***Cost-effective***: Provide a financially optimal solution-one that gives a clinically relevant benefit at a reduced cost, provided no alternative intervention meets these criteria
- ***Affordable:*** Ensure that no patient receiving surgical care incurs unnecessary costs
- ***Essential:*** Ensure that Bellwether operations (caesarean section, laparotomy, stabilization of open fracture) are available at all District Hospitals
- ***Timeliness:*** Guarantee that every patient would get to a facility offering necessary surgery services in less than two hours; to cut down on patients' wait periods and interruptions in their care
- ***Equitable***: Offer care that is the same regardless of age, gender, ethnicity, geography, political standing, cultural or socioeconomic background
- ***Effective***: Provide services grounded in scientific evidence to everyone who would benefit from them, while avoiding offering them to others who are unlikely to benefit
- ***Efficient:*** Prevent wastage of resources including tools, materials, concepts, personnel time and energy, among other things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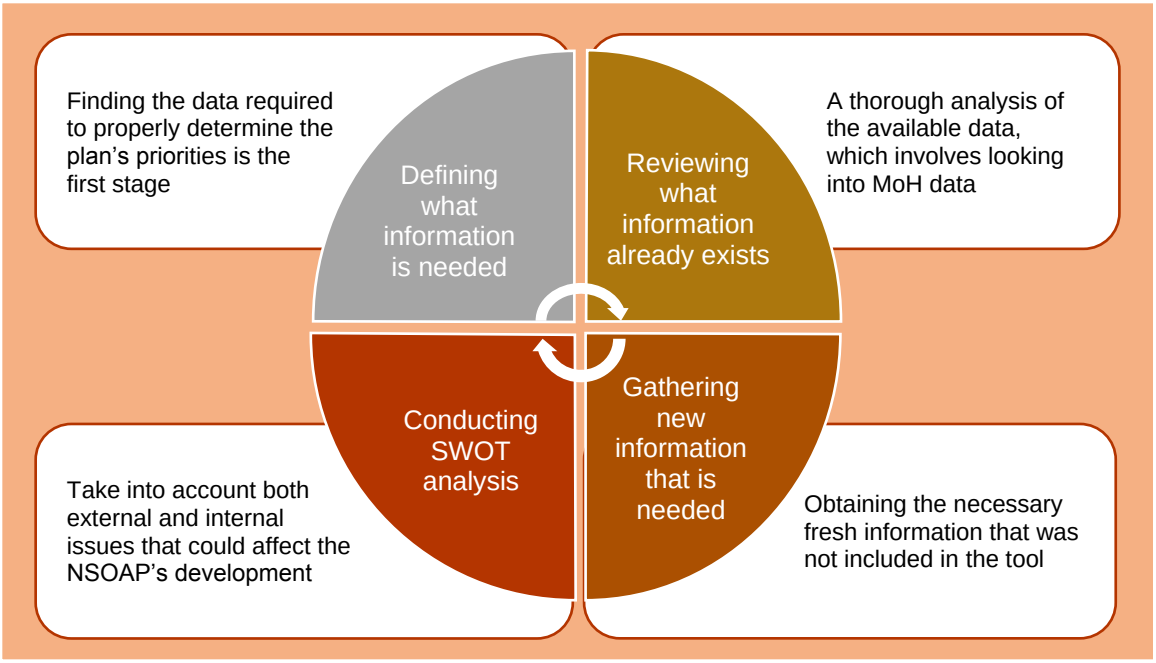
CHAPTER 2: SITUATIONAL ANALYSIS

In 2020, Ghana launched its roadmap to attaining UHC by 2030. The vision of the plan is to ensure that all people in Ghana have timely access to high quality health services irrespective of ability to pay at the point of use." This includes having timely access to SOTA services. Over the years the country has undergone a series of health system reforms to improve its coverage and efficiency. This includes, enhancing services at the community, increasing ambulance services, instituting the national health insurance scheme among others.

The guiding principles for attaining UHC hinged on prioritizing at-risk groups or vulnerable populations such as children, adolescents, aged and those with physical disabilities. Among these groups one of the major barriers to accessing health care is not only distance to health facilities but also financial bottlenecks which the roadmap to UHC seeks to eliminate. Some key interventions highlighted under the UHC are providing essential services for the populations and timely effective management of clinical and public health emergencies. This strategy aligns with the need to have NSOAP for Ghana to comprehensively strategize and contribute to the goal of UHC and mandate of the MoH.

To be able to develop a well thought through plan, we first established the baseline landscape of SOTA services in Ghana across all levels of the health services to inform strategic interventions. It is generally known that these health services are quite deficient at the lower levels of the health system, as such decentralising these assessments will provide a better picture of the gains and gaps that need to be addressed.

The situation analysis followed four main stages (Figure 3) We started by defining what information was needed, reviewed what information already exists, gathered new information, and conducted a SWOT analysis.



Adapted from Sonderman et al, 2019 [43]:

Figure 3. Phases of Situation Analysis

Situation analysis findings are presented according to the six domains of the NSOAP.

2.1 Infrastructure

Adequate infrastructure including physical buildings, equipment and logistics is essential to providing quality SOTA services. Water, electricity and oxygen are fundamental necessities for delivering high-quality SOTA care. The majority 34 (61.8%) of healthcare facilities surveyed in the baseline assessment reported having access to running water at all times. However, it is concerning that one (1.8%) of facilities reported never having access to running water. Reliable access to running water was reported by the majority 4 (80.0%) of Tertiary hospitals and 9 (81.8%) of Secondary/Regional level hospitals and 34 (87.2%) of Primary/District level hospitals (Table 4). Health centres or clinics reported having running water only sometimes. The lack of access to consistent running water hinders the ability to implement effective infection prevention and control measures. This negatively affects surgical sterilization and maintenance of hygiene in the pre-operative, intra-operative and post-operative phases of SOTA care. National planning is focused on ensuring reliable water access in all healthcare facilities, considering infrastructure improvements and resource allocation.

Table 4. Availability of infrastructure for surgical services in health facilities in baseline survey, Ghana, 2022

Level of Facility	Availability of Infrastructure n (%)					
	Never[a]	Rarely[a]	Sometimes[a]	Often[a]	Almost Always[a]	Always[a]
Running Water (n=56)						
Primary/District Hospital	1 (2.5)	0 (0.0)	2 (5.0)	3 (7.5)	6 (15.0)	28 (70.0)
Secondary/Regional Hospital	0 (0.0)	0 (0.0)	0 (0.0)	2 (18.2)	3 (27.3)	6 (54.6)
Tertiary/Teaching Hospital	0 (0.0)	0 (0.0)	0 (0.0)	1 (20.0)	4 (80.0)	0 (0.0)
Electricity (n=55)						
Primary/District Hospital	0 (0.0)	0 (0.0)	1 (2.6)	7 (18.0)	14 (35.9)	17 (43.6)
Secondary/Regional Hospital	0 (0.0)	0 (0.0)	0 (0.0)	1 (9.1)	4 (36.4)	6 (54.6)
Tertiary/Teaching Hospital	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (60.0)	2 (40.0)
Oxygen (n=56)						
Primary/District Hospital	1 (2.5)	0 (0.0)	3 (7.5)	5 (12.0)	14 (35.0)	17 (42.5)
Secondary/Regional Hospital	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (27.3)	8 (72.7)
Tertiary/Teaching Hospital	0 (0.0)	0 (0.0)	0 (0.0)	1 (20.0)	3 (60.0)	1 (20.0)
Internet (n=55)						
Primary/District Hospital	4 (10.3)	2 (5.1)	6 (15.4)	4 (10.3)	18 (46.2)	5 (12.8)
Secondary/Regional Hospital	0.(0.0)	0.(0.0)	1 (9.1)	3 (27.3)	5 (45.5)	2 (18.2)
Tertiary/Teaching Hospital	0.(0.0)	0.(0.0)	0.(0.0)	0.(0.0)	4 (80.0)	1 (20.0)

[a] Never (0% of the time), Rarely (1%–25% of the time), Sometimes (26%–51% of the time), Often (51%–75% of the time), Almost always (76%–99% of the time), Always (100% of the time)

The baseline assessment highlighted that 25 (47.2%) of healthcare facilities surveyed have continuous access to electricity, either through the National grid or generators. However, disparities existed in the reliability of this access, with 21 (38.2%) of facilities reporting almost always having electricity, while one (1.8%) and 8 (14.5%) reported having electricity only sometimes or often, respectively (Table 4). Inconsistencies in electricity supply could significantly impact the operation of critical medical equipment, storage of temperature-sensitive medications, and overall patient care quality. To address this, the NSOAP has prioritized improving the reliability of electricity access in

healthcare facilities, by considering investments in backup power systems and infrastructure improvements.

Disparities in oxygen availability are evident across healthcare facility levels. Health Centres lack oxygen entirely. Primary hospitals show varying access levels, while Secondary and Tertiary hospitals generally have better access. Tertiary facilities, however, face challenges with consistent access to oxygen. Ensuring reliable oxygen availability, particularly in critical settings, is essential for patient care and medical procedures. The NSOAP will prioritize improving oxygen infrastructure, distribution, and storage, with a focus on tertiary hospitals where inconsistencies were noted.

Over 60% of health facilities consistently have access to basic imaging modalities, but health centres and clinics have limited access. District-level facilities generally lack consistent access to imaging and operative room infrastructure, while tertiary facilities have more consistent access. Ensuring equitable access to imaging services across all facility levels is crucial. The plan is focused on enhancing the capacity of health centres and district-level facilities to provide basic imaging services. Investment in infrastructure and training programs can contribute to addressing these disparities.

Disparities exist in the infrastructure needed to care for acutely ill patients across facility levels. Tertiary facilities have Intensive Care Units (ICUs) and recovery wards, but many Primary Care facilities lack recovery wards. Of the Regional hospitals and Teaching hospitals in the country, 43% of them have ICUs[44]. Some tertiary facilities also lack consistently functional equipment. Addressing these disparities requires a comprehensive approach. Planning is focused on expanding the availability of recovery wards and ICUs, ensuring consistent functionality of equipment, and potentially developing strategies for sharing resources or facilitating referrals from primary to tertiary facilities.

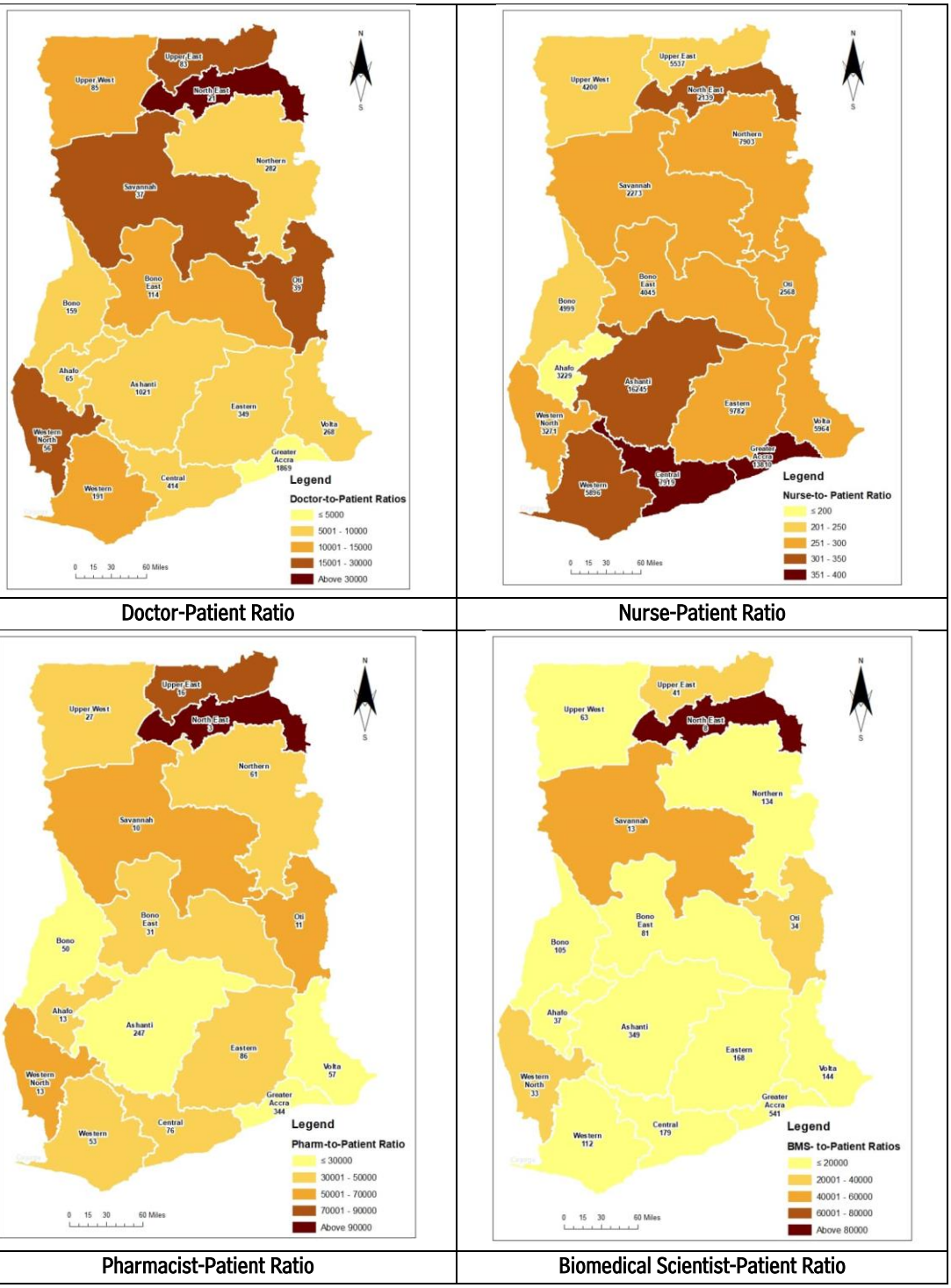
2.2 Workforce

The WHO and the LCoGS recommend a minimum of 20 SOTA physician per 100,000 population. With an estimated population of 30.8 million, Ghana requires a minimum of 6,160 SOTA physicians. However, there were approximately 1,920 SOTA physicians in the country[29] translating to 6 SOTA physicians per 100000. Adequate SOTA physicians are effective if they are well distributed within the country to provide access to SOTA care.

In addition to SOTA physicians, there are other healthcare workers who are critical in providing SOTA care. These include Generalist Medical Practitioners Nurses and Midwives, Pharmacists,

Biomedical Scientists among other who provide SOTA care. As of December 2023, Ghana's medical workforce density (medical and dental including specialities) in the public sector was 5,053 doctors. This number is unevenly distributed across the 16 regions of the country with majority 2890 (57.2%) being taken up by Greater Accra and Ashanti regions. This pattern is similar to what exists in the nursing profession where Ashanti region had the highest number of 16,245 followed by the Greater Accra region with 13,810. The Northeast region had the least representation with 2,139 nurses. Workforce migration, which has been reported to be high among the nursing professions, poses a challenge to meeting the growing healthcare needs of the entire population. Pharmacists form a core part of the health service delivery team. Greater Accra region has the highest number of 344 Pharmacists followed by Ashanti region with 247. The Northeast region had the least with only 3 Pharmacists serving the entire population of 658,903.

