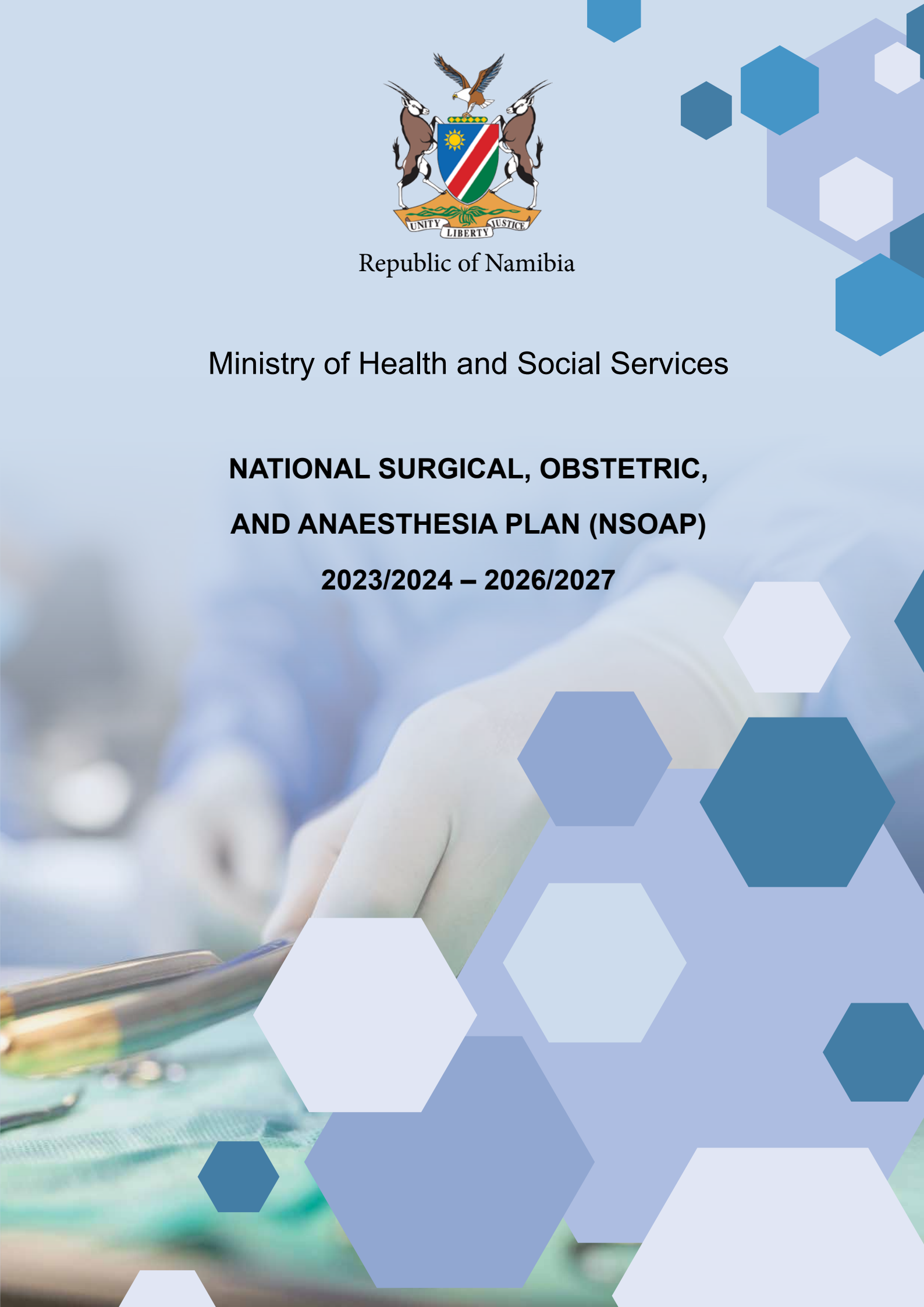
Republic of Namibia

Ministry of Health and Social Services

NATIONAL SURGICAL, OBSTETRIC, AND ANAESTHESIA PLAN (NSOAP)

2023/2024 – 2026/2027



REPUBLIC OF NAMIBIA

MINISTRY OF HEALTH AND SOCIAL SERVICES

NATIONAL SURGICAL, OBSTETRIC, AND ANAESTHESIA PLAN (NSOAP)

2023/2024 – 2026/2027

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REPUBLIC OF NAMIBIA

MINISTRY OF HEALTH AND SOCIAL SERVICES

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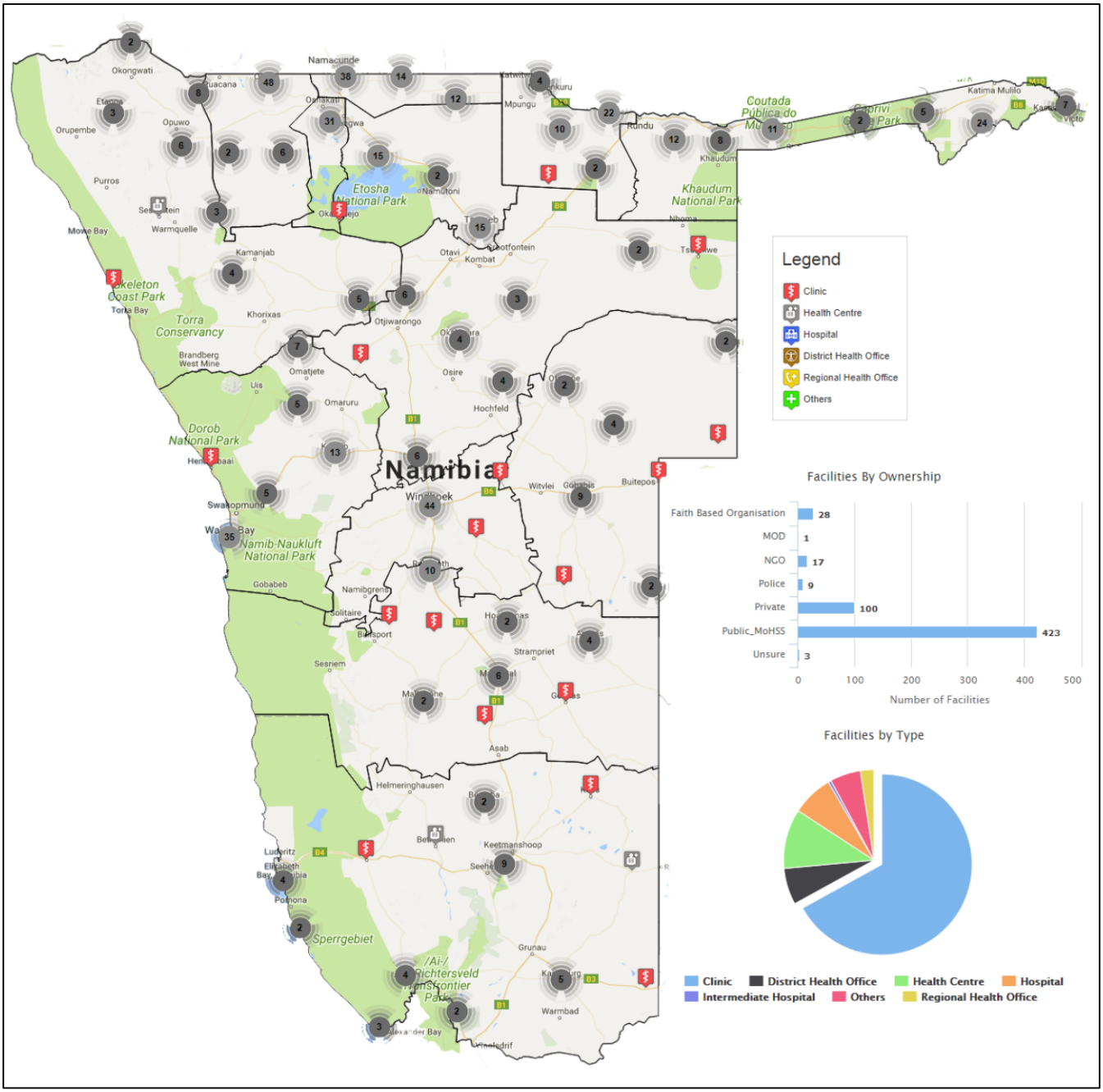