With regards to Biomedical Scientists, the highest representation is 541 in the Greater Accra region, followed by the Ashanti region with 349 Biomedical Scientists. The existing pattern in the distribution of these cadres indicates uneven distribution of healthcare workforce in favour of the major cities. This situation further indicates that the core professionals in the medical team that might be targeted to implement the NSOAP might be limited due to the absence of a clear retention plan for service delivery in deprived areas.



Doctor-Patient Ratio | Nurse-Patient Ratio

Pharmacist-Patient Ratio | Biomedical Scientist-Patient Ratio

Source: Ministry of Health Payroll, December 2023

Figure 4.Healthcare Professional-Patient Ratio and Distribution in Ghana, 2023

Additionally, among anaesthesia providers in the baseline analysis, there is a comparatively high number of Certified Registered Anaesthetists (CRA). The number of anaesthesia providers in the baseline survey indicates an apparent strength in anaesthesia services (Table 5). However, there is a concerning shortage of medical doctors specialized in anaesthesia, who by policy are required to provide supervision for CRAs. This highlights a potential need for targeted workforce development initiatives to address the imbalance. The data also underscores the importance of specialty training programs to ensure a well-rounded workforce, particularly in areas experiencing shortages. Understanding the distribution of professionals can inform resource allocation decisions, facilitating the enhancement of service provision in critical areas such as anaesthesia. Furthermore, the presence of non-physicians in critical SOTA services provides an opportunity to emphasize the significance of collaborative care models to optimise service delivery and address workforce gaps effectively.

Another issue aggravating the challenges in Ghana's workforce density and distribution is the freeze on recruitment since 2020 among some critical health workforce which has possibly yielded gaps in the skilled mix of the workforce for service delivery in some aspects of the public sector. A strong partnership with the private sector could yield appreciable health outcomes. Ghana's NSOAP therefore aims at maximizing all available resources towards effective and efficient surgical services in a mutually beneficial way to the populace.

Gender equality in SOTA workforce is also critical for diversity and better work environments that improve patient care. This NSOAP will not only focus on the SOTA workforce density and distribution across the country but also, gender equality in the SOTA workforce.

Table 5. Distribution of SOTA service providers in health facilities in baseline survey, Ghana-2022

Healthcare Professional	Number
Anaesthesiologists	47
General Surgeons	85
Maxillofacial Surgeons	23
Neurosurgeons	5
Otorhinolaryngologists	9
Ophthalmologists	16
Orthopaedic and Trauma Surgeons	23
Paediatric Surgeons	8
Plastic Surgeons	5
Urologists	27
General Doctors (Surgery)	192
General Doctors (C-Section)	213
General Doctors (Anaesthesia)	10
Certified Registered Anaesthetists	284
Midwives	3926
Non-midwives (Obstetrics)	127
Nurses (Surgical Wards)	2228
Medical Laboratory/Biomedical Scientists	660
Physician Laboratory Scientists	10
Pharmacists	314
Radiographers	107
Radiologists	19
Sonographers	43
Pathologists	15
Total	**8,396**

Source: Baseline Assessment

2.2.1 Anaesthesia

A minimum of four Specialist Anaesthetists per 100,000 population has been suggested to achieve a reasonable standard of healthcare at country level. Ghana therefore needs a minimum of 1,232 Specialist Physician Anaesthetists (Anaesthesiologists) to provide a reasonable standard of anaesthesia service delivery. A baseline assessment conducted in 2023 found the total number of Anaesthesiologists to be 158. This includes medical doctors who have undergone an 18-month Diploma in Anaesthesia programme with the Ghana College of Physicians and Surgeons (GCPS). Based on this, the density of Anaesthesiologists per 100,000 population is computed to be 0.49 representing a huge gap in the required number of Anaesthesiologists for Ghana's population. There was a notable disparity in the distribution of anaesthesiologists and SOTA workforce in general

across the levels of healthcare facilities with a concentration of SOTA workforce at tertiary/teaching hospitals. Over 90% of Anaesthesiologists were in the teaching hospitals. The gap in the anaesthesia manpower at the District hospitals is being filled by non-physician providers of anaesthesia.

2.2.2 Nursing

Ghana currently has 41,805 general nurses and 27,286 midwives serving across the country in the public sector as at December 2023. These include 76 Emergency Nurse Specialists, 6 Peri-Operative Nurse Specialists, 10 Critical Care Nurse Specialists, 30 Palliative Care Nurse Specialists, 45 Oncology Nurse Specialists, 4 Ophthalmic Nurse Specialists and 7 Otorhinolaryngology Nurse Specialists trained by the Ghana College of Nurses and Midwives (GCNM)[45]. Additionally, there are 828 post-basic Perioperative Nurses, 782 post-basic Critical Care Nurses, and 355 post-basic Emergency Nurses. While the NSOAP focuses attention on these categories of nurses providing specialized care, general nurses and midwives on surgical and maternity wards are also considered to be providing SOTA care.

2.2.3 Surgery

Surgeons in Ghana tend to concentrate in the urban areas of the country leaving most District level facilities lacking access to specialist surgical care. Surgical subspecialities such as Paediatric Surgery and Trauma and Orthopaedic Surgery are also not well represented across health facilities in the country. As of July 2024, there were 19 Paediatric Surgeons in Ghana of which three are in Regional hospitals, two in District hospitals and two in private hospitals. Paediatric surgical care in underserved areas has been delivered largely through outreach programmes. Paediatric outreach programmes have been recommended as a stopgap measure for the inadequate number of paediatricians in the country[46]. This is because, the current rate of graduation of Paediatric Surgeons in Ghana if not increased would be unable to cater for the surgical needs of children in Ghana.

2.2.4 Obstetrics and Gynaecology

Obstetrician and Gynaecologists represent another critical cadre of professionals critical to achieving optimum SOTA care. There were approximately 453 Obstetrician and Gynaecologists in the country as of July 2024 with a projected need of 871 in 2030. The distribution of this workforce also appears to be in favour of urban areas and in higher level health facilities. However, there is a relative equity in the distribution as urban areas and secondary and tertiary facilities tend to be densely populated and have comparatively more caseload than lower-level facilities in rural areas.
Most SOTA Physician Specialists in Ghana are trained either by the GCPS or the West Africa College of Surgeons. Over half of the graduates work in the nation's capital, Accra or Kumasi, the next largest city in the country[47].

2.3 Service Delivery

The assessment of the service delivery is focused on the availability and access to Bellwether procedures, surgical volumes and quality of the SOTA care. It includes surgical safety measures such as use of surgical safety checklist and tracking of perioperative mortality.

2.3.1 Two - hour access to health facility

In the baseline assessment, the indicator which looked at 2-hour access to health facilities showed that 18.5% (10/54) of the health facilities surveyed reported that all their patients always had 2-hour access to the health facilities for SOTA services. About 7.4% (4/54) of the health facilities reported that between 26-50% of their patients were able to have 2-hour access to these services while none of the health facilities surveyed reported a 0% for this indicator (Table 6).

This data highlights disparities in geographical accessibility to healthcare services, which could significantly impact the planning and distribution of SOTA services. The observed variations in accessibility underscore the need to address disparities in geographical access to healthcare services. Limited access to healthcare facilities within a 2-hour timeframe may deter individuals from seeking timely medical care, particularly in emergencies. This could potentially impact the utilisation of SOTA services, with implications for patient outcomes and overall healthcare delivery. Some of the factors contributing to these disparities include poor road network, transport and unavailability of surgical specialists.

Table 6. Access to healthcare facilities within a 2-hour timeframe in surveyed facilities in baseline assessment, Ghana, 2022

Facility Level	Access to healthcare facilities within a 2-hour time frame n (%)					
	Never[a]	Rarely[a]	Sometimes[a]	Often[a]	Almost Always[a]	Always[a]
Primary/District Hospital	0 (0.0)	1 (2.6)	4 (10.5)	10 (26.3)	14 (36.8)	9 (23.7)
Secondary/Regional Hospital	0 (0.0)	0 (0.0)	0 (0.0)	4 (36.4)	6 (54.5)	1 (9.1)
Tertiary/Teaching Hospital	0 (0.0)	0 (0.0)	0 (0.0)	4 (80.0)	1 (20.0)	0.(0.0)
Total	**0 (0.0)**	**1 (1.9)**	**4 (7.4)**	**18 (33.3)**	**21 (38.9)**	**10 (18.5)**

[a] Never (0% of the time), Rarely (1%–25% of the time), Sometimes (26%–51% of the time), Often (51%–75% of the time), Almost always (76%–99% of the time), Always (100% of the time)

2.3.2 Surgical volumes

Table 7 shows the distribution of surgical volumes per level of healthcare facility surveyed. On average, Tertiary level health facilities performed relatively more surgical procedures with a median annual surgical volume of 5,357 followed by the Secondary and Primary level facilities with median annual surgical volumes of 1,901 and 679 respectively (Table 7). Though this data does not include the population served by each level of health facility and the case mix at each level, these figures indicate that Ghana is still lagging in SOTA services. The LCoGS recommended surgical volume of 5,000 procedures per 100,000 population as a target to meet population surgical needs.

Table 7. Surgical volume per level of facility in surveyed health facilities in baseline assessment, Ghana, 2022

Facility Level	Total number of surgeries	Median (IQR) annual surgical volume
Primary/District Hospital (n=35)	32, 639	679 (457; 1,277)
Secondary/Regional Hospital (n=8)	20,150	1,901 (1,352; 3,640)
Tertiary/Teaching Hospital (n=4)	25,340	5,357 (4,836; 7835)
Total (n=47)	**78, 129**	**1,163 (560; 2003)**

According to the LCoGS, laparotomy, caesarean delivery, and operative management of an open fracture are the three Bellwether procedures indicative of adequate provision of surgical care in a health system. From the baseline survey, only 19.6% (11/56) of facilities surveyed could perform all the Bellwether procedures. This figure is similar to 20% for District hospitals and less than 43% for Regional hospitals found in the Ghana Harmonised Health Facility Assessment[39]. Less than a quarter of health facilities surveyed providing all Bellwether procedures may be indicative of inadequate infrastructure, lack of capacity as well as the inequitable distribution of SOTA professionals. The low proportions of facilities capable of performing a full complement of Bellwether procedures may mean patients may have to be referred to higher centres and this could result in delays, increased cost of care and poor outcomes. Of the Bellwether procedures, the highest median annual surgical volume of 499 was recorded for caesarean section followed by laparotomy and then reduction of open fractures (Table 8).

Table 8. Surgical volume of Bellwether procedures in the baseline surveyed health facilities, Ghana, 2022

Facility Level	Total number of surgeries	Median (IQR) annual surgical volume
Laparotomy		
Primary/District Hospital (n=38)	1,693	11 (3;30)
Secondary/Regional Hospital (n=10)	866	83 (36; 129)
Tertiary/Teaching Hospital (n=4)	365	30 (15; 168)
Total	**2,924**	**16 (4; 51)**
Caesarean Section		
Primary/District Hospital (n=38)	17,221	393 (279; 561)
Secondary/Regional Hospital (n=11)	9,400	783 (411; 1006)
Tertiary/Teaching Hospital (n=4)	7,038	1,646 (1,255; 2,264)
Total	**33,659**	**499 (285; 851)**
Reduction of Open Fractures		
Primary/District Hospital (n=36)	351	0 (0; 0)
Secondary/Regional Hospital (n=10)	970	0 (0; 73)
Tertiary/Teaching Hospital (n=3)	323*	108 (107; 109)
Total	**1,644**	**0 (0; 0)**

*Incomplete data from three Teaching Hospitals

Surgical safety is of utmost importance to prevent major and life-threatening complications leading to undue loss of life and patient morbidity. Regarding surgical safety checklist, not all facilities ensure the use of the surgical safety checklist for all surgical procedures. Of the health facilities surveyed, 41.1% (23/56) including three Tertiary and 15 Primary level facilities reported using the surgical safety checklist always for surgical procedures (Table 9).

Though most facilities hold monthly mortality meetings and regularly report maternal mortality, they do not monitor or report perioperative mortality in a structured surveillance system.

Table 9. Use of surgical safety checklist for surgical procedures in the baseline surveyed health facilities, Ghana, 2022

Level of Facility	Frequency of use of WHO surgical safety checklist n (%)					
	Never[a]	Rarely[a]	Sometimes[a]	Often[a]	Almost Always[a]	Always[a]
Primary/District Hospital	4 (10.0)	1 (2.5)	4 (10.0)	7 (17.5)	9 (22.5)	15 (37.5)
Secondary/Regional Hospital	3 (27.3)	1 (9.1)	0 (0.0)	1 (9.1)	1 (9.1)	5 (45.5)
Tertiary/Teaching Hospital	0 (0.0)	0 (0.0)	0 (0.0)	1 (20.0)	1 (20.0)	3 (60.0)
Total	**7 (12.5)**	**2 (3.6)**	**4 (7.1)**	**9 (16.1)**	**11 (19.6)**	**23 (41.1)**

[a] Never (0% of the time), Rarely (1%–25% of the time), Sometimes (26%–51% of the time), Often (51%–75% of the time), Almost always (76%–99% of the time), Always (100% of the time)

2.4 Information Management and Research

Efficient and judicious data collection and use of information for decision-making is critical to a well-functioning healthcare system. The paucity of data points on surgical systems highlights the weakness in the SOTA space and provides opportunities to establish evidence-based policies for system level improvement.

Healthcare delivery in Ghana has been transformed using digital health platforms like the District Health Information Management System (DHIMS 2), eTracker software, and the Lightwave Health Information Management System (LHIMS).

These systems improve the quality of healthcare. By making it easier to efficiently record patients' histories and treatment plans, these technologies help doctors provide more efficient patient care.

2.4.1 Data Collection Systems, Verification and Utilisation

On the national health data repository, the DHIMS 2 platform and eTracker, data is collated on various service variables including caesarean sections from different levels of care. The DHIMS 2 is used for gathering data from all public facilities and a good number of private facilities.

Very limited information is gathered on various surgical and anaesthesia procedures performed and therefore difficult to track over time. There are data points on surgeries, blood transfusions and some key indicators which are not routinely entered into the system. Although these systems have data validation processes to ensure accuracy, these are weak and often not implemented. The use of data from these systems are only accessible to selected facility-level officers, limiting non-health facility actors from accessing and using data for decision making.

Human resource data on SOTA can be found on a separate human resource electronic platform within the GHS facilities but these are not detailed enough to include specialization areas within the SOTA system. Various Agencies such as the Ghana Medical and Dental Council, Nursing and Midwifery Council, training institutions as well as professional bodies and private practitioners have data on SOTA human resource, but these data are not harmonized. The multiple and often fragmented data collecting platforms affect the completeness and quality of data gathered. This NSOAP proposes the development of a national database for harmonizing and integrating existing SOTA human resource data.

2.4.2 Electronic Health Records Systems

Various health facilities have attempted using electronic medical record systems. However, the MoH has deployed the LHIMS, which is a National Electronic Health Record System, to all Teaching, Regional and District hospitals as well as Polyclinics. The MoH is currently extending this technology to Health centres.

The LHIMS which as of June 2024 has registered 19.7 million persons, focuses on patient-level transactional data and supports continuity of care by providing health facilities access to real time patient data. It also provides a dashboard for the MoH to access data and reports. The LHIMS provides opportunity for healthcare workers to quickly enter notes, examine medical histories, and access patient records with ease. In the end, this results in better surgical outcomes by facilitating quicker decision-making and enhanced communication among healthcare professionals. The LHIMS also allow for smooth information sharing between various healthcare facilities, which can improve patient-provider communication. This guarantees continuity of care, particularly for patients requiring specialty surgical procedures or receiving therapy at several locations.

2.4.3 Supply Chain Management Information System

In addition to the DHIMS 2 and LHIMS, the MoH has the Ghana Integrated Logistics Management System (GhILMIS) which supports supply chain operations and decision making at all levels. The GhILMIS helps optimize the supply of medical products as well as improve planning and responsiveness.

2.5 Financing

Health financing in Ghana is through the government of Ghana allocation, health insurance from both private and the national health insurance scheme, out of pocket expenditure and partner support. The cost of SOTA care varies largely depending on the type of care, the cadre of healthcare worker and the facility delivering the care. The cost of SOTA care is relatively expensive at higher level facilities and private facilities that provide specialist care. There are direct and ancillary costs related to the SOTA care and indirect costs of transportation and lost wages.

Insurance is provided by the NHIA and private health insurance companies. The NHIS covers over 95% of disease conditions prevalent in the country[48]. The health insurance coverage in Ghana is 68.8%[6] with the NHIS coverage being 55.4%. The NHIS and the private health insurance have contributed to reduction of out-of-pocket expenditure on health. However, a large proportion of insured households still experience catastrophic health expenditure[49]. There is therefore the need to revise current policies to further protect households from catastrophic expenditure. Adding preventive services to the benefits package may be an important first step.

Strengths	Weaknesses
▪ Existence of policy guidelines aligned with SOTA care (Medical Oxygen, Equipment and Digital Health Policies) ▪ Availability of basic equipment and medical supplies for surgical care services ▪ Broad access to SOTA services through the construction (Agenda 111 Ghana priority health infrastructure projects) and refurbishment of healthcare facilities ▪ The existence of a general ambulance service system ▪ Availability of infrastructure planners and a Biomedical Engineering Directorate at the National level ▪ Availability of a maintenance plan for procurement and a supply budget line ▪ Well-equipped, accredited specialist training institutions and programs for Surgeons, Anaesthetists and Nurses in SOTA ▪ Formal regulatory bodies to regulate training, professional standards and health facility accreditation ▪ Availability of experienced surgical care teams to build the capacity of the inexperienced trainees ▪ Existence of suitable and diverse professional cadres capable of undertaking work in SOTA disciplines ▪ Implementation of performance appraisal systems to assess and enhance the effectiveness of SOTA care provision ▪ The numbers of Specialists being trained by specialist training colleges is rising annually ▪ Availability of a structured referral system ▪ Existence of collaboration with development partners ensuring access to resources	▪ Inadequate and stable provision of infrastructure including medical oxygen, electricity, and water ▪ Deficiencies in SOTA equipment and supplies resulting in compromised safety and efficacy ▪ Substandard operating theatres due to inadequate budgetary support for activities of MOH and its Agencies ▪ Restricted financial resources allocated to healthcare infrastructure and services ▪ Inadequate road and transportation systems ▪ Inadequate ambulance system, compounded by insufficient regular maintenance practices ▪ Inadequate SOTA technology available ▪ Shortage and maldistribution of SOTA professionals ▪ Insufficient number of SOTA professionals being trained ▪ Inadequate strategies and resources to attract and retain SOTA professionals ▪ Low interest by medical doctors in pursuing training in Anaesthesia ▪ Inadequate government support for Continuing Professional Development (CPD) courses for SOTA cadres, particularly those working in rural areas ▪ DHIMS 2 does not have all key performance indicators for NSOAP ▪ Lack of surveillance for perioperative mortality ▪ Capacity for research is limited ▪ Lack of protected time for SOTA professionals to conduct research

▪ Increasing awareness and advocacy efforts prioritising SOTA, enhancing accessibility and service delivery ▪ Well-defined organisational structure in many institutions ▪ Access to comprehensive outreach programs dedicated to surgical care ▪ Well-structured Institutional Care Division that monitors systems ▪ Urban centres are reasonably catered for in terms of SOTA care ▪ Availability of LHIMS, DHIMS 2 and technical capacity for collecting and managing SOTA data ▪ Ethics Review Committees available to facilitate SOTA research ▪ Institutionalization of quality management in the MOH and its agencies ▪ National and Private Health Insurance Schemes available ▪ Over 95% of disease conditions in the country are covered by NHIS ▪ Government commitment for improving SOTA care ▪ Strong Primary Health Care services	▪ Agencies of MOH with data which are not interconnected especially about manpower movements and cadres ▪ Deficiencies in documentation of SOTA care delivered at health facility level ▪ Coverage of NHIS is inadequate ▪ Out-of-pocket payment is still occurring ▪ Preventive services are not covered by the NHIS ▪ Proportion of budgetary allocation to health sector inadequate

Opportunities	Threats
▪ Support from partners to improve infrastructure and enhance capacity for SOTA care ▪ A partner-driven process is in place to support SOTA services ▪ Training and capacity building initiatives are available to enhance the proficiency and expertise of healthcare professionals ▪ Enhanced academic qualifications exist in selected universities for improving educational credentials ▪ Partnerships established between clinical cadres and academic institutions to conduct research ▪ The availability of policy documents such as the Global Strategic Direction and WHO guidelines	▪ Interest of partners for sustainable infrastructure development is not guaranteed ▪ Support from various stakeholders is mainly for obstetrics ▪ Financial commitment from partners is not assured, posing challenges to securing adequate funding for healthcare projects (Infrastructure and maintenance) ▪ Cooperation from private sector is not assured, particularly regarding the sustainability ▪ Tendency for public sector healthcare professionals to prioritize private practice over public service, resulting in conflicts of interest and further straining the workforce

provides essential guidance for the delivery of care in SOTA ▪ Embracing technology and fostering innovation enhances operational efficiency ▪ Robust internet connectivity ensures seamless communication and access to online resources and telemedicine for healthcare delivery ▪ Global interest in SOTA data ▪ Availability of journals and platforms for sharing SOTA research ▪ Funding available from development partners for SOTA research ▪ Partner collaborations exist in country	▪ Lack of accreditation for Continuous Medical Education (CME) courses offered at the facility level, hindering professional development opportunities for SOTA cadres ▪ Inadequate implementation or operationalization of the referral system. ▪ Increased medico-legal concerns due to lack of attention to patient centred care and patient safety ▪ High level interferences with the placement of staff ▪ Unsatisfactory conditions of service (salary, workplace environment, insurance) ▪ Migration of SOTA professionals out of the country

Figure 5. SWOT Analysis of SOTA care in Ghana

2.6 Summary of Situation Analysis

The current SOTA situation and key needs are summarized according to the domains of the NSOAP (Table 9).

Table 10. Summary of SOTA situation in Ghana, 2024

Domain	Current Situation	Needs
Infrastructure	Unreliable access to running water, electricity and oxygen	▪ Backup power generator, water reservoir and oxygen piped to operating theatres for all hospitals at District level and above
	27 hospitals in 11 regions have oxygen plants[32]	▪ Oxygen plant at all 16 regional levels
	Lack of consistent access to imaging and operative room infrastructure at District level	▪ At least 3 operating theatres for each District level hospital
	Inadequate supply of surgical equipment and supplies	▪ Surgical equipment and supplies for all levels
Workforce		▪ Minimum of 6,160 SOTA physicians needed for country's population
	Relatively more CRA compared to Anaesthesiologists 943 CRAs available[29]	▪ 1,252 CRAs needed ▪ 3 CRA per District hospital, 25 per Regional hospital and 12 per Teaching hospital is desirable
	155 Anaesthesiologists available[29]	▪ 1,296 Anaesthesiologists needed. ▪ At least two Anaesthesiologists per District level hospital, 26 per Regional hospital and 60 per Teaching hospital is desirable
	590 General Surgeons available[29]	▪ 670 General Surgeons needed[29] ▪ At least one General Surgeon per District level hospital desirable
	Total of 19 Paediatric Surgeons	▪ 50 Paediatric Surgeons needed (4 per million children under 15 years)[50] ▪ At least one per Regional level hospital desirable ▪ District level hospital capacity to stabilize children with life-threatening surgical conditions, make health enhancing and life-saving surgical decisions
	58 Trauma and Orthopaedic Surgeons[29]	▪ 304 Trauma and Orthopaedic Surgeons needed[29] ▪ At least one Trauma and Orthopaedic Surgeon per District level hospital desirable
	453 Obstetricians and Gynaecologists[29]	▪ 871 Obstetricians and Gynaecologists needed ▪ At least one Obstetrician and Gynaecologist at District level hospital desirable

	Maldistribution of SOTA professionals	▪ SOTA physicians and specialists at District level (with emphasis on Paediatric Surgeons, Anaesthesiologists, Trauma Surgeons) ▪ Retain SOTA specialists at District level
	Inadequate SOTA Physicians and Specialists at District level	▪ Post SOTA specialists to District level ▪ Retain SOTA specialists at District level
	Total of 122 nurse specialists providing SOTA services[45] : 76 Emergency Nurse Specialists 6 Peri-Operative Nurse Specialists 10 Critical Care Nurse Specialists 30 Palliative Care Nurse Specialists	▪ 222 Emergency Nurse Specialists needed ▪ 92 Peri-Operative Nurse Specialists needed ▪ 92 Critical Care Nurse Specialists needed ▪ 92 Palliative Care Nurse Specialists needed
	244 Biomedical Engineers available[29]	▪ 384 Biomedical Engineers needed
	Gender balance in SOTA workforce unknown	▪ Gender equality in SOTA workforce
	Low human resource capacity for Bellwether procedures at District level hospitals	▪ Train general practitioners at District level hospital to perform Bellwether procedures
Service Delivery	Less than a quarter of District level facilities have Bellwether procedures	▪ Bellwether services at the rest of the 75% of District level facilities
	About 30% of patients had 2-hour access to health facility with Bellwether procedures	▪ All District level health facilities and above should have Bellwether procedures available
	Surgical volume per level (Median) District level: 679 Regional level:1,901 National level: 5,357	▪ Minimum surgical volume of 5000 per 100,000 annually recommended[3]
	Proportion of surgeries where there is full implementation of surgical safety checklist is unknown	▪ Surgical safety checklist implementation for all surgeries desirable
	No surveillance for perioperative mortality	▪ Establish surveillance for perioperative mortality
Information Management	DHIMS 2 and LHIMS available. DHIMS 2 does not generate LCoGS indicators	▪ Integrate into DHIMS 2 SOTA key indicators
	Multiple data sources for SOTA human resources not harmonized	▪ Centralized database for SOTA human resources
Financing	Health insurance coverage is 68.6%[6] (both NHIS and private health insurance)	▪ Reduce risk of catastrophic and impoverishing expenditure


ABLE
4
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CHAPTER 3: STRATEGIC FOCUS

This chapter presents the vision, mission, and strategic objectives and indicators for the NSOAP. It also highlights the prioritization of the strategic interventions for the various domains of the NSOAP.

3.1 Vision and Mission

3.1.1 Vision

To provide equitable access to essential surgical, obstetric, trauma and anaesthesia care for all persons living in Ghana

3.1.2 Mission

To provide safe, accessible, high-quality and timely comprehensive surgical, obstetric, trauma and anaesthesia care to all people living in Ghana, regardless of their age, location and socioeconomic background and in a manner that mitigates impoverishment.

By providing equitable access to high-quality, essential surgical, obstetric, trauma and anaesthesia care for all persons living in Ghana, the NSOAP aims to contribute to the MOH's vision of a healthy population for national development.

3.2 Prioritization

The prioritization of interventions took into consideration the results of the baseline survey, situation analysis and other contextual issues obtained from policy documents, publications and grey literature.

Contextual issues taken into consideration include, the country's demographic characteristics, population growth rate, urbanization, availability and distribution of health workforce and infrastructure development among others.

In the light of these, improving infrastructure, expanding surgical capacity, training SOTA providers, and ensuring access to essential surgical services in both urban and rural areas to meet the increasing demand were prioritized. In addition, interventions and resources to address the specific healthcare needs of children, including paediatric surgeries and maternal health services as well as research initiatives to improve surgical outcomes and patient safety were highlighted for prioritization. Other issues were related to surgical health promotion, screening for various cancers and funding initial management of persons injured in road traffic accidents.

In order to optimize SOTA care, this NSOAP highlights the strengthening of diagnostic functions at the various levels of care. This is expected to enhance timely identification of surgical conditions using imaging diagnostics and other tests as well as identification of underlying medical conditions that may impact SOTA care. These services are also important in guiding surgical decisions and enhancing patient safety. Diagnostic services and professionals that provide these services have been planned for in this NSOAP.

3.2.1 Prevention and Early Detection of Cancers

Although not a surgical intervention, screening for some childhood, cervical, breast and gastrointestinal cancers has impact on surgical care. This NSOAP therefore includes screening for childhood cancers as part of the child welfare clinic visits. In addition, screening for breast, cervical, prostate and colon cancers will be intensified for prevention and early detection of cancers. Furthermore, a robust immunization programme against the human papilloma virus (HPV) at the appropriate age will be set up for cervical cancer prevention. These strategies form part of comprehensive surgical health promotion.

3.2.2 Fund for Accident and Trauma Patients

Initial management of persons with road traffic injuries requires swift decision-making including a decision to transport to health facilities and perform lifesaving interventions. This initial management interventions require payment. However, the situations are such that it is often impossible to demand payment for such activities. Setting up a fund possibly from deductions from vehicle insurance premiums, with appropriate disbursal mechanisms to cover the initial management of persons injured in road crashes will be pursued by this NSOAP.

Key crosscutting considerations included in the prioritization comprised issues of ECO care, inclusivity and gender, task sharing and use of artificial intelligence in SOTA care. These issues were considered to potentially impact the NSOAP and its implementation.

3.2.3 Intergrated Emergency Critical and Operative Care

The NSOAP emphasizes the ECO care concept being promoted by the WHO to reduce preventable deaths and improve overall patient outcomes across SOTA spectrum of care. This seeks to improve access to high-quality essential ECO care services by everyone through the promotion of a seamless continuum of care for patients requiring SOTA care. The NSOAP recognizes the important role of timely and comprehensive continuum of care in emergencies, critical illnesses and obstetric situations and incorporates a strong focus on integrated ECO care. This involves breaking down silos between emergency care, critical care and surgical services and strengthening SOTA interventions

that are needed in operating theatres, Emergency Units and ambulatory facilities including the National Ambulance Service at all levels of care. It also includes strengthening the necessary workforce including the Emergency Medical Technicians and other frontline providers. Additionally, it comprises improving medicines and supplies needed to provide the necessary interventions. The NSOAP focuses on strategies to improve ECO services and enhance emergency care systems that serve as the first point of contact for communities. The NSOAP will therefore serve as a tool for implementing integrated ECO care that is accessible to all persons at all levels of the health care system.

3.2.4 Gender and Inclusivity

In the NSOAP prioritization, acknowledgement was given to gender and inclusivity as SOTA needs differ between genders. Disparities in access to care including financial access were considered and included. This was done to develop a plan that is inclusive of the needs of women and children including survivors of gender-based violence (GBV) who may require SOTA interventions. Attention is also focused on children's surgical needs especially structural birth defects which are considered as part of the neglected surgically treatable conditions of LMICs[2]. This is particularly important because congenital anomalies have emerged among the leading cause of death in children less than 5 years as childhood deaths from infectious diseases and malnutrition have decreased over the decade.