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The Ministry of Health and Social Services (MoHSS) of the Republic of Namibia acknowledges that this plan was developed through extensive consultation and reiterative processes with the support and participation of several local, regional and international partners.

The MoHSS extends special thanks to the Quality Assurance Division (QAD) for providing the requisite guidance and coordination to initiate and lead the development of the N*amibia National Surgical Obstetric and Anaesthesia Plan (NSOAP) 2023-2027*. The MoHSS also thanks its local and regional partners for their invaluable contributions to the development of the *NSOAP.*

Special thanks go to SADC and the Wits Regional Collaboration Centre for Surgical Healthcare (WitSSurg): Prof. Emanuel Makasa, Dr Gabriella Hyman and the Harvard Programme in Global Surgery and Social Change (PGSSC) Prof Daniel Scott Corlew, Dr Hassan Daoud, Dr Rashi Jhunjhunwala, Dr Jennifer Hon and Dr Kate Isoken Obayagbona for technical support in developing the NSOAP.

For the full list of contributors and their respective contributions, please see Appendix A.

STATEMENT BY THE HONOURABLE MINISTER OF HEALTH AND SOCIAL SERVICES

It is my honour to introduce the National Surgical Obstetric and Anaesthesia Plan (NSOAP) for the period of 2023-2027. This comprehensive plan is the result of the collective efforts of various stakeholders, including healthcare professionals, policymakers and local as well as regional partners.

The NSOAP is a crucial step towards improving the health outcomes of our people, particularly in the area of surgical care, obstetrics and anaesthesia. Access to safe and affordable surgical and obstetric care is a fundamental right of every citizen and the plan seeks to ensure that this right is upheld for all Namibians.

The NSOAP is based on a people-centred approach, which means that the needs and priorities of our communities have been considered throughout the development of this plan. The plan recognises the importance of addressing the social determinants of health, such as poverty, gender inequality and lack of education, which have a significant impact on the health outcomes of our people.

The NSOAP includes a range of interventions, such as: the strengthening of health care systems, expansion of surgical and obstetric services, training of healthcare professionals and, furthermore, includes data systems improvement to monitor and evaluate progress. These interventions are in line with Sustainable Development Goals (SDGs) and the World Health Organization's (WHO) Global Surgery 2030 initiative.

I am confident that the implementation of this plan will lead to a significant improvement in the healthcare outcomes of our people, particularly in the areas of surgical, obstetric and anaesthetic care. However, the success of this plan depends on the collective efforts of all stakeholders, including government, civil society organisations, healthcare professionals and the community.

I would like to express my gratitude to all those who have contributed to the development of this plan, and look forward to working with all of you to ensure its successful implementation. The implementation of this plan will require the MoHSS and various development partners and stakeholders to allocate and invest the necessary human, material and financial resources. Together, we will achieve our shared goal of ensuring that every Namibian has access to safe, affordable and high-quality surgical and obstetric care.

DR KALUMBI SHANGULA, MP
MINISTER

STATEMENT BY THE EXECUTIVE DIRECTOR OF HEALTH

The Namibian NSOAP outlines a strategy to tackle six key health system areas: surgical infrastructure and equipment, surgical service delivery and supplies, surgical workforce, surgical information management and quality improvement, surgical financing, and surgical system governance. Each domain broadly addresses complex surgical, obstetric and anaesthesia (SOA) problems caused by emergency, as well as essential surgical conditions like trauma and injury, cancer, childbirth complications and birth defects.

The NSOAP is not just a plan, but a commitment to our people to ensure that they receive the best possible care. As we embark on this journey, we recognise that there will be challenges and obstacles that we will have to overcome. However, we are committed to work together to overcome these challenges to ensure that the NSOAP is implemented successfully.

The COVID-19 pandemic has highlighted the importance of having strong and resilient health systems, and the NSOAP is a key part of building such systems in Namibia. We have seen the devastating impact that the pandemic had on our healthcare system, and we recognise the urgent need to invest in strengthening our healthcare systems to prepare for future pandemics and/or other emergencies.

The NSOAP is aligned with our national development priorities, as outlined in Namibia's Vision 2030 and National Development Plans. It identifies the important role that surgical and obstetric care plays in realising our national development goals; by reducing poverty, promoting gender equality and improving maternal and child health.

The MoHSS would like to emphasise that the NSOAP is not just a document that will sit on a shelf, but it is a living plan that will be implemented and monitored over the next five years. We are furthermore committed to ensuring that this plan is implemented with the requisite transparency and accountability, and that all stakeholders receive regular progress reports.

The MoHSS reiterates its commitment to the successful implementation of the NSOAP. I therefore call upon all stakeholders to work together in unison to ensure that every Namibian has access to safe, affordable, high-quality, surgical and obstetric care. Together, we can build a healthier and more prosperous Namibia for all.