This NSOAP embraces strategies to prioritize gender sensitivity. These include disaggregation of data on SOTA care and service utilization by sex and other sociodemographic factors to identify disparities in access to care. This will be critical in developing tailored services that address specific needs of women, men, children and people with other socioeconomic and cultural backgrounds. The NSOAP also includes development of protocols for addressing GBV that require SOTA care. It includes efforts to minimize stigma, prevent discrimination and provide a welcoming environment for all patients seeking SOTA care. Disaggregation of data on SOTA health workforce by sex will be done and strategies devised to foster gender equality in SOTA training and empowering women for leadership positions in SOTA care.

3.2.5 Task Sharing

Task sharing has been embraced by many LMICs to ensure rational redistribution of tasks among health workforce. As a result of the inadequate highly skilled SOTA workforce, other health workers with shorter duration of training and fewer qualifications have been used to supplement the numbers of SOTA professionals especially in underserved areas. In this NSOAP, these cadre of healthcare professionals will be trained to perform certain types of SOTA care. In Ghana, Physician Assistants and Nurse Anaesthetists, now called CRAs, have been used to supplement the inadequate numbers of medical doctors and Physician Anaesthetists (Anaesthesiologists) respectively. Strengthening and

expanding existing task-sharing arrangements to ensure equitable access to SOTA care has been highly prioritized. This would be done through development of specific guidelines for task sharing, as well as adequate monitoring and evaluation of the practice. There is a limit however to the expertise this arrangement will provide and would not be used as a replacement for the requirement for increasing the needed trained workforce.

3.2.6 Artificial Intelligence

With the advent of Artificial Intelligence (AI), there is the need to develop guidelines for its responsible use in SOTA care. Even though the technology will require substantial investment to implement by health facilities, its advantages such as use in improving decision-making, enhancing the provision of SOTA care, and resource allocation will accelerate its adoption and use by health facilities. AI-powered virtual reality simulations, monitoring systems and surgical robots could be leveraged to address the shortage of SOTA care. Despite the benefits of AI in SOTA care, there are drawbacks such as lack of robust data storage and security that are essential for effective functioning. Another weakness is the potential bias in AI algorithms, which may exacerbate existing healthcare disparities. This NSOAP recognizes the potential shortcomings and takes into consideration development of guidelines which will incorporate responsible use of AI for SOTA care.

3.3 Strategic Priority Objectives

The plan seeks to improve SOTA care using strategic objectives categorized under the following domains: infrastructure, workforce, service delivery, information management, financing, and governance and leadership.

- ***Infrastructure***

  Improve infrastructure at all service delivery facilities to meet the minimum requirements for offering essential SOTA services

- ***Workforce***

  Ensure the availability and equitable distribution of qualified, competent, and motivated workforce for delivery of high-quality SOTA services

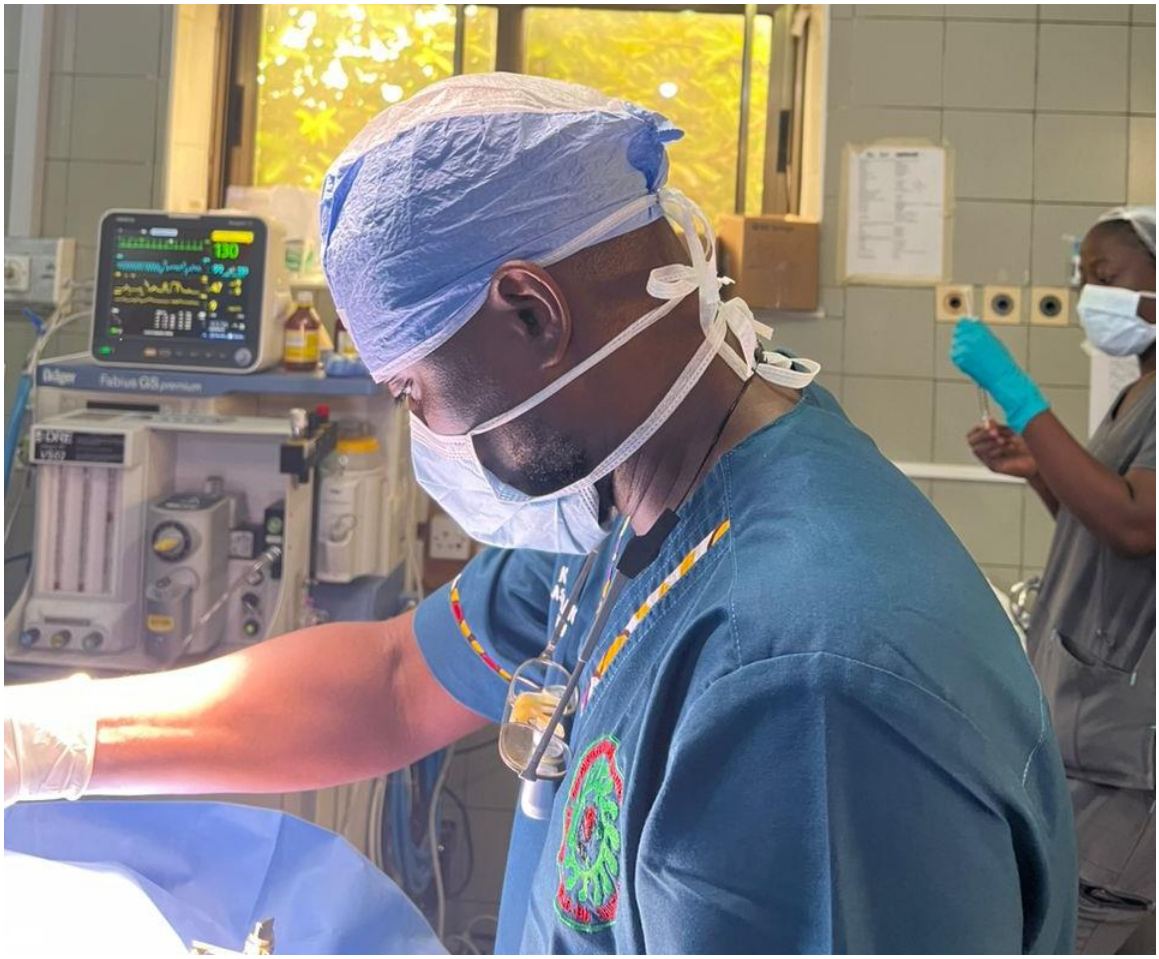
- ***Service Delivery***

  Expand access to high-quality and timely package of SOTA services, including specialized care for children, women and men

- *Information Management*
  Strengthen surveillance, research and continuous quality improvement of SOTA care

- *Financing*
  Provide sustainable financing for SOTA care through diversified funding mechanisms and deployment of cost-effective care models

- *Governance and Leadership*
  Strengthen leadership, foster coordination and stakeholder collaboration and develop open accountability systems for promotion of SOTA care



3.4 Strategic Objectives and Interventions

This section highlights the strategic objectives and interventions of the various domains.

Domain	Strategic Objective	Strategic Interventions
Infrastructure	Improve infrastructure at all service delivery facilities to meet the minimum requirements for offering essential SOTA services	Expand access to well-equipped health facilities with uninterrupted SOTA services Provide reliable access to essential SOTA equipment for healthcare providers
Workforce	Ensure the availability and equitable distribution of qualified, competent, and motivated workforce for delivery of high-quality SOTA services	Expand the training capacity for SOTA professionals to meet population needs Promote equitable distribution of qualified SOTA professionals Develop and implement mechanisms to ensure retention of SOTA professionals in underserved areas
Service Delivery	Expand access to high-quality and timely package of SOTA services, including specialized care for children, women and men	Improve timely access to SOTA services including referral, preventive, treatment, rehabilitative and palliative care Boost the quality and safety of SOTA services through adherence to perioperative standard operating procedures
Information Management	Strengthen surveillance, research and continuous quality improvement of SOTA care	Promote systematic tracking and utilization of SOTA service data for evidenced-based decision-making Promote research around SOTA systems
Financing	Provide sustainable financing for SOTA care through diversified funding mechanisms and deployment of cost-effective care models	Enhance affordability of safe, effective and high-quality SOTA care and protect against catastrophic and impoverishing health expenditure Improve resource mobilization and budget allocation for SOTA
Governance **and** Leadership	Strengthen leadership, foster coordination and stakeholder collaboration and develop open accountability systems for promotion of SOTA care	Establish and empower strong and dedicated leadership for NSOAP implementation and institutionalization Monitor and evaluate progress towards achievement of NSOAP objectives

CHAPTER 4: MONITORING AND EVALUATION

Monitoring and evaluation (M&E) of the NSOAP implementation process will be conducted through existing and new strategies focused on improving and maintaining the quality of SOTA care delivery in Ghana. The concept of integration is a fundamental aspect of NSOAP implementation and will allow for ongoing health systems strengthening across a variety of sectors. While the country's Health Information Management System (DHIMS 2) provides a suitable platform for integration of NSOAP indicators, the use of other applications for collection and transmission of data should be considered. At the health facility level, the Lightwave Health Information Management System would require some adjustment to accommodate the minimum data required for generating the performance indicators.

The MoH and GHS will be responsible for the monitoring and evaluating the NSOAP implementation process. Data for the M&E will be combination of routinely collected health data from LHIMS, DHIMS 2, private health facilities and survey data in some cases. To ensure efficiency and sustainability, M&E activities must be integrated into existing monitoring and supervisory visits and other quality improvement activities.

4.1 Monitoring Approaches

The strategies for monitoring will include utilization of existing platforms:

- Monthly morbidity and mortality meetings
- Quarterly review meetings at the District level
- Half-year and annual reviews at the Regional and National levels
- Monthly supportive supervision by District to Sub-district levels
- Quarterly supportive supervision by Region to District levels
- Biannual supportive supervision by National level to Regions and Districts

Private sector will be active participants of monitoring at all these levels. Reporting of key SOTA indicators would be incorporated into these routine activities.

4.2 Evaluation Approaches

To appropriately measure the performance of the NSOAP in meeting its objectives, annual reviews will be conducted at the National and Regional levels to assess the progress made towards achieving the set targets. A mid-term evaluation of the NSOAP will be conducted to course correct. Data from the evaluation will be used to inform the needed adjustments in the plan's targets and implementation approach. At the end of the five years of implementation, an end-term evaluation of the plan will be done to determine the performance, challenges and lessons learnt. This will form the basis for development of a new NSOAP.

4.3 Monitoring and Evaluation Framework

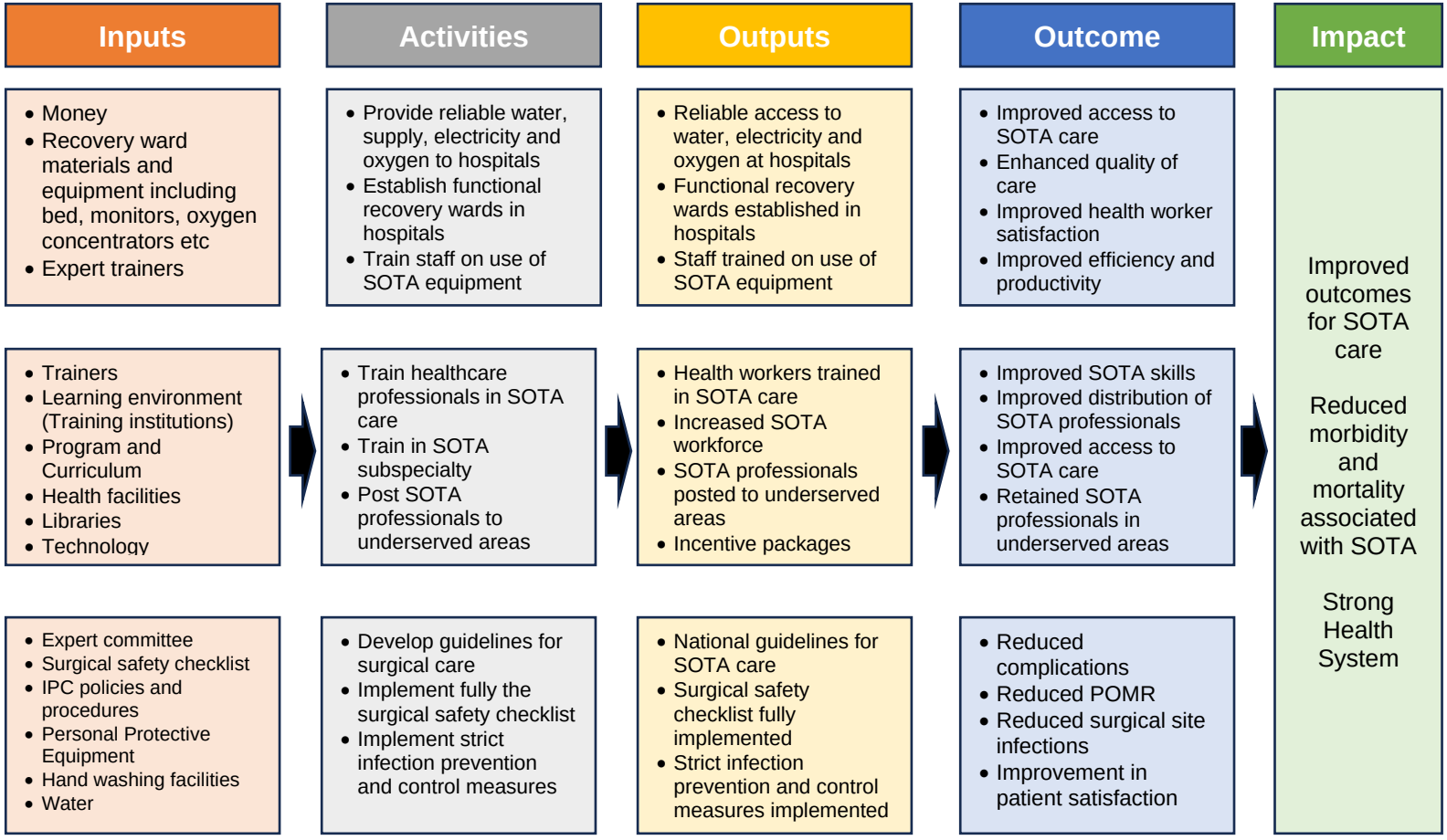


Figure 6. Logic Model for NSOAP implementation

4.4 Indicators of SOTA Care

The LCoGS proposed six core indicators which should be tracked by all countries[3,51]. These indicators monitor realization of universal access to safe, affordable SOTA care when needed. The NSOAP will prioritize the LCoGS six core indicators to enable assessment of the current state of surgical care in the country and to allow for comparison against international targets. In addition to the global level indicators, National level indicators will be collected. These indicators, their activities and strategic interventions are organized based on the six domains of the NSOAP: Infrastructure, Workforce, Service Delivery, Information Management, Financing and Governance and Leadership.

4.4.1 Domain 1: Infrastructure

This domain is concentrated on expanding and improving infrastructure for SOTA care at health facilities. It takes into consideration maintenance of the infrastructure and building capacity of healthcare workforce to use these equipment and supplies.

The strategic interventions under this domain are:

- Expanding access to well-equipped health facilities with uninterrupted SOTA services
- Provide reliable access to essential SOTA equipment for healthcare providers

Domain: Infrastructure, Products and Technology									
Strategic Objective: Improve infrastructure at all service delivery facilities to meet the minimum requirements for offering essential SOTA services.									
Strategic Intervention 1: Expand access to well-equipped health facilities with uninterrupted SOTA services									
Main Activities	**Assumptions**	**Indicator**	**Baseline**	**Target**					**Responsible entity**
				Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Provide backup power generator for each hospital	Backup power including solar power generator to be provided to additional 30% of health facilities over the 5-year period.	Proportion of District level hospitals and above with backup power generator including solar power	45.5%	50%	55%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities

Provide hospitals with water reservoirs with adequate capacity	Additional 20% of hospitals to be connected to community water supply and assisted to have reservoir as back up	Proportion of District level hospitals with adequate water storage capacity	60.7%	70%	80%	90%	100%	100%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Provide oxygen production plants of appropriate capacity in all Regional centres	At least, each region to have an oxygen plant. With 11 out of 16 serving as baseline	Number of regions with at least one hospital having oxygen plant	11[1]	12	13	14	15	16	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Provide piped oxygen supply to operating theatre and recovery wards in all District hospitals	Fifty percent of the District level hospitals have oxygen supply to operating theatre. An additional 20% of District level hospitals to be provided with piped oxygen supply to operating theatres	Proportion of District level hospitals with piped oxygen to operating theatre and recovery wards	50%	55%	60%	65%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Improve on internet connectivity to health facilities	The assumption is that about 75% have high speed internet connectivity. The remaining 25% to be covered within the 5-year period.	Proportion of District level hospitals and above with high-speed internet connectivity	75%[2]	80%	100%	100%	100%	100%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Provide waste management facilities at each district	Centralized waste management facilities to be provided to serve health facilities in urban areas and decentralized facilities for health facilities in rural areas.	Proportion of Districts with high efficient centralized incinerators	Unknown	x	x	x	x	x	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities

[1] Ghana Medical Oxygen Policy, 2023

[2] Ghana Harmonised Health Facility Assessment

Establish telemedicine in health facilities	Number of District level hospitals and above with telemedicine facilities is unknown. At least a third of these facilities to have telemedicine facilities	Proportion of District level hospitals and above with telemedicine facilities	Unknown	10%	15%	20%	25%	30%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs
Strategic Intervention 2: Provide reliable access to essential SOTA equipment for healthcare providers									
Increase number of functional operating theatres to at least 3 per hospital	Eight out of ten District level hospitals to have at least 3 functional theatres.	Proportion of District level hospitals with at least 3 functional theatres equipped with functional anaesthesia machines	50%	60%	65%	70%	75%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Provide surgical equipment and consumables to health facilities	50% of district hospitals have adequate consumables and equipment for surgical procedures. To increase to 80% at the end of the fifth year.	Proportion of District level hospitals with complete surgical equipment and consumable (based on WHO Essential Surgical List)	50%	60%	65%	70%	75%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs including free surgery organizations
Provide regular preventive maintenance and maintenance contracts for SOTA equipment	Eight out of 10 district level hospitals and above to have valid maintenance contracts	Proportion of District level hospitals and above with regular preventive maintenance and maintenance contracts for SOTA equipment	21%[3]	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Provide all operating theatres with a functional multi-parameter patient monitor with capnography	Eight out of 10 operating theatres at District level hospitals and above to have functional multi-parameter patient monitor with capnography	Proportion of operating theatres with a functional multi-parameter patient monitor with capnography	Unknown	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs

Equip all District level hospitals and above with surgical sterilization capacity	All District level hospitals to be provided with surgical sterilization equipment	Proportion of District level hospitals and above with surgical sterilization capacity	51%[4]	60%	70%	80%	90%	100%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs
Equip all District level hospitals and above with blood storage fridges and freezers	Eight out of 10 District level hospitals and above to be provided with blood storage fridges and freezers	Proportion of District level hospitals and above with blood storage fridges and freezers	38%[5]	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs
Provide diagnostic laboratory and imaging equipment appropriate for levels of health facility	A third of District level hospitals and above to be provided with appropriate diagnostic laboratory and imaging equipment	Proportion of District level hospitals and above with appropriate diagnostic laboratory and imaging equipment (USG, Xray and CT scan for District hospitals and MRI for tertiary)	Unknown	5%	10%	20%	25%	30%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs
Establish functional recovery wards/ HDUs in all District level facilities	Eight out of 10 District level hospitals to be provided with functional recovery wards	Proportion of District level hospitals with functional recovery wards/ HDUs	Unknown	50%	60%	70%	75%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Establish functional ICUs at all higher-level facilities (secondary care facilities and above)	All Regional level hospitals and above to be provided with functional ICUs	Proportion of Regional level hospitals and above with functional ICUs	43%[6]	50%	70%	80%	90%	100%	MOH / GHS

[4, 5] Ghana Harmonized Health Facility Assessment, 2023

[6] Siaw-Frimpong et al, 2021

Train surgical team on the use of SOTA equipment	Surgical teams at District, Regional and National level to be trained on SOTA equipment. Half yearly training at Regional and National levels for 30 staff per training	Number of trainings on the use of SOTA equipment conducted	Unknown	34	68	102	136	170	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs
		Number of staff trained on SOTA equipment	Unknown	1020	2040	3060	4080	5100	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs
Provide laparoscopic towers to hospitals	Half of the Regional level hospitals to be equipped with laparoscopic facilities	Proportion of Regional hospitals and above with laparoscopic towers	Unknown	10%	20%	30%	40%	50%	MOH/ GHS/ NGOs
Train SOTA professionals in laparoscopic surgery	SOTA professionals to be trained in laparoscopic surgery at Regional level and Teaching hospitals	Number of SOTA professionals trained in laparoscopic surgery	Unknown	50	100	150	200	250	MOH/ GHS/ GCPS/ NGOs
		Proportion of Regional hospitals and above offering laparoscopic surgery	Unknown	10%	20%	30%	40%	50%	MOH/ GHS/ GCPS
		Proportion of surgeries performed through laparoscopy annually	Unknown	10%	10%	10%	10%	10%	MOH/ GHS

4.4.2 Domain 2: Workforce

The focus of the plan for this domain is to increase the number of SOTA workforce, improve distribution across the country and expand the SOTA subspecialty trainings to ensure access to these services. The retention of SOTA workforce in underserved areas will also be given attention. Gender equality of the workforce will be given serious consideration.

The strategic interventions include:

- Expand the training capacity for SOTA professionals to meet population needs
- Promote equitable distribution of qualified SOTA professionals
- Develop and implement mechanisms to ensure retention of SOTA professionals in underserved areas

Domain: Workforce									
Strategic Objective: Ensure the availability and equitable distribution of qualified, competent, and motivated workforce for delivery of high-quality SOTA services									
Strategic Intervention 1: Expand the training capacity for SOTA professionals to meet population needs									
Main Activities	**Assumptions**	**Indicator**	**Baseline**	**Target**					**Responsible entity**
				Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Train and employ SOTA providers	Physicians trained as specialist SOTA professionals to be increased gradually from from 6 to 12/100000 population over the	Number of SOTA physicians per 100 000 population*.	6	6	7	8	10	12	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities /GCPS
Train District level medical doctors to perform Bellwether procedures (in-service training)	District level hospital practitioners to be trained to perform Bellwether procedures	Proportion of District level hospitals whose medical doctors have been trained to perform Bellwether procedures	62%[7]	65%	70%	75%	80%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities /NGOs

[7] Ghana Harmonised Health Facility Assessment Report, 2023

Train District level hospital staff in Paediatric surgical care	District level hospital staff to be trained to stabilize children with life-threatening surgical conditions, make health enhancing and life-saving surgical decisions.	Proportion of District level hospitals whose staff have been trained in Paediatric surgical care	N/A	5%	10%	15%	20%	25%	MOH / GHS / Faith-based health facilities/ GCPS/ NGOs
Train medical professionals in SOTA specialty programmes	An average of 20 surgeons to be trained annually for the next 5 years	Number of Surgeons trained	590	610	620	630	650	670	MOH / GHS / Faith-based health facilities/ GCPS
	An average of 45 Obstetricians and Gynaecologists to be trained annually for the next 5 years to increase the number by 50%	Number of Obstetricians and Gynaecologists trained	453	500	545	590	635	680	MOH / GHS / Faith-based health facilities/ GCPS
	An average of 30 Anaesthesiologists annually to be trained for the next 5 years	Number of Anaesthesiologists trained	158	185	215	245	275	305	MOH / GHS / Faith-based health facilities/ GCPS
Train surgeons in surgical sub-specialties	An average of two Paediatric Surgeons to be trained annually for the next 5 years	Number of Paediatric Surgeons trained	19	21	23	26	27	29	MOH / GHS / Faith-based health facilities/ GCPS
	An average of five Orthopaedic Surgeons to be trained annually for the next 5 years	Number of Trauma and Orthopaedic Surgeons trained	58	63	68	73	78	83	MOH / GHS / Faith-based health facilities/ GCPS
Train nursing professionals in SOTA programmes	At least two specialists per Regional level and 10 per teaching hospital for all categories; and at least additional one Emergency nurse specialist for 50% of all	Number of Specialist Critical Care Nurses trained	10	20	30	50	70	92	MOH / GHS / Faith-based health facilities/ /GCNM
		Number of Specialist Emergency Nurses trained	76	100	130	160	190	222	MOH / GHS / Faith-based health facilities/ /GCNM
		Number of Specialist Perioperative Care Nurses trained	6	20	30	50	70	92	MOH / GHS / Faith-based health facilities/ /GCNM

	District hospitals to be trained over the period	Number of Specialist Palliative Care Nurses trained	30	40	50	60	75	92	MOH / GHS / Faith-based health facilities/ /GCNM
	An average of 100 post-basic SOTA nursing professionals annually to be trained to increase the current number by 25%	Number of nursing professionals trained in SOTA post-basic programmes	1,965	2065	2165	2300	2400	2500	MOH / GHS / Faith-based health facilities/ health professional training institutions
	An average of 60 CRAs to be trained annually over the 5- year period	Number of CRA trained	943	1000	1060	1120	1180	1240	MOH / GHS / Faith-based health facilities/ health professional training institutions
Train allied health professionals in SOTA programmes	Progressively increasing number of allied health professionals tol be trained over the period	Number of allied health professionals trained in SOTA programmes	-	x	x	x	x	x	MOH / GHS / Faith-based health facilities/ health professional training institutions
Train Pharmacists to support SOTA care	An average of 800 pharmacists to be trained per year	Number of pharmacists trained	6,486	7000	7800	8600	9400	10,200	MOH / GHS / Faith-based health facilities/ Universities (Government and Private)/ GCPHARM
Establish skills labs and simulation centres for SOTA training	At least one centre to be established per each of the three zones (Southern, middle and Northern)	Number of skilled laboratory and simulation centres established	Unknown	1	1	2	2	3	MOH / GHS / Faith-based health facilities/ health professional training institutions
Institute mandatory District rotations for all SOTA specialty trainees	All SOTA specialists to be posted to the district for rotation as part of training	Proportion of SOTA specialty trainees who take part in mandatory District rotation	Unknown	80%	90%	100%	100%	100%	MOH / GHS / Faith-based health facilities/ health professional training institutions
Train Biomedical Engineers	An average of 40 Biomedical Engineers to be trained annually	Number of Biomedical Engineers trained	244	275	300	330	360	384	MOH / GHS / Faith-based health facilities/ health professional training institutions

Establish a Biomedical equipment training programme	At least one additional programme to be established per each of the three zones (Southern, middle and Northern)	Number of Biomedical equipment training programmes available	1	1	1	2	2	3	MOH / GHS / Faith-based health facilities/ Universities/ Private Institutions
Provide facilities for maintenance of Biomedical equipment	Facilities for maintenance of Biomedical equipment to be available at all Regional level, Teaching Hospitals and National Level	Functional units for maintenance of Biomedical equipment available	Unknown	15	20	25	30	33	MOH/ GHS
Strategic Intervention 2: Promote equitable distribution of qualified SOTA professionals									
Implement minimum staffing requirements for SOTA care for health facilities	SOTA care professionals to be posted to 8 out of 10 District level hospitals	Proportion of District level hospitals meeting minimum staffing requirements for SOTA workforce	Unknown	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/HeFRA/ Quasi government and Private health facilities
Implement modular training programmes for the SOTA workforce	Half of SOTA specialty programmes to be implemented as modular training programmes	Number of SOTA specialist programmes for physicians implemented as modular training programmes	1	1	2	3	4	5	MOH / GHS / Faith-based health facilities/ health professional training institutions
		Number of SOTA specialist programmes for nurses implemented as modular training programmes	0	0	1	1	2	3	MOH / GHS / Faith-based health facilities/ health professional training institutions
Provide in-service training and CPDs for SOTA providers	SOTA in-service training to be conducted at least once a year at Regional and National level. Each training will have at least 30 participants	Number of SOTA in-service training or CPDs organized	N/A	17	34	51	68	85	MOH / GHS / Faith-based health facilities/
		Number of SOTA providers benefiting from in-service training or CPDs	N/A	510	1020	1530	2040	2550	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities

Post newly qualified SOTA workforce to under-served areas	At least 6 out of 10 newly qualified SOTA professionals to be posted to underserved areas	Proportion of newly qualified SOTA workforce posted to underserved areas	Unknown	10%	20%	30%	40%	60%	MOH / GHS / Faith-based health facilities
		Proportion of District level hospitals having Specialist Surgeons	25%[8]	10%	20%	30%	40%	50%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
		Number of Regional hospitals with specialist Paediatric Surgeons	3	4	5	10	13	16	MOH / GHS
Engage retired but active SOTA specialists in underserved areas to provide service and train residents	Retired but active SOTA specialists to be retained in half of the District level hospitals	Number of retired but active SOTA specialists in underserved areas to provide service and train residents	Unknown	50	70	90	110	130	MOFEP/ MOH / GHS / Faith-based health facilities/
Strategic Intervention 3: Develop and implement mechanisms to ensure retention of SOTA professionals in underserved areas									
Maintain a national database of SOTA professionals	Data on health workforce from different institutions and the private sector to be collated and harmonized into a central database for planning	Updated national database for SOTA professionals available	No	Yes	Yes	Yes	Yes	Yes	MOH / GHS / Faith-based health facilities/
Institute incentive packages for the SOTA workforce in underserved areas	Incentive packages to be in place for all SOTA workforce in underserved areas	Incentive packages for the SOTA workforce in underserved areas available and being implemented	No	Yes	Yes	Yes	Yes	Yes	MOFEP/ MOH / GHS / Faith-based health facilities/
Organize award and recognition scheme for SOTA workforce	National and Regional levels to organize annual award schemes to recognize workforce in underserved areas	Number of award and recognition ceremonies involving SOTA held at Regional level annually	Unknown	16	16	16	16	16	MOH / GHS
		Number of award and recognition ceremonies involving SOTA held at National level annually	Unknown	1	1	1	1	1	MOH/GHS

*LCoGS recommended indicator

[8] Ghana Harmonised Health Facility Assessment, 2023

4.4.3 Domain 3: Service Delivery

The service delivery domain will be focused on availability of and equitable access to essential SOTA services with attention on how these services are distributed across different levels of care in the country. It will also consider the safety and quality improvement practices that enhance the SOTA care. Gender equality will be prominent in terms of access to SOTA care including care for women, men and children as well as SOTA care for survivors of GBV.