BEN NANGOMBE
EXECUTIVE DIRECTOR

LIST OF ABBREVIATIONS

ASOS	African surgical outcome study
AU	African Union
AIDS	Acquired immunodeficiency syndrome
CSSD	Central sterile services department
CAO	Chief administrative officer
CANECSA	College of Anaesthesiologists of East, Central and Southern Africa
CRN	Control registered nurse
COPD	Chronic Obstructive Pulmonary Disease
CEmONC	Comprehensive emergency obstetrics and neonatal care
CT	Computed tomography
CME	Continuous medical education
COVID-19	Coronavirus disease
CPD	Continuing professional development
HIRD	Directorate of health information and research
DC	Direct cost
DALY	Disability adjusted life year
DCC	District coordination committee
DHIS2	District health information software 2
DH	District hospital
E ECO	mergency, critical and operative
EmONC	Emergency obstetric and new-born care
NDP5	Fifth National Development Plan 5
GP	General practitioner
GBD	Global burden of disease
HIMS	Health information management systems
HIS	Health information system
HIRD	Health Information Research Directorate
HPCNA	Health Professions Council of Namibia
HDU	High-dependency units
HMIC	High Middle Income Country
HIV	Human Immunodeficiency Virus
HR	Human Resources
IHME	Institute for Health Metrics and Evaluation

ICU	Intensive care unit
Kids OR	Kids operating room
LCoGS	Lancet Commission on Global Surgery
LMIC	Low middle income country
MRI	Magnetic Resonance Imaging
MCH	Maternal and child health
MMR	Maternal mortality ratio
MoHSS	Ministry of Health and Social Services
MoWT	Ministry of Works and Transport
MO	Medical officer
M & E	Monitoring and evaluation
NIP	Namibia Institute of Pathology
NSOAP	Namibia National Surgical Anaesthetic and Obstetric Plan
NDP	National Development Plan
NHSP	National Health Strategic Plan
NHTC	National Health Training Centre
NQPS	National Quality Policy and Strategy
NSPs	Non-Specialist Providers
NCD	Non-Communicable Disease
NGO	Non-Governmental Organisation
OTs	Operating theatres
ORECs	Optimal Resources for Children's Surgery
OPPS	Out-of-pocket- payments
OPD	Out-patient department
POMR	Perioperative mortality rate
PPHRD	Policy Planning and Human Resource Development
PEPFAR	President`s Emergency Plan for AIDS Relief
PHC	Primary Health Care
PGSSC	Programme in Global Surgery and Social Change
PSA	Prostate specific antigens
PPP	Public-Private Partnership
QA	Quality Assurance
QAD	Quality Assurance Division
QI	Quality Improvement
RN	Registered Nurse
RTI	Road Traffic Injury

SADC/WitSSurg -	Southern Africa Development Community's University of Witwatersrand Regional Collaboration Centre for Surgical Healthcare Improvement
SMO	Senior Medical Officer
SRN	Senior Registered Nurse
SADC	Southern African Development Community
SDG	Sustainable Development Goals
SOP	Standard operating procedure
SOs	Strategic Objectives
SWOT	Strengths, Weaknesses, Opportunities and Threats
SOA	Surgical, Obstetric and Anaesthesia
SOAD	Surgical, Obstetric and Anaesthesia Workforce Density
SSI	Surgical site infection
SDGs	Sustainable Development Goals
TSSV	Technical supervisory support visits
COSECSA	The College of Surgeons of East, Central and Southern Africa
ECSACOG	The East, Central and Southern Africa College of Obstetrics and Gynaecology
PEPFAR	The United States President's Emergency Plan for AIDS Relief
TB	Tuberculosis
UHC	United Health Care
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
UCES	Universal coverage of essential surgery
UNAM	University of Namibia
VMMC	Voluntary Medical Male Circumcision
WCH	Windhoek Central Hospital
WitSSurg	Wits-SADC Regional Collaboration Centre for Surgical Healthcare
WISN	Workload Indicators od Staffing Needs
WHA	World Health Assembly
WFSA	World Federation of Societies of Anaesthesiologists
WHO	World Health Organization
WHO-PGSSC-SAT	World Health Organization-Programme for Global Surgery and Social Change - Surgical Assessment Tool
WHO-SAT	World Health Organisation Situation Analysis Tool

EXECUTIVE SUMMARY

The Government of the Republic of Namibia acknowledges that equitable access to safe, surgical, obstetric and anaesthesia (SOA) healthcare is an all-important public health priority for Namibia's people. Namibia has made progress in achieving the Sustainable Development Goals - particularly in terms of decreasing maternal mortality and in managing communicable diseases such as HIV. However, population growth, dispersed rural populations, competing public health priority programmes, increasing neonatal deaths (as under-five deaths decreased), and the recent Covid-19 pandemic - made it difficult for government to provide equitable, high-quality emergency and SOA healthcare services to the entire Namibian population.

In response to the unacceptably high and unmet burden of surgical diseases that require emergency, critical and surgical care, the Ministry of Health and Social Services (MoHSS), in collaboration with regional and international partners, developed this NSOAP document. To this end, a task force led and coordinated by the MoHSS QAD provides custodianship for the NSOAP development and implementation process. Through inclusive consultations involving various stakeholders, healthcare professionals, and development partners, Namibia developed the NSOAP, which it plans to integrate into the broader, national health strategic plan.

The Namibian NSOAP is a modified approach for addressing the six major health system domains: surgical infrastructure and equipment, surgical service delivery and supplies, surgical workforce, surgical information management and quality improvement, surgical financing, and surgical system governance. Each domain broadly addresses the complex SOA problems caused by emergency and essential surgical conditions, inter alia; trauma and injury, cancer, childbirth complications, and surgical paediatric disorders. Policy harmonisation will be achieved through the NSOAP objectives and associated programmes' integration into the Namibia quality management policy (NQMP) 2021/2022-2025/2026. It is expected that the successful implementation and evaluation of this NSOAP will lead to overall healthcare systems strengthening in the Republic of Namibia.

The aim of this NSOAP 2023-2027 is to address challenges and improve access to safe and high-quality SOA health services for all Namibians. The document outlines a strategic framework whereby universal access to emergency as well as critical surgical care can be achieved for all Namibians. These objectives aim to and address the findings of the situational analysis carried out by the MoHSS in October 2021using the World Health Organization's Surgical Assessment Tool (WHO-SAT).

To support and ensure the successful implementation of this plan , the MoHSS and its various development partners and stakeholders will allocate the necessary human, material and financial resources.

The plan is expected to be implemented in three phases:

- **Phase 1** (2022-2024): Health system and health facility SOA capacity baseline assessment, development of the NSOAP with an appropriate monitoring and evaluation (M&E) framework; establishment of the appropriate quality management (QM) structures for implementation.
- **Phase 2** (2024-2025): Model pilot implementation of the NSOAP; stakeholder feedback and mid-term review (i.e., M&E).
- **Phase 3** (2026-2027): Nation-wide upgrading, including planning for future strategies, and end-of-NSOAP framework review. Integration of NSOAP initiatives and outcomes into the National Health Strategic Plan.

The MoHSS will monitor and evaluate the implementation of the NSOAP in a reiterative process featuring continuous engagement with all partners. The NSOAP is an integrated national health policy providing a roadmap to guide the Namibian government in expediting its commitment to achieve universal health coverage for all citizens. Simultaneously, the requisite human resources will be cultivated to drive sustainable national development successfully.

CHAPTER 1:

NAMIBIA NATIONAL SURGICAL OBSTETRIC AND ANAESTHESIA PLAN OVERVIEW

1.1 Introduction

1.1.1. Global context

In 2015, the United Nation's 17 sustainable development goals (SDGs) were adopted by 193 member States, including the Republic of Namibia. The overall aims of the SDGs were to end poverty and ensure prosperity and well-being for all [1]. A core component for achieving the SDGs is to ensure universal health coverage (UHC). The SDGs emphasise the strengthening of sustainable health systems through capacity-building and collaboration to achieve UHC. As such, improving equitable access to timely, safe and appropriate, emergency and essential Surgery, Obstetrics and Anaesthesia (SOA) healthcare, including critical care, was confirmed as a critical component to realise UHC [1].

In May 2012, at the 68th World Health Assembly (WHA), World Health Organisation (WHO) Resolution WHA68.15, co-sponsored by the Republic of Namibia with other SADC member states, was adopted.

Resolution WHA68.15 states: "strengthening emergency and essential surgical care and anaesthesia as a component of UHC" [1]–[4]. This commitment was further re-reinforced in 2017 by WHO decision WHA70 (22) which affirms the need to collect robust data on emergency and essential surgical and anaesthesia care. The Government of the Republic of Namibia also co-sponsored WHO Decision WHA70 (22) and is therefore committed to bi-annual reporting, through the WHA, on the progress of country implementation of commitments as contained in resolution WHA68.15. Namibia was one of the first countries to initiate the NSOAP development process.

In addition to reinforcing the SDGs, WHA Resolution WHA68.15 is aligned with the findings published by two formative publications from 2015: the *Disease Control Priorities 3 (DCP-3)* and the Lancet Commission on Global Surgery (LCoGS) [5], [6]. DCP-3 was the first surgery-dedicated *Disease Control Priorities* volume to be published by the World Bank Group. It presented cost-effective strategies to address the global surgical disease burden.

The World Bank Group dedicated the first volume of the DCP-3 to "Essential Surgery" with the following key messages:

- Full provision of essential surgical procedures would prevent approximately 1.5 million deaths per annum, or about 6-7% of all preventable deaths in low- and middle-income countries.
- Essential surgical procedures rank among the most cost-effective of all health interventions. Twenty-eight of the 44 essential procedures would typically be delivered by the surgical platform of a first level (or district) hospital, making investment in this platform highly cost-effective.
- Effective and affordable measures (such as task sharing) have been shown to increase access to surgical care, while much needed investment is being made to expand capacity. As emergency procedures constitute 23 of the 28 provided on the DH surgical platform (six of 10 provided at community health centre level), such facilities must be widely distributed geographically.
- There are substantial disparities between countries at different economic levels in safety of surgical care (e.g., in perioperative mortality rates and anaesthesia-related deaths). The mortality rate from caesarean sections, for example, varies across countries by a factor of 80:1 or more. Feasible and affordable measures (such as the Surgical Safety Checklist) have been shown to improve safety and quality.
- Universal coverage of essential surgery (UCES) should be publicly financed early on the path to UHC, given that it is affordable and highly cost effective. There is a major public demand for surgical services that can reduce the burden of disease. We estimate that implementation of UCES would require about $3 billion per year of annual spending over current levels and would have a benefit to cost ratio of over 10:1.

The LCoGS report named *Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development,* collected, collated and analysed cross-sectoral data and provided the first comprehensive description of the status of SOA healthcare globally [6]. Together, these formative publications provided the foundation for SOA healthcare to become a core component of the global health agenda.

The LCoGS report demonstrated that clinical conditions requiring SOA healthcare contribute to approximately one-third of the global disease burden. Yet, more than two-thirds of the world's population lack access to safe, timely, affordable SOA healthcare [5]–[7]. At least a quarter of the patients receiving surgery become financially impoverished as a result of direct and indirect costs. Additionally, economic losses from the burden of surgical illness amounts to approximately 2% of GDP in low- and middle-income countries (LMICs) by 2030 (Debas et al., 2015; Institute for Health Metrics and Evaluation (IHME), 2018; Meara et al., 2015). Inequitable access to high-quality surgical care disproportionately affects LMICs like Namibia. Access to safe surgery is an indivisible component of UHC - a fundamental goal of the Namibian Government's health agenda [8].

Despite the demonstrated global burden of surgical disease, SOA healthcare remains under-represented in global health policy. The NSOAP was proposed by LCoGS to serve as the unifying policy framework whereby universal coverage of essential surgery (UCES) could be achieved [3], [5], [6]. The NSOAP presents a strategic framework for establishing resilient surgical systems across six essential domains: (1) infrastructure; (2) workforce; (3) service delivery; (4) information management, (5) financing and (6) governance. Through the support of various multilateral organisations, NSOAPs are facilitating the necessary health systems strengthening to deliver high-quality SOA healthcare to the world's population (Meara et al., 2015; Ministry of Health and Social Services, 2021; Ministry of Health, 2018; NSOAP Zambia, 2017; UNITAR, 2020).

LCoGS further recommended six pragmatic, comparable indicators to measure and evaluate access to, and quality of, SOA healthcare. More recently, the latter two indicators (see below) have been combined, and the methods for metric collection and comparison refined through an Utstein Consensus report [6], [12]anaesthesia, and obstetric (SAO. These five LCoGS indicators and their recommended targets are:

i. Access to timely essential surgery (within two hours) - *geospatial access:* the proportion of a country's population with geographic access (within two hours) to a facility capable of providing surgical and anaesthetic care for the Bellwether procedures (caesarean section, laparotomy, and surgical management of open long-bone fracture) [12]. [12]. The capacity to deliver Bellwether procedures represents the facility's minimum capacity to provide essential SOA care [6], [13].

Target: 80% coverage of essential SAO care by 2030.

ii. Surgical, anaesthesia and obstetric (SAO) provider workforce density (SAOD) - *workforce:* the number of specialist surgical, anaesthetic and obstetric providers, who are actively practicing, per 100,000 of the population [12].