The key strategic interventions under this domain are:

- Improve timely access to SOTA services including referral, preventive, treatment, rehabilitative and palliative care
- Boost the quality and safety of SOTA services through adherence to perioperative standard operating procedures

Domain: Service Delivery									
Strategic Objective: Expand access to high-quality and timely package of SOTA services, including specialized care for children, women and men									
Strategic Intervention 1: Improve timely access to SOTA services including referral, preventive, treatment, rehabilitative and palliative care									
Main Activities	**Assumptions**	**Indicator**	**Baseline**	**Target**					**Responsible entity**
				Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Provide access to Bellwether procedures at District level hospitals and above	Eight out of 10 District and all Regional level hospitals and hospitals to be equipped with operating theatres, equipment and supplies for Bellwether procedures leveraging on CEmONC facilities	Proportion of District level hospitals providing Bellwether procedure	20%[9]	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ NGOs including free surgery organizations
		Proportion of designated Regional level hospitals providing Bellwether procedure	43%[10]	60%	70%	80%	90%	100%	
		Proportion of patients requiring emergency surgical care whose travel time from when they first seek care to their arrival at a health facility providing any of the Bellwether procedures is less than or equal to two hours*	30%	40%	50%	60%	70%	80%	

[9,10] Ghana Harmonised Health Facility Assessment, 2023

Provide surgical procedures at District level hospitals and above (increase surgical volume)	Number of surgeries per 100000 to be increased gradually by 500 every year up to a maximum of 3000 per 100000 annually	Number of major surgical procedures performed in an operating theatre per 100 000 population per year*.	869[11]	1000	1500	2000	2500	3000	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities, NGOs
	Number of congenital anomaly surgeries to be increased progressively over the period with participation from partner organizations	Number of congenital anomaly surgeries performed per year	Unknown	X	X	X	X	X	
Develop a coordinated surgical outreach program using the hub-and-spokes approach	Stakeholder meetings and workshops to be held to design an outreach program for Teaching, Regional and selected District level hospital surgical teams to provide support and mentorship to facilities at lower levels. These programs will prioritize SOTA services that are weak at the lower levels.	Document of coordinated surgical outreach program using the hub-and-spokes approach available	No	Yes	Yes	Yes	Yes	Yes	MOH / GHS / Faith-based health facilities/
Implement a coordinated surgical outreach programme using the hub-and-spokes approach		Proportion of eligible hospitals that have implemented at least one general surgical outreach program using the hub-and-spokes approach	N/A	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government health facilities
Implement a coordinated Paediatric surgical outreach programme including training using the hub-and-spokes approach		Proportion of eligible hospitals that have implemented at least one Paediatric surgical outreach program using the hub-and-spokes approach	N/A	40%	50%	60%	70%	80%	MOH/ GHS/ Faith-based health facilities/ Kid's OR/ Operation Smile
Implement a coordinated Orthopaedic surgical outreach programme using the hub-and-spokes approach		Proportion of eligible hospitals that have implemented at least one Orthopaedic surgical outreach program using the hub-and-spokes approach	N/A	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government health facilities
Provide reliable surgical care to all patients admitted for surgery	Trained SOTA professionals and necessary logistics including equipment,	Proportion of elective surgical cases that were cancelled on the planned day of surgery annually	Unknown	<10%	<10%	<10%	<10%	<10%	MOH / GHS / Faith-based health facilities/ Quasi

[11] Gyedu et al, 2019

	supplies, water, electricity and oxygen to be made readily available. The LHIMS will capture data on cancelled surgeries.								government and Private health facilities
Provide health facilities with adequate supply of essential medicines and consumables for SOTA services	Eight out of ten District level hospitals to have adequate supply of essential medicines and consumables for SOTA care for adults and children by the end of the fifth year	Proportion of District level hospitals and above with adequate stock of essential medicines and consumables for SOTA services at all times	Unknown	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Provide health facilities with adequate supply of essential medicines and consumables for paediatric SOTA services		Proportion of District level hospitals and above with adequate stock of essential medicines and consumables for paediatric SOTA services at all times (Airway equipment, blood pressure cuffs, cervical collars, and nasogastric tubes)	Unknown	40%	50%	60%	70%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Implement existing referral system guidelines for SOTA services	Existing referral guidelines to be well disseminated at all levels of care	Proportion of patients referred for SOTA care annually for whom existing referral system guidelines were fully implemented	Unknown	60%	80%	100%	100%	100%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Review existing informal referral communication channels being utilized by SOTA providers	A review committee to hold a series of meetings to review referral communications and make recommendations for improvement and formalization	Review report of existing referral communication channel available	N/A	Yes	Yes	Yes	Yes	Yes	MOH / GHS / Faith-based health facilities/
		Proportion of District level hospitals and above adopting and implementing formalized referral communication channel	N/A	40%	50%	60%	70%	80%	
Establish a coordinated cervical	Consultative stakeholder workshops and validation meetings to be held to	Coordinated cervical cancer screening programme available	No		Yes	Yes	Yes	Yes	MOH/ GHS/ NCDCP

cancer screening programme	establish a cervical cancer screening programme								
Implement cervical cancer screening programme	Health workers to be trained, equipped and supervised to conduct screening at all levels. Public awareness created through various media.	Proportion of eligible women screened for cervical cancer	N/A		20%	50%	60%	70%	MOH / GHS / Faith-based health facilities/NCDCP /Quasi government and Private health facilities
Establish a coordinated breast cancer screening programme	Consultative stakeholder workshops and validation meetings to be held to establish a breast cancer screening programme	Coordinated breast cancer screening programme available	No		Yes	Yes	Yes	Yes	MOH / GHS /NCDCP
Implement breast cancer screening programme	Health workers to be trained, equipped and supervised to conduct screening at all levels. Public awareness created through various media.	Proportion of eligible women screened for breast cancer	N/A		20%	50%	60%	70%	MOH / GHS / Faith-based health facilities/NCDCP /Quasi government and Private health facilities
Establish a National immunization programme against HPV	Consultative stakeholder workshops and validation meetings to be held to review EPI program to include HPV vaccination	National immunization programme against HPV available	No		Yes	Yes	Yes	Yes	MOH/ GHS/ EPI
Implement HPV immunization programme	Health workers to be trained, equipped and supervised to conduct HPV vaccination. Public awareness created through various media.	Proportion of appropriate aged young girls immunized against HPV	N/A		20%	50%	60%	80%	MOH/ GHS/ Faith-based health facilities/EPI/Quasi government and Private health facilities

Implement palliative care to patients needing care	District hospitals and above to be provided with palliative care units and professionals	Proportion of District level hospitals and above providing palliative care for surgical conditions	50%[12]	60%	65%	70%	75%	80%	MOH / GHS / Faith-based health facilities/Quasi government and Private health facilities
Implement rehabilitative care to patients with patients needing care	District hospitals and above to be provided with rehabilitative care units and professionals	Proportion of District level hospitals providing rehabilitative care for surgical conditions	44%[11]	50%	60%	70%	75%	80%	MOH / GHS / Faith-based health facilities/Quasi government and Private health facilities
Strategic Intervention 2: Boost the quality and safety of SOTA services through adherence to perioperative standard operating procedures									
Develop national guidelines for surgical care	Expert team to be formed to develop standard guidelines for clinical surgical care including Paediatric surgery and sub-specialities. Guidelines to be disseminated through regular workshops at all levels.	National guidelines for surgical care available	No	Yes	Yes	Yes	Yes	Yes	MOH/ GHS/ Faith-based health facilities/ Kid's OR/ Operation Smile
Establish surveillance system for perioperative morbidity and mortality	Expert team to develop surveillance system for monitoring perioperative morbidity and mortality	Surveillance system for perioperative morbidity and mortality available	No	Yes	Yes	Yes	Yes	Yes	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Provide acceptable surgical care to patients	Refresher training and training on patient centred care to be organized biannually for SOTA professionals	Average rating of a health facility on a score of 0-10 from surgical I-PAHC surveys	N/A	6	7	7	8	8	MOH / GHS / Faith-based health facilities/ Quasi govern-ment and Private health facilities

[12] ,[13] Ghana Harmonised Health Facility Assessment, 2023

Provide prompt surgical care to patients admitted for surgery	SOTA professionals to be available at all District level hospitals and above and the hospitals to be equipped with operating theatres, equipment and supplies	Average number of days patients waited in hospital (after admission) to receive elective surgery	Unknown	x	x	x	x	x	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Institute regular training of surgical teams on surgical safety checklist	SOTA professionals to be trained through annual workshops conducted at all levels (by the national team and sixteen regional teams for a minimum of 20 participants per training)	Number of trainings conducted for surgical teams on surgical safety checklist annually	N/A	17	17	17	17	17	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
		Number of SOTA professionals trained on surgical safety checklist annually	N/A	340	340	340	340	340	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Implement fully the surgical safety checklist	Safety checklist to be made accessible in all operating theatres in both electronic (LHIMS) and non-electronic formats. Devices to be made available in operating theatres for safety checklist implementation	Proportion of surgical procedures where the surgical safety checklist was fully implemented	Unknown	40	60	80	90	100	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
	Surveillance system for perioperative mortality to be in place. All perioperative mortalities to be audited for quality improvement	Proportion of death (regardless of cause) before discharge among patients who have had a major surgical procedure in an operating theatre*	0.65%[12]	0.5%	0.4%	0.3%	0.2%	0.1%	MOH / GHS / Faith-based health facilities/ Quasi govern-ment and Private health facilities

[12] National data not available. Perioperative mortality rate of 0.65% in a teaching hospital used as a proxy for baseline. Target is aimed at reducing this rate by 80% at the end of the five years[52]

	Surveillance system for perioperative morbidities to be in place and all perioperative morbidities documented and recorded in the LHIMS for public health facilities	Proportion of surgical patients who developed anaesthetic adverse outcome (any one of the following): • cardiopulmonary arrest • high spinal anaesthesia • Inability to secure airway	15%[13]	14%	12%	9%	6%	3%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Implement strict infection prevention and control measures to reduce surgical site infection for all major surgical procedures	Quarterly trainings to be conducted for SOTA professionals at all levels of care utilizing new and updated evidence-based recommendations for prevention surgical site infections (SSI)	Proportion of all elective major surgeries with an infection occurring at the site of the surgical wound prior to discharge annually.	6%[14]	5%	4%	3%	2%	1%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
		Proportion of all emergency major surgeries with an infection occurring at the site of the surgical wound prior to discharge annually	12%[15]	10%	9%	8%	7%	6%	
Develop protocols for GBV requiring SOTA care	Expert team to be formed to develop and disseminate standard protocols for managing GBV requiring SOTA care. A series of stakeholders' meetings to be held to develop protocols which will be disseminated at all levels.	Standardized protocols for GBV requiring SOTA care available	No	Yes	Yes	Yes	Yes	Yes	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Implement protocols for GBV requiring SOTA care		Proportion of GBV requiring SOTA care for which standardized protocol has been implemented	N/A	50%	60%	70%	75%	80%	

*LCOGS recommended indicator

[13] National data not available. Rate of severe anesthetic-related critical incidents of 15% used as a proxy for baseline. Target is aimed at reducing this rate by 80% at the end of the five years
[14] Based on assumption that rate of SSI in elective surgeries will be half that of emergency surgeries
[15] National data not available. Surgical site infection of 12% in a teaching hospital used as a proxy for baseline. Target is aimed at reducing this rate by half at the end of the five years[53]

4.4.4 Domain 4: Information Management and Research

This domain will highlight tracking SOTA service data and utilizing it for decision-making. It will also focus attention on development of guidelines and building capacity of health facilities and healthcare workers for SOTA surveillance. The domain will provide opportunities for strengthening research capacity in SOTA and improving communication of research findings.

The strategic interventions for this domain include:

- Promote systematic tracking and utilization of SOTA service data for evidenced-based decision-making
- Promote research around SOTA systems

Domain: Information Management and Research									
Strategic Objective: Strengthen surveillance, research and continuous quality improvement of SOTA care									
Strategic Intervention 1: Promote systematic tracking and utilization of SOTA service data for evidenced-based decision-making									
Main Activities	**Assumptions**	**Indicator**	**Baseline**	**Target**					**Responsible entity**
				Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Develop guidelines for SOTA data reporting and utilization	A team to engage stakeholders through workshops to develop guidelines for the reporting	Guidelines for SOTA data reporting and utilization available	No	Yes	Yes	Yes	Yes	Yes	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Train healthcare workers on SOTA data collection protocols	Annual training to be conducted at all levels of care from District level hospitals to Teaching hospitals. Teaching hospitals to conduct a training per year. Regional level to conduct training for all Regional and District level Hospitals including Quasi government and private health facilities per year (Average of 30 participants per training)	Number of trainings conducted to train healthcare workers on SOTA data collection annually	N/A	22	22	22	22	22	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities/ CHIM
		Number of healthcare workers trained on SOTA data collection protocols	N/A	660	660	660	660	660	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities /CHIM

Integrate SOTA indicators and reporting into existing electronic health records system	Data Sheets for SOTA indicators to be created into the DHIMS 2	Proportion of SOTA key performance indicators reported through existing electronic health records system	N/A	80%	100%	100%	100%	100%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities /CHIM
Strategic Intervention 2: Promote research around SOTA systems									
Train SOTA providers in design and implementation of research projects	Training to be conducted through short courses and CPDs for SOTA professionals at all levels of care	Proportion of SOTA professionals trained in design and implementation of research projects	Unknown	10%	15%	20%	25%	30%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities / Academic institutions/NGOs
		Number of research projects designed and implemented by SOTA providers annually	Unknown	70-100	70-100	70-100	70-100	70-100	
Train SOTA providers on scientific research communication	Training to be conducted during professional training and through short courses and CPDs for SOTA professionals at all levels of care	Proportion of SOTA professionals trained on scientific communication	Unknown	10%	15%	20%	25%	30%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities / Academic institutions/ NGOs
		Number of publications by SOTA providers annually	Unknown	70-100	70-100	70-100	70-100	70-100	
Advocate for funding for surgical research priorities of local relevance	Funding to be made available by the government partners and NGOs to support SOTA research. Funding to be increased progressively over the period	Amount of funding for surgical research priorities of local relevance provided	Unknown	x	x	x	x	x	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities / Development partners, NGOs

4.4.5 Domain 5: Financing

The domain on financing is targeted at strategies to provide sustainable financing for SOTA care and protection against financial risk. It will concentrate on resource mobilization strategies for NSOAP and efficient and equitable resource allocation for SOTA care.