Target: at least 20 SAO providers per 100,000 population by 2030.

iii. Surgical case volume: the number of procedures, performed in an operating theatre, using any form of anaesthesia, per 100,000 population per year.

Target: minimum of 5,000 procedures per 100,000 population by 2030.

iv. Perioperative mortality rate (POMR): deaths from all causes, before discharge (up to 30 days), in all patients who have received any anaesthesia for a procedure done in an operating theatre, divided by the total number of procedures, per year, expressed as a percentage [12]. This is the proposed quality metric for evaluating the quality of SOA care in terms of case volume and SAOD [6], [14].

Target: routine tracking of POMR by 2030 at all facilities.

v. Risk of catastrophic expenditure for surgical care - financial risk protection: the percentage of the population at risk of catastrophic expenditure if they were to acquire a surgical procedure [12].

Target: 100% protection against impoverishment from out-of-pocket payments by 2030.

While various research studies and analyses have emerged since the initial LCoGS publication that suggest potential modifications/adjustments for these indicators, these indicators provide a general guide for measuring tangible NSOAP goals. The original LCoGS indicators are incorporated in all NSOAPs to date including those adopted in: Ethiopia, Nigeria, Tanzania, Rwanda, and Zambia [10], [10], [11], [15]–[17]. The NSOAP framework allows for the translation of academic research into pragmatic policy in a way that has transformed surgical care health policies.

Globally, various countries, across diverse regions, have committed to and adopted the NSOAP framework. These countries have adapted the framework based on local needs and government structure. Despite variations in specific approaches, this framework prioritises the coordination of local champions, key stakeholders, as well as regional and international partners [3].

1.1.2. NSOAP in the Southern African Development Community (SADC) region

SADC was established to achieve the requisite socioeconomic development to improve the standard of living and quality of life of the people in southern Africa through integration and regional collaboration [18], [19]. The SADC Treaty was adopted in Windhoek, Namibia, in 1992. This treaty led to renewed efforts to fight shared political, economic and social challenges on both a local and regional level. Of the six countries in Sub-Saharan Africa that have adopted an NSOAP, three are SADC Member States: United Republic of Tanzania, the Republic of Zambia and Zimbabwe. Sixteen SADC Member States at the Joint Meeting of SADC Ministers of Health and Ministers responsible for HIV/AIDS, in 2018 and 2019, adopted decisions one and twenty-one on "Strengthening Emergency and Essential Surgical Obstetrics and Anaesthesia Care as a Component of Universal Health Coverage" under the leadership of the Republic of Namibia. This echoes the 2015 global political commitment to SOA care as contained in WHO Resolution WHA68.15. These actions reinforce the SADC resolution to prioritise surgical care as a fundamental component of the regional health strategy [19].

1.1.3. Covid-19 pandemic and essential surgery

The Covid-19 pandemic disrupted routine health service delivery globally [20], [20]. Health systems in middle income countries (MICs), such as those in the SADC region, were particularly at risk and subsequently severely affected. Surgical services were disproportionately affected by the pandemic. This was largely due to increased pressure placed on existing healthcare resources by the pandemic; the re-allocation of scarce funding and resources towards the Covid-19 response; the re-allocation of the surgical workforce and infrastructure, tools and equipment, towards Covid-19 response; the effects of lockdown on acute, chronic and indolent surgical disease presentation and management; and changes in health-seeking behaviour among the population [20], [20].

A major consequence of the redistribution of SOA resources was the cancellation of essential elective surgeries. It is estimated that approximately 497 operations were cancelled every week from the start of the pandemic in Namibia [20]. This resulted in a significant surgical backlog in Namibia. Delaying essential elective surgery (such as cancer surgery) led to an additional burden on the Namibian healthcare system and unnecessary morbidity and mortality levels.

While surgical care was negatively affected by the pandemic, the value of resilient surgical systems was highlighted. SOA units contributed systems expertise, health workforce and critical care experience to the Covid response. The Covid-19 pandemic not only exposed an urgent need for strengthening surgical health systems, but presented a unique opportunity to improve critical, emergency and SOA care in a collaborative and integrated way.

1.1.4. Critical and emergency care integration

SOA care serves as a definitive management strategy for most, or at least many, ill or injured patients that need assistance from emergency and critical care systems. The role of SOA care in conjunction with the resuscitation, stabilisation, optimisation and peri-operative care of critically ill patients is essential. Thus, the integration of emergency and critical care strategies into the Namibia NSOAP framework will: facilitate early recognition and triage of emergency, critically ill and/or injured patients; facilitate early stabilisation and prompt, appropriate referral of SOA patients and, facilitate the streamlined allocation of scarce resources for the diagnosis, monitoring and management of SOA among critically ill patients.

In order to integrate critical care service provision across all levels of care, in the NSOAP plan, there is a need for careful consideration and developing consensus around the levels of critical care and subsequent service delivery. Critical care encompasses a spectrum of surveillance for critically ill patients from enhanced in-ward surveillance, to high-dependency units (HDU) (where intermediate high care and possibly single organ support is provided), to intensive care units (ICU) (where multi-organ support in response to significant physiological derangement is provided)[21].

This streamlined integration was successful during the Covid-19 response in Namibia. During the pandemic, the Government of Namibia, through partnerships with non-governmental organisations (NGOs), multilateral organisations (such as the WHO) and local partners, was able to address the following major essential emergency, critical and operative (ECO) and SOA care shortages:

- *Lack of sustainable, stable oxygen supply:* sustainable investments and donations were made to facilitate building oxygen plants to ensure adequate oxygen supplies.
- *Inadequate critical care capacity:* new critical care units have been established throughout Namibia so that now, almost all hospitals in Namibia have critical care staff, equipment (such as ventilators) and supplies.

As the Covid-19 pandemic subsides, these resources continue to be shared among all patients in need, particularly those requiring SOA healthcare. While the pandemic led to direct and indirect health system and infrastructure gains, the strain the Covid-19 pandemic placed on surgical healthcare accentuated the need to strengthen national SOA healthcare capacity and develop a more robust healthcare system through this endeavour.

1.1.5. NSOAP in Namibia

The Namibian government has a demonstrated a long-standing commitment to developing a plan for SAO care to become part of the National Health Strategic Plan (NHSP). In 2018, the process of developing NSOAP in Namibia was initiated, with the first situational analysis conducted in December 2018 and its findings presented to the MoHSS in January 2019. Unfortunately, the initial NSOAP development process was subsequently disrupted by the COVID-19 pandemic. However, through partnerships with local, regional and international stakeholders, a renewed commitment to NSOAP development was established with an NSOAP stakeholder engagement meeting held in November 2021 in Windhoek [9].

In preparation for the stakeholder meeting, an updated situational analysis was carried out by the MoHSS in October 2021. This followed Circular No 82 of 2021 issued by the MoHSS QAD to all regional health coordinators. The situational analysis was conducted using the WHO programme for global surgery and social change - surgical assessment tool (WHO-PGSSC-SAT or WHO-SAT) at 29 facilities from both public and private sectors, across all levels of care. The findings from this updated assessment provided relevant information for the current NSOAP document. The baseline assessment allows for ongoing evaluation of the various recommended LCoGS indicators presented throughout the plan.

The development of the Namibia NSOAP was driven by a taskforce coordinated by the MoHSS QAD. The plan's development included engagement with local, regional and international stakeholders, a representative group of health cadres, and various development partners.

The NSOAP is divided into the following chapters:

1. **Chapter 1:** Namibia NSOAP overview
2. **Chapter 2:** Strategic focus for the NSOAP plan
3. **Chapter 3:** Mission and vision
4. **Chapter 4:** Monitoring and evaluation (M&E) framework
5. **Chapter 5:** Costing of activities
6. **Chapter 6:** Appendices

1.2 Country background

1.2.1. Country, geography and population distribution

The Republic of Namibia covers an area of 824,292 square kilometres and is one of the largest countries in Sub-Saharan Africa. Namibia borders the South Atlantic Ocean in the west and five other countries: Angola and Zambia in the north, Zimbabwe and Botswana in the east and South Africa in the south. Namibia was the last country in Southern Africa to become a republic when it gained independence from South Africa on 21 March 1990, and has been a peaceful democracy ever since [22].

In 2017, Namibia's population was estimated at 2.5 million people, with 1.2 million males (48.6%) and 1.3 million females (51.4%). Of these, 36% of the population are aged 0-14 years old. Despite being one of the largest countries in Sub-Saharan Africa, Namibia is the least densely populated with an estimate of three people per square kilometre. While most of the population live in towns and cities, this geographical spread makes access to health services for the population and service provision by the government, extremely challenging [22], [23]. The country is divided into 14 administrative regions and 35 districts. These are (from most densely populated to least in persons per square km): Ohangwena (22), Oshana (20), Khomas (9.2), Omusati (9.1), Zambezi (6.1), Kavango West (4.7), Oshikoto (4.7), Kavango East (4.5), Erongo (2.4) Otjozondjupa (1.4), Kunene (0.8), Omaheke (0.8), Hardap (0.7), and Karas (0.5).

1.2.2. Socioeconomic overview

While The World Bank classifies Namibia as a high middle income country (HMIC), Namibia has one of the world's highest income disparities (Gini coefficient 0.61) and an unemployment rate of 33% [22]. Economic growth in Namibia has declined from an annual GDP growth of 1.06% in 2018 to 8.5% in 2020. Income inequalities reflect inequitable access to and provision of essential health services as well as the risk of impoverishment that individuals face when accessing health services. In order to address healthcare disparities, Namibia has developed and adopted numerous healthcare policies and initiatives.

Namibia's fifth National Development Plan (NDP5) for 2017-2022 aims to provide access to quality healthcare for its population. The MoHSS identified three strategic pillars for the healthcare sector: (i) improving people's well-being; (ii) operational excellence; and (iii) talent management. Improving the management and outcomes of maternal, new born and child health, HIV, tuberculosis and non-communicable diseases emerged as key priorities for achieving the "people's well-being". SOA care is an indivisible component of addressing these health priorities.

The MoHSS's QAD recently published the National Quality Policy and Strategy (NQPS) 2021/2022 to 2025/2026 - to support efforts by the MoHSS to provide high quality healthcare and social services sustainably [8], [24]. The NQPS aims to provide a shared framework for stakeholders, streamline initiatives, mobilise resources frugally, and implement programmes pragmatically across all sectors of healthcare and social services. The NSOAP is aligned with, and reinforces the NQPS's goals and priorities. These strategic plans evaluate and improve global socio-economic metrics (Table 1) and global health standards indicators (Table 3). The NQPS specifically identifies quality care targets related to surgical care. This reinforces the relationship between the NQPS and NSOAP strategic objectives.

Table 1: Demographic and socio-economic indicators for Namibia (2020)

Indicator	Status	Source
Population	2.54 million	World Bank (2020)
Sex ratio (males to females)	0.94	World Bank (2020)
Average annual population growth rate	1.86%	World Bank (2020)
Life expectancy at birth	64 years	World Bank (2020)
Population under 15 years	936 105 people (36.84%)	World Bank (2020)
Urban population	1.3 million	World Bank (2020)
Population density	3.1 people per square km	World Bank (2020)
Poverty level	28.7%	World Bank (2020)
GDP per capita	$9298.00	World Bank (2020)

1.2.3. Health system organisation and structure

The Namibian healthcare system reflects a complex social, political and economic history. Health inequalities in Namibia transcend the public and private sectors, reflecting a historic, persistent, racial/ethnic divide. However, The Government of Namibia has made significant progress in integrating racially divided communities and regions into one healthcare system. Within a few years of establishing an independent republic, the national leadership at the MoHSS began changing to a decentralised healthcare system that prioritised primary healthcare (PHC) [8], [22]. Many of the public health gains outlined above, reflect this change.

Namibia has a dual healthcare system consisting of both private and public sectors. The public sector is predominantly funded by the Government of Namibia and serves the majority of the population. Public health services are utilised by 85% of the population, while the private health sector provides services for a mere 15% of the population [25]. The private sector is funded by private medical aid funds since there is no national health insurance scheme. Despite this dual system, the government reimburses the private sector for services provided to state patients where the service is not available in the public sector.

Namibia has developed a vast healthcare system to meet the needs of a geographically dispersed populace. This requires coordination across different administrative bodies and sectors. This exercise in ensuring access to health service outposts, requires a large and costly healthcare workforce. Although the Namibian government aims to spend 15% of its GDP on healthcare, Namibia only spent about 8.6% of its GDP on healthcare in 2017. Funding from donors has declined since Namibia's reclassification in 2009 as an upper-middle-income country[22], [25]. In 2008, donors funded 22% of the country's healthcare needs, while in 2017, donors funded only 7% of Namibia's healthcare costs. Most of the government's health sector spending is directed at tertiary services.

The health system in Namibia focuses mainly on hospital-based and curative services with most of the infrastructure and service-points concentrated in urban areas. The public health sector is structured in a three-tier hierarchy with national (level 3), regional (level 2), and district (level 1) levels of care. In 2018, the public health sector consisted of 373 health facilities with a total of 7,551 beds. The composition of public sector hospitals was as follows: one referral hospital, four intermediate hospitals, 30 district hospitals (DHs), 47 health centres, and 291 clinics. In addition, there are 1,150 outreach points. The private sector has 101 health facilities that offer 1,144 beds to the insured population.