The key strategic interventions under this domain are:

- Enhance affordability of safe, effective and high-quality SOTA care and protect against catastrophic and impoverishing health expenditure
- Improve resource mobilization and budget allocation for SOTA

Domain: Financing									
Strategic Objective: Provide sustainable financing for SOTA care through diversified funding mechanisms and deployment of cost-effective care models									
Strategic Intervention 1: Enhance affordability of safe, effective and high-quality SOTA care and protect against catastrophic and impoverishing health expenditure									
Main Activities	**Assumptions**	**Indicator**	**Baseline**	**Target**					**Responsible entity**
				Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Include all Bellwether procedures in the NHIS	All Bellwether procedures to be covered fully by the NHIS	Proportion of Bellwether procedures fully covered by the NHIS	100%	100%	100%	100%	100%	100%	MOH/NHIA
Register and maintain members on health insurance	NHIA and private health insurance companies to initiate membership drive to enrol and renew packages for the population	Proportion of households protected against catastrophic expenditure from direct out-of-pocket payments for surgical and anaesthesia care*	Unknown	50%	60%	70%	80%	90%	NHIA/ Private health insurance companies
		Proportion of households protected against impoverishment from direct out-of-pocket payments for surgical and anaesthesia care*	Unknown	50%	60%	70%	80%	90%	NHIA/ Private health insurance companies

Review surgical costing index	Surgical costing index to be reviewed annually	Reviewed surgical costing index available	Yes	Yes	Yes	Yes	Yes	Yes	MOH/ NHIA/ Private health insurance companies/ Health Technology Assessment Secretariat
Strategic Intervention 2: Improve resource mobilization and budget allocation for SOTA									
Develop resource mobilization plan for NSOAP	A team to have a series of workshops to develop a plan for mobilizing resources	Resource mobilization plan for NSOAP available	N/A	Yes	Yes	Yes	Yes	Yes	MOH
Provide subvention for implementation and sustainability of NSOAP	Budget to be allocated for service delivery	Amount of funds allocated for implementation of NSOAP received	N/A	x	x	x	x	x	MOH / GHS / Faith-based health facilities/ Development partners
Increase budget allocated to SOTA care	Expenditure on surgery to be prioritized and increased progressively over the period	Surgical expenditure as a proportion of total national healthcare budget	Unknown	x	x	x	x	x	MOH / MOFEP
		Surgical expenditure as a proportion of GDP	Unknown	x	x	x	x	x	MOH/GHS/Faith-based health facilities/ Private health institutions

*LCoGS recommended indicator

4.4.6 Domain 6: Leadership and Governance

The domain on leadership and governance will include institutional framework oversight of NSOAP, coordination and stakeholder collaboration. It will also focus attention on monitoring and evaluation for continuous improvement of the NSOAP.

Strategic interventions under this domain will include:

- Establish and empower strong and dedicated leadership for NSOAP implementation and institutionalization
- Monitor and evaluate progress towards achievement of NSOAP objectives

Domain: Leadership and Governance									
Strategic Objective: Strengthen leadership, foster coordination and stakeholder collaboration and develop open accountability systems for promotion of SOTA care									
Strategy 1: Establish and empower strong and dedicated leadership for NSOAP implementation and institutionalization									
Main Activities	**Assumptions**	**Indicator**	**Baseline**	**Target**					**Responsible entity**
				Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Allocate budget for NSOAP implementation	Funds to be allocated to NSOAP implementation annually based on cost for implementation	Amount of funding allocated to NSOAP implementation annually	N/A	x	x	x	x	x	MOFEP/ MOH
Create and operationalize NSOAP desk at MoH	NSOAP desk to be created at the MoH	Functional NSOAP desk available at MoH	N/A	Yes	Yes	Yes	Yes	Yes	MOH
Facilitate NSOAP Steering Committee meetings	At least two NSOAP Steering Committee meetings to be held annually	Number of meetings held by NSOAP Steering Committee per year	N/A	2	2	2	2	2	MOH / GHS / Faith-based health facilities/NSOAP Steering Committee
Develop health facility compliance and implementation plan for NSOAP	Eight out of 10 District level hospitals to develop NSOAP compliance and implementation plan	Proportion of District level hospitals and above with compliance and implementation plan for NSOAP	N/A	20%	50%	70%	75%	80%	MOH / GHS / Faith-based health facilities/ Quasi government and Private health facilities
Train SOTA staff in leadership and health systems management	At least one SOTA staff per Regional level hospital and above to be trained in Leadership and Health systems Management	Number of SOTA staff trained in leadership and health systems management	N/A	22	44	66	88	110	MOH / GHS / Faith-based health facilities/ Academic Institutions/ NGOs/ Private sector

Integrate NSOAP into health sector strategic plan	NSOAP to be integrated into health sector strategic plan	NSOAP integrated into health sector strategic plan	N/A		Yes	Yes	Yes	Yes	MOH / GHS / Faith-based health facilities/CHIM
Strategy 2: Monitor and evaluate progress towards achievement of NSOAP objectives									
Disseminate NSOAP to stakeholders	Leaflets on NSOAP to be printed and disseminated	NSOAP dissemination report available annually	N/A	Yes	Yes	Yes	Yes	Yes	MOH
	NSOAP messages to be posted on various MoH and health facility social media handles	Number of people reached with NSOAP messaging through social media campaigns	N/A	x	x	x	x	x	MOH
	Surgical teams at District, Regional and National level to be trained on NSOAP annually (20 staff per training)	Number of health workers trained on NSOAP annually	N/A	5,540	5,540	5,540	5,540	5,540	MOH/ GHS/ Faith-based health facilities/ Quasi government institutions/ Private sector
		Number of NSOAP training sessions (workshops/CPDs) held annually	N/A	x	x	x	x	x	MOH/GHS/Faith-based health facilities/ Training Institutions/ Private sector
Develop M&E plan for NSOAP implementation	M&E plan for NSOAP to be developed at the National level	M&E plan for NSOAP implementation available	N/A	Yes	Yes	Yes	Yes	Yes	MOH/ Development partners/ Academic institutions
Implement M&E plan for NSOAP	M&E plan for NSOAP to be implemented at all levels	M&E reports for NSOAP available annually	N/A	Yes	Yes	Yes	Yes	Yes	MOH/ Development partners/ Academic institutions
Conduct monitoring and supervision in sector agencies and service delivery sites	Biannual monitoring and supervision visits to be conducted by the national level, quarterly visit by regions	Number of regions visited for supervision annually	N/A	16	16	16	16	16	MOH/ GHS/ Development partners
		Proportion of District level hospitals visited annually	N/A	40%	60%	80%	80%	80%	
Conduct implementation research on NSOAP	Research to be conducted on the implementation of the NSOAP	Number of research conducted annually on implementation of NSOAP	N/A	5	5	5	5	5	MOH / GHS / Faith-based health facilities/NGOs/ Development partners/ Academic institutions
Conduct surveys to support measure-ment of NSOAP implementation	At least 3 surveys will be conducted annually to complement the NSOAP indicators.	Number of surveys conducted annually to support measurement of NSOAP implementation	N/A	5	5	5	5	5	MOH / GHS / Faith-based health facilities/ NGOs/ Academic institutions

The key performance indicators will comprise the six LCoGS indicators in addition to National level indicators. The indicator reference sheet detailing the indicators, their definition, data source and frequency of reporting in Annex 1

CHAPTER 5: IMPLEMENTATION, GOVERNANCE AND LEADERSHIP

The implementation arrangements of the NSOAP will consider the institutional framework, the stakeholder roles, communication and dissemination planning and financing. The implementation of the plan will be done through the existing structures within the MoH and its agencies. This NSOAP will be implemented in alignment with existing health policies and the Health Sector Medium Term Development Plan and be integrated with future health sector plans and policies.

5.1 Institutional Framework

The governance and leadership of NSOAP will rely on existing institutional frameworks within the Ghana's health sector. The entire NSOAP governance and accountability structure, which covers all aspects of planning, budgetary allocation, implementation, monitoring, and evaluation, will be under the supervision of the MoH. Governance and leadership of the NSOAP will include prioritization of the construction of open accountability systems and the promotion of surgical health on the national agenda. This will involve creating a framework for coordination of the NSOAP implementation. Leadership will be at the MoH and GHS (at the National level), and the Regional and District levels for coordination of SOTA care.

Accountability responsibilities of operational planning, budgetary allocation as well as monitoring, evaluation and learning will be replicated at all the levels of the health sector.

At the National level, the Minister of Health will have the ultimate oversight responsibility for the NSOAP planning, implementation and monitoring and evaluation. A Steering Committee will be responsible for the operationalization and evaluation of the plan. Additionally, the Steering Committee will be responsible for coordinating activities vertically with all the subnational levels of healthcare sector as well as overseeing horizontal collaboration with partners and other stakeholders. At the Regional, District and health facility levels, coordination and reporting of NSOAP implementation will be done by the Regional and District Health Management Teams in close collaboration with the hospitals. At the health facility level, the Medical Directors and Medical Superintendents of Primary, Secondary and Tertiary level hospitals will oversee NSOAP activities in their respective hospitals.

Table 11. Roles of leadership at the various levels of care

Responsible Entity	Roles
NSOAP Steering Committee	▪ Provide oversight of implementation and evaluation ▪ Supportive supervision of Regional and District levels ▪ Coordinate the annual operational planning for NSOAP ▪ Coordinate M&E activities ▪ Coordinate activities across stakeholders
Regional Health Management Team	▪ Supportive supervisory visit to Districts ▪ Collect NSOAP M&E data from Districts ▪ Report on NSOAP implementation to National level (monthly) ▪ Coordinate M&E and other quality improvement activities (leverage bi-annual and annual review platforms for NSOAP review)
District Health Management Team	▪ Supportive supervisory visit to health facilities ▪ Collect NSOAP M&E data from health facilities ▪ Receive NSOAP M&E data from private institutions ▪ Report on NSOAP implementation to Regional level (monthly) ▪ Coordinate M&E and other quality improvement activities (leverage quarterly review platforms for NSOAP review)
Health Facility Medical Superintendent/ Director	▪ Work with hospital management to develop NSOAP operational plan ▪ Collect and review NSOAP M&E data ▪ Report on NSOAP implementation to the District level (monthly)

5.2 Stakeholder Analysis and Roles

The effective and efficient implementation of the NSOAP will require participation from multiple stakeholders. These stakeholders including the MoH and its agencies, private sector and the public will play various roles depending on their interest and influence. Coordination and collaboration between stakeholders will ensure appropriate SOTA care delivery at all levels. Inter-sectoral collaboration with other government sectors such as Ministry of Finance and Economic Planning and Ministry of Education based on shared interests will be required for successful implementation of the NSOAP.

Table 12. Stakeholder roles for NSOAP implementation

Stakeholder	Role of Stakeholder
MoH	▪ Take ultimate responsibility of the NSOAP implementation including partner coordination ▪ Provide leadership and institutional framework for NSOAP implementation, and monitoring and evaluation ▪ Mobilize resources including financial resources for NSOAP implementation
Health Service Delivery Agencies	▪ Deliver SOTA care in alignment with NSOAP guidelines ▪ Participate in data collection, monitoring and evaluation and other quality improvement initiatives ▪ Train health professionals on SOTA care and surveillance
National Health Insurance Authority	▪ Include essential SOTA care in benefits package ▪ Work with appropriate partners to review cost of SOTA services
Professional Associations	▪ Provide expertise in developing clinical guidelines and ensure adherence to best practices ▪ Support in dissemination of NSOAP care to health professionals and the general public
Academic and Training Institutions	▪ Develop/update training programs and curriculum for healthcare professionals ▪ Build research capacity of SOTA professionals
Health Professional and other Regulatory Bodies	▪ Monitor quality of training and ethical conduct of SOTA care professionals ▪ Build research capacity of SOTA care professionals ▪ License SOTA professionals to practice ▪ Monitor and regulate standards for medicine, equipment and supplies for SOTA care
Private Health Providers	▪ Deliver SOTA care in alignment with NSOAP guidelines ▪ Participate in data collection, monitoring and evaluation and other quality improvement initiatives
Health workers	▪ Implement NSOAP at point of care ▪ Provide safe, timely and quality SOTA care to patients ▪ Refer and follow up patients to appropriate level of care
Development partners	▪ Provide technical support and resources for NSOAP development and implementation ▪ Participate in NSOAP monitoring and evaluation
Civil Society Organizations • Women and Children Advocacy Groups • Patient Advocacy Groups • Non-Governmental Organizations • Persons with Lived Experience	▪ Contribute to public awareness campaigns ▪ Monitor implementation of NSOAP from interest groups' perspectives ▪ Support in resource mobilization for NSOAP implementation and monitoring and evaluation ▪ Provide technical assistance, infrastructure and training programs for SOTA care, especially in underserved areas ▪ Support in providing financial assistance for NSOAP implementation ▪ Promote community participation in prevention and control programmes

Traditional and Alternate Medical Practitioners	▪ Identify clients under their care with signs and symptoms that need SOA care ▪ Refer promptly clients under their care with surgical conditions to appropriate health facilities or liaise with Community health workers
General Population • Community Leaders • Community Members	▪ Contribute to awareness creation on the importance of SOTA ▪ Participate in prevention and education programs

5.3 Financing the NSOAP

Ghana's health sector is financed from multiple sources of revenue. These include Government of Ghana allocation, Health Insurance, out-of-pocket expenditure and donor support. Financing mechanisms for this NSOAP will mirror this existing financing arrangement. Financial resources for the NSOAP implementation shall be sourced through existing channels available in the MoH for resource mobilization. Other innovative approaches to resource mobilization should be considered.

There is the need to develop a resource mobilization plan which will detail the strategies for attracting funding from the various sources. This strategy will among other things encourage funding by the Government of Ghana where funds from the National budget will be allocated for NSOAP either as a dedicated line item or from existing health sector budget. This NSOAP provides the foundation required for a strong business case for investment in SOTA care in Ghana.

Another possible source of funding is allocation of health insurance revenue for NSOAP. Establishment of a fund from motor insurance premium for taking care of specific aspects of the NSOAP shall be actively pursued.

Development partners may also provide funding for NSOAP activities in alignment with their priorities. Developing proposals for NSOAP of funding in alignment with partner priorities detailing long term self-reliance and sustainability plan may secure funding support. As part of the NSOAP implementation, and the resource mobilization plan, proposals will be developed to request support from development partners for implementation of the plan.

The private sector through public-private partnerships has the potential to provide financial support to NSOAP. The MoH will lead partnership arrangements with the private sector to co-finance healthcare infrastructure, equipment and training programs. Nongovernmental organizations can mobilize funds from various sources to support NSOAP activities.

To optimize resource utilization, this NSOAP implementation will include identification and making use of opportunities for collaborations between organizations, programs or projects.

5.4 Communication and Dissemination Plan

The MoH will establish priorities and oversee policy, planning, regulation, and coordination in the execution of this strategy. The MoH will assist sector entities whose mandates cover the corresponding areas of strategic intervention with frontline implementation. The promotion and communication of the NSOAP 2025–2029 will play a significant role in its implementation. This will act as a key motivator for the people and all implementing institutions to work together towards the accomplishment of the specified goals and objectives. This is to guarantee that all partners and stakeholders are properly informed about the NSOAP's requirements and to promote ownership and compliance. The population and health professionals will be empowered by the strategy's successful communication and distribution, which will also spark interest in the NSOAP's proposed paradigm change in quality.

The MoH will distribute the NSOAP to all agencies, the commercial sector, and important national stakeholders. Additionally, it would be expected of all MoH agencies to set up their respective institutions and organisations to distribute the NSOAP to the relevant stakeholders at their various levels. Key stakeholders and partners will be informed on progress made and milestones reached. Dissemination will include sharing of information on NSOAP on social and traditional media outlets, using existing health education channels to create awareness and informing the healthcare professionals and the public through Information, Education and Communication (IE&C) materials, presentations and publications. It will also involve organizing interactive workshops and forming partnership with health professional associations for NSOAP implementation. Advocacy for policy changes that support NSOAP and integrating NSOAP in pre-service training, conducting in-service training and regular Continuous Professional Development (CPD) for health care workers will also be used.