Community-based preventative and curative services are provided at outreach points, clinics, and health centres. A few health centres are equipped to admit patients and provide minor surgical procedures. Health centres are equipped to screen for certain surgical and obstetric diseases and acutely manage certain types of injuries. DHs provide medical and surgical services for patients referred from lower-level facilities. Intermediate hospitals provide more specialised medical and surgical care, while national referral hospitals are capable of offering more advanced

medical and surgical care. Thus, the Namibian health system is structured so that SOA care should be provided, at different levels of complexity by healthcare workers with varying levels of expertise, across all levels of hospital care.

Currently, the majority of SOA expenditure occurs at level two and three hospitals. This reflects the distribution of SOA service delivery and service utilisation. In order to achieve the NSOAP's objectives, SOA services need to be decentralised, which will facilitate sustainable improvement in SOA service delivery. Thus, the NSOAP provides an opportunity for much-needed strengthening of DHs.

1.2.3.1 Private sector referrals and public-private partnerships

According to the situational analysis, all participating hospitals have the capacity to refer patients. Expenditure on referrals is mostly for:

- Essential general surgery
- Essential orthopaedics
- Essential obstetrics and gynaecology
- Radiology/imaging services
- Special medication and medical treatment
- Critical care services
- Staffing

1.2.4. Health workforce

In 2018, an assessment of Namibia's medical workforce density in the public sector showed that there were 0.33 physicians for 1,000 people, with 2.02 nurses for 1,000 people. The medical workforce is not evenly distributed across different regions, with the majority of the healthcare workforce concentrated around the major cities and in the private sector (Figures 2.1, 2.2, 2.3). The unequal distribution of the healthcare workforce constantly fluctuates between regions and facilities. Health workforce migration is largely due to changes in training opportunities and in the healthcare needs of various regions. Moreover, a large portion of the healthcare workforce work in the private sector. One-third of all physicians, two-thirds of pharmacists, and about 20% of nurses work in the private sector. In terms of SOA workforce density (SOAD), there are approximately 1.87 surgeons, 1.47 obstetricians and gynaecologists, and 0.68 anaesthetists per 100,000 of the population according to the most recent situational analysis.

A shortage of healthcare cadres in the workforce poses a challenge to meeting the growing healthcare demands of the population. Furthermore, gaps in supply chain management and auxiliary and management staff means that the public sector is often unable to respond to all healthcare needs. This is particularly true for SOA care [24]. Some progress has been made in addressing workforce, equipment and infrastructure shortages in the public sector through the public-private partnerships (PPP). The PPP model increases the private sector's contribution to the provision of healthcare services, with reimbursement from the government. However, PPPs pose a threat to specialist staff retention in the public sector and may thus lead to delayed equipment and supply procurement or maintenance. This would lead to continuous limitations regarding SOA capacity in Namibia. Thus, the strategy requires careful monitoring and regulation to ensure that healthcare system challenges in the public are neither ignored nor exacerbated by the opportunities brought about by PPPs. The Namibia NSOAP aims to integrate PPPs in a sustainable and mutually beneficial way so that the population of Namibia have improved access to quality SOA and ECO care.

1.2.5. SOA care initiatives in Namibia

Several existing MoHSS initiatives and institutions contribute to improving the quality of SOA healthcare services. These include:

- *Namibia Medicines Regulatory Counci*l - registers and monitors the quality of medication and preparations
- *Health Professions Council of Namibia (HPCNA)* - regulates training and registration of healthcare professionals throughout the country
- *Atomic Energy and Radiation Protection Authority* - protects the population and environment from the harmful effects of radiation
- *Health Facilities Regulation* - handles the registration and licensing of all private healthcare facilities in the country

Policies and guidelines created by the MoHSS for healthcare workers aimed at improving the quality SOA services include:

- National Quality Management Policy and Strategy (2021)
- Hospital and Primary Healthcare Facility Standards (2021)
- Operation Theatre Manual (2015)
- Infection prevention and control (IPC) guidelines (2015)
- Central Sterile Services Department guidelines (2015)
- Phlebotomy guidelines (2015)
- Standard treatment guidelines (2021)
- Standard operating procedures for common causes of maternal mortality and morbidity
- Post-exposure prophylaxis guidelines (2011)
- National Waste Management Policy and Integrated Health Care Waste Management Plan (2012)

To meet the sustainable development goals (SDGs) in Namibia, strategies focusing on improving health outcomes related to emergency, critical and surgical healthcare services are needed. Thus, the Namibia NSOAP will provide a framework for the planning, delivery and management of equitable, safe, and quality emergency, critical, and surgical care with SOA services, across all levels of the healthcare delivery system in the Republic of Namibia.

1.2.6. Disease burden and trends

1.2.6.1. Overview

The burden of disease in Namibia is complex and high. Namibia has a quadruple burden of disease consisting of communicable diseases, maternal and child health, non-communicable diseases (NCDs) and trauma and injuries (Table 2). SOA care is used in the diagnosis, treatment and palliation of all these disease categories. As life expectancy increases and the overall diagnosis and management of NCDs increase, the prevalence (and subsequent health system burden) of NCDs increases as well.

The health outcomes in Namibia were historically poor and reflect income inequalities and unequal access to health services. As the economy has become more robust, and access to quality services improved, most health outcomes improved as well. Many disease entities contributing to leading causes of mortality in Namibia require SOA care to manage morbidity and/or treat the disease definitively. For example, diabetic foot sepsis requires surgical management to achieve source control.

An approximation of the burden of surgical disease is difficult when using the existing global burden of disease (GBD) data. This is because surgical diseases transcend multiple GBD entities. In Namibia, the estimation of the burden of surgical disease is rendered more difficult through lack of comprehensive, accurate record-keeping and reporting. The approximation of the burden of surgical disease is important for a meaningful interpretation of surgical service provision [7], [25], [26].