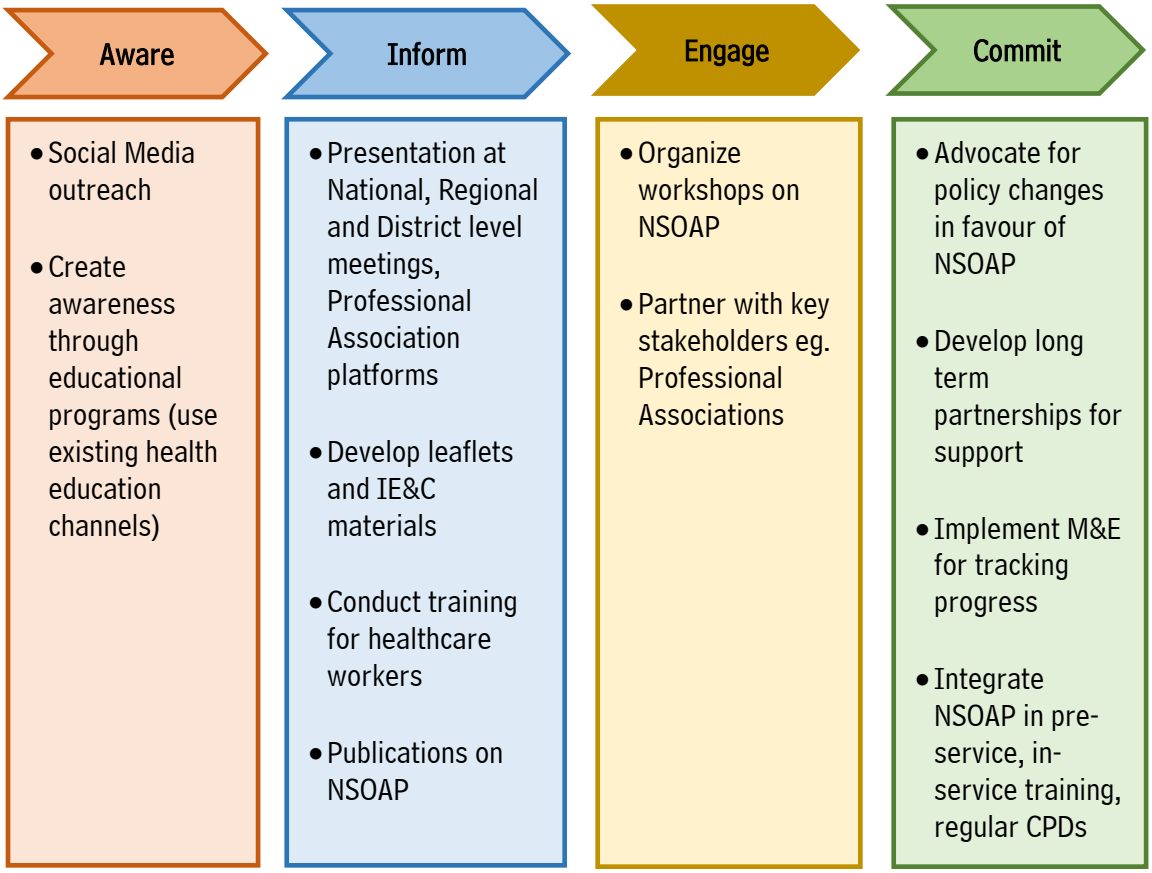


Figure 7. Communication and Dissemination Framework for NSOA

CHAPTER 6: COSTING OF THE PLAN

This budget provides the estimated financial resources needed to implement the NSOAP 2025-2029. The budget was developed based on the key activities under each domain's strategic objective. The budget estimates are based on assumptions of cost of products, services obtained from key stakeholders and Ghana's SOTA needs as indicated in the targets. The budget was also developed taking cognizance of the estimated number of SOTA professionals and health facilities required to fill the gaps identified in the needs analysis as well as the number of years of implementation. An inflation factor was applied to budget items depending on the nature of the activity.

Table 13. Summary of cost of implementing NSOAP in USD

Domain	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Infrastructure	56,375,200	46,470,200	41,270,200	40,360,200	40,360,200	**224,836,000**
Workforce	25,033,000	24,980,000	25,030,000	24,980,000	24,835,000	**124,858,000**
Service Delivery	35,819,820	28,462,015	29,922,015	21,942,015	24,482,015	**140,627,879**
Information Management	1,873,000	1,860,000	1,860,000	1,860,000	1,860,000	**9,313,000**
Financing	28,000	20,000	20,000	20,000	20,000	**108,000**
Governance and Leadership	572,000	559,000	579,000	559,000	589,000	**2,858,000**
Total	**119,701,020**	**102,351,215**	**98,681,215**	**89,721,215**	**92,146,215**	**502,600,879**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ANNEXES

Annex 1: Performance Indicator Reference Sheet

The key performance indicators will comprise the six LCoGS indicators in addition to national level indicators. The indicator reference sheet detailing the indicators, their definition, data source and frequency of reporting are detailed Annex 1.

	Indicator Title	Indicator	Definition	Data Source	Frequency of Reporting	Stratification	Category
1	**Emergency 2-hour surgical access* (Access to timely essential surgery)**	Proportion of patients requiring emergency surgical care whose travel time from when they first seek care to their arrival at a health facility providing any of the bellwether procedures (caesarean section, laparotomy or open fracture stabilization) is less than or equal to two hours	**Numerator:** number of patients requiring emergency surgical care whose travel time from when they first seek care to their arrival at a health facility providing caesarean section, laparotomy or open fracture stabilization is less than or equal to two hours **Denominator:** total number of patients requiring emergency surgical care surveyed	Facility records and population demographics	Every 6 months	• Residence (urban /rural) • Wealth quintile • Type and ownership of facility (private/public/ faith-based)	**Access**

2	**SOTA workforce density***	Number of surgical, obstetric and anaesthesia providers (including perioperative nurses, emergency nurses, critical care nurses, CRAs) who are working per 100 000 population.	**Numerator:** Number of surgical, obstetric and anaesthesia providers (including perioperative nurses, emergency nurses, critical care nurses, CRAs) who are working **Denominator:** Total population in catchment area Expressed per 100 000	Facility records (including private), data from training and licensing bodies, MOH and GHS HRD	Annually	• Cadre • Sex • Location (urban/rural) of place of work	**Quality**
3	**Surgical volume***	Number of major surgical procedures performed in an operating theatre per 100 000 population per year. Note: a major surgical procedure is defined as any procedure conducted in an operating theatre under general, spinal or major regional anaesthesia.	**Numerator:** Number of major surgical procedures performed in operating theatre **Denominator:** Total Population in catchment area Expressed per 100 000	Facility records	Monthly	•Type of procedure: (emergency/elective) •Procedure type: emergency/elective •Residence (urban/rural), •Sex (male/female) Wealth quintile	**Access**
4	**Paediatric surgical volume**	Number of major surgical procedures performed on paediatric patients in an operating theatre per 100 000 paediatric population per year	**Numerator:** Number of major surgical procedures performed on paediatric patients in an operating theatre	Facility records	Monthly	•Procedure type: (emergency/elective) •Residence (urban/rural), •Sex (male/female) •Wealth quintile	**Access**

		Note: Paediatric patient is aged less than 15 years	**Denominator:** Total paediatric population in catchment area Expressed per 100 000				
5	**Perioperative Mortality Rate***	All-cause death rate before discharge in patients who have had a major surgical procedure in an operating theatre	**Numerator:** total number of deaths prior to discharge among major surgical procedures **Denominator:** total number of major surgical procedures Expressed as a percentage (per 100)	Facility records	Monthly	•Procedure type: (emergency/elective) •Residence (urban/rural), •Sex (male/female) •Wealth quintile	**Quality**
5	**Paediatric Perioperative Mortality rate**	All-cause death rate before discharge in paediatric patients who have had a major surgical procedure in an operating theatre	**Numerator:** total number of deaths prior to discharge among major paediatric surgical procedures **Denominator:** total number of major paediatric surgical procedures Expressed as a percentage (per 100)	Facility records	Monthly	•Procedure type: emergency/elective •Residence (urban/rural), •Sex (male/female) Wealth quintile	**Quality**

6	**Protection against impoverishing expenditure***	Proportion of households protected against impoverishment from direct out-of-pocket payments for surgical and anaesthesia care	**Numerator**: number of patients whose aggregate cost for accessing and receiving care when compared to their household income puts them below the poverty line* Poverty line is the minimum income level needed to meet basic needs. **Denominator:** total number of surgical patients surveyed	Surveys, facility records	Every 6 months	Sex	**Financing**
7	**Protection against catastrophic expenditure ***	Proportion of households protected against catastrophic expenditure from direct out-of- pocket payments for surgical and anaesthesia care	**Numerator**: number of patients whose aggregate cost for accessing and receiving care is less than 10% of reported household income[51] **Denominator:** total number of surgical patients surveyed	Household surveys, facility records	Every 6 months	Sex	**Financing**
8	**Safe surgery checklist utilization rate**	Proportion of surgical procedures where the safe surgery checklist was fully implemented.	Numerator: number of surgical patient charts in which the safe surgery checklist was completed entirely)	Random review of 20-25 surgical patient records per facility; operating theatre records	Monthly		Safety

			Denominator: total number of patient charts reviewed Expressed as a percentage (per 100)				
9	**Surgical site infection rate**	Proportion of all major surgeries with an infection occurring at the site of the surgical wound prior to discharge. **One or more of the following criteria should be met:** • purulent drainage from the incision wound; • positive culture from a wound swab or aseptically aspirated fluid or tissue; •an abscess or other evidence of infection involving the deep incision that is found by direct examination during re- operation, or by histopathological or radiological examination; or • spontaneous	Numerator: total number of inpatients with new surgical site infection Denominator: total number of major surgical procedures performed in operating theatre Expressed as a percentage (per 100)	Facility records	Monthly	Procedure type: (emergency/elective)	

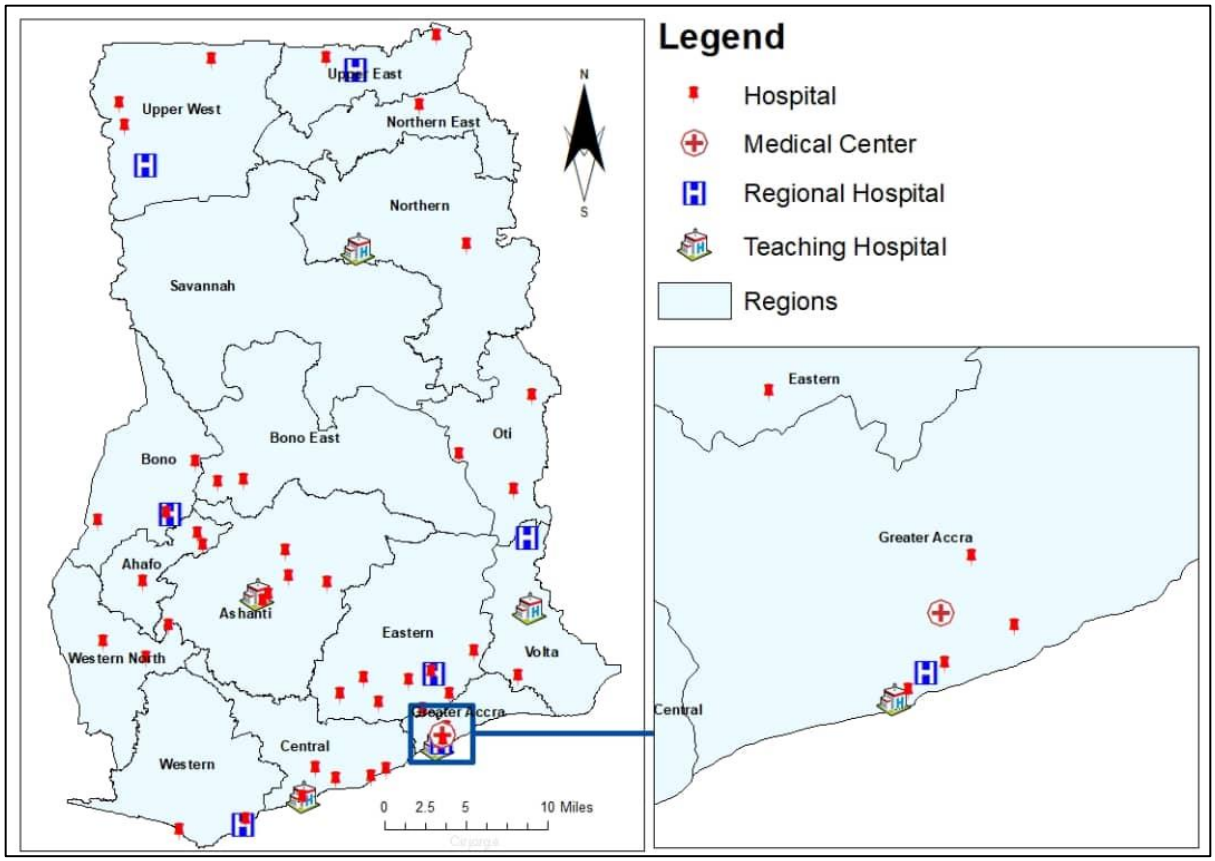
		wound dehiscence or deliberate wound revision or opening by the surgeon in the presence of pyrexia >38 oC or localized pain or tenderness; or localized swelling or redness **Note:** A major surgical procedure is defined as any procedure conducted in an operating theatre under general, spinal or major regional anaesthesia.					
10	**Anaesthesia adverse outcome**	Percentage of surgical patients who developed any one of the following: • cardiorespiratory arrest • inability to secure airway • high spinal anaesthesia **Cardiorespiratory arrest is defined as cessation of cardiac activity evidenced by:** • chest compressions being performed • loss of femoral,	**Numerator:** number of surgical cases with an anaesthetic adverse outcome **Denominator:** number of major surgical procedures performed in operating theatre Expressed as a percentage (per 100)	Health facility records	Monthly	Procedure type: (emergency/elective)	

		carotid and apical pulse with ECG changes. **High spinal is defined as within 15 minutes of administration of spinal anaesthesia:** • patient experiences loss of sensation in the shoulder and • need for positive pressure ventilation after administration of spinal anaesthesia • Includes any administration of spinal anaesthesia extending above T4 level. **Inability to secure airway defined as:** • having to awaken patient due to inability to intubate • cardiac-respiratory arrest due to failure to intubate.					
11	**Surgical patient satisfaction**	Average rating of a hospital on a score of 0–10 from surgical I-PAHC surveys.	**Numerator:** sum total of I-PAHC rating scores) **Denominator:** number of I-PAHC surveys completed)	Survey	Annually		Quality
12	**Coverage of Specialist Surgeons in District Hospitals**	Proportion of District hospitals having specialist surgeons	**Numerator:** Number of District hospitals having specialist surgeons	MOH/Health facility records	Annually		Access

			Denominator: total number District hospitals Expressed as percentage (per 100)				
13	**Coverage of Anaesthesiologists in District Hospitals**	Proportion of District hospitals having anaesthesiologists	**Numerator:** Number of District hospitals having anaesthesiologists **Denominator:** total number District hospitals Expressed as percentage (per 100)	MOH/Health facility records	Annually		Access

*LCoGS recommended indicators

Annex 2: Health facilities selected for the baseline assessment



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