Table 2: Leading causes of death in Namibia (2009-2019)

Cause of Death (rank)	Disease	Disease Category	% change 2009-2019
1	HIV/AIDS	Communicable, maternal, neonatal and nutritional	-31.3%
2	Stroke	Non-communicable disease	13.1%
3	Lower respiratory tract infection	Communicable, maternal, neonatal and nutritional	-0.6%
4	Ischaemic heart disease	Non-communicable disease	22.3%
5	Neonatal disorders	Communicable, maternal, neonatal and nutritional	-16.2%
6	Tuberculosis	Communicable, maternal, neonatal and nutritional	-28.7%
7	Diabetes	Non-communicable disease	21.2%
8	Diarrhoeal disease	Communicable, maternal, neonatal and nutritional	-22.7%
9	Road accident injuries	Injuries	7.1%
10	COPD	Non-communicable disease	9.3%

1.2.6.2. Spectrum of surgical disease

Accurate estimates of the global burden of surgical disease and surgical needs are deficient - particularly in the context of LMICs and HMICs. The need for SOA care cuts across multiple disease categories including non-communicable disease (also definitive and palliative treatment of cancers, diabetes mellitus, cardiovascular and respiratory disease), communicable diseases (and their sequelae), trauma and injury [6], [7], [27], [28].

However, owing to the lack of existing data in countries such as Namibia, it is difficult to provide comprehensive insight into the burden of need. The NSOAP will, however, facilitate the necessary research infrastructure and health information system reinforcement to monitor and evaluate the burden of SOA needs, on a continuous basis. SOA care transcends the traditional siloed approach to disease prevention, treatment and cure, and provides dynamic opportunities for comprehensive healthcare system reinforcement.

The areas of SOA needs requiring prioritisation are (i) trauma and injury, (ii) emergency surgery, (iii) cancer surgery, (iv) obstetric and comprehensive emergency obstetrics and neonatal care (CEmONC), and (v) children's surgery.

(i) Trauma and Injury

Globally, mortality due to trauma and injury decreased over the past 20 years [29], [30]. However, the burden of need and morbidity due to trauma and injury continued to increase [29]. The spectrum of trauma and injury varies

between different regions. In Namibia, it is predictable that the major sources of trauma and injury are road traffic injuries (RTIs), occupational injuries (such as in mining), burns and heat-related injuries, and interpersonal violence. Sex differentials suggest men experience a significant higher burden than women, from injury disability-adjusted life year (DALYs). This has detrimental socio-economic effects on the household and national economy, as most of the workforce in Namibia is male.

Evaluating the burden of trauma and injury is complex. Cross-sectoral interventions are necessary to decrease the burden of trauma and injury. In order to improve trauma and injury related health outcomes, robust emergency and critical care services are required. Early stabilisation and the appropriate referral of a trauma patient is crucial, even when actual operative intervention is not required for definitive management. Furthermore, engagement with existing trauma registries (such as those coordinated by the WHO) would further strengthen information systems across healthcare sectors in Namibia.

(ii)) Emergency Surgery

Non-trauma, non-oncological surgical conditions likely contribute a sizeable share of hospital admissions (and a large part of surgical admissions) in Namibia. Emergency general surgical conditions most frequently include acute abdomen, appendicitis and abscesses that require in-hospital surgical management. According to the African surgical outcome study (ASOS) of 2018, of the 325 surgical patients from Namibia included in the study, there was a 3.7% post-operative mortality, 4.3% required post-operative critical care admission and 18.3% developed post-operative complications [31].While this study is not authorised to make national inferences about surgical outcomes, it nevertheless suggests that in order to improve surgical outcomes, investment in critical care resources need to be directed at theatre optimisation, healthcare workforce capacity and improving infrastructure as well as supplies.

(iii) Cancer Surgery

Surgical care is necessary for approximately 65% of all cancer cure or control [6]. According to the global burden of disease (GBD) study 2019, there has been a 26.3% global increase in new cancer cases since 2010, a 20.9% increase in deaths due to cancer, and a 16.0% increase in DALYs due to cancer [26]. This suggests that not only is the global burden of cancer increasing, but also its corresponding necessity for operative cancer care. According to Global Cancer Incidence, Mortality and Prevalence (GLOBOCAN) 2020, the number of incident cases for 2020 was 3345 cases while the 5-year prevalent was 7463 for both sexes. The most common new cases of cancer for both sexes are breast (16.7%), cervical (11.2%) and prostate (10.3%). The sex-specific distribution for males consist of prostate (23.8%), Kaposi's Sarcoma (12.6%) and Non-Hodgkin's Lymphoma (4.5%), and for females breast (29.3%), cervical (19.7%) and Kaposi Sarcoma (4.7%) [32], [33].

In order to achieve equitable cancer care and outcomes, improving healthcare infrastructure as well as its surveillance and response systems is necessary across all levels of care, in order to ensure adequate screening, diagnosis and the multi-disciplinary management of cancer.

(iv) Obstetric and Comprehensive Emergency Obstetric and Neonatal Care services (CEmONC) Surgery -

The surgical management of obstetrics is a fundamental component of achieving the safe CEmONC care necessary to decrease avoidable maternal and neonatal mortality. A recent study showed that of 37,106 live births, 23 maternal deaths and 298 near-misses occurred. The most common causes of near miss and death are haemorrhage and hypertensive disorders - both of which often require emergency SOA care [34]. The provision of appropriate obstetric and CEmONC care will thus lead to improved antenatal care, surgical, anaesthetic and obstetric workforce and capacity, improved equipment and supplies (such as blood products) and improved referral pathways.

Obstetric surgery also includes the comprehensive management of morbidities that result from complicated delivery (such as obstructed labour). Almost 20 years have passed since the United Nations Population Fund (UNPFA) campaign to "End Fistula" was launched, yet significant health gaps remain. While insufficient data is available to estimate the burden of obstetric fistula in Namibia, a study from 2014 suggests that only 19 facilities in Namibia have the capacity to repair obstetric fistula [35].

1.2.6.3. Health indicators

Significant progress has been made in improving health outcomes. Several global health indicators reflect this progress: maternal mortality, ratio, infant mortality ratio, under-5 mortality and HIV incidence have all improved over the past five years (Table 3)[25], [36]. Several data collection initiatives coordinated by the MoHSS Directorate of Health Information and Research (HIRD) and QAD have facilitated the tracking of these health trends in Namibia.

While progress has been made in reporting and improving key global health indicators, global SOA indicators have not previously been collected or reported in Namibia, or on a global scale. The incorporation of routine reporting and surveillance of SOA-related outcomes such as perioperative mortality rate (POMR) and surgical site infection (SSI) into routine health indicator reporting systems, is crucial for ensuring that high quality SOA care is delivered through this NSOAP. This NSOAP reports global SOA indicators for Namibia for the first time and provides a strategy for the routine collection and reporting of these indicators.

Table 3: Global health indicators for Namibia

Indicator	Status	5-year trend (2015-2020)	Source
Maternal mortality ratio	195 per 100,000 live births	217 (2015) - 195 (2020)	World Bank (2017)
Infant mortality ratio	30 per 1,000 live births	33 (2015) - 30 (2020)	World Bank (2020)
Under-5 mortality rate	40 per 1,000 live births	47 (2015) - 40 (2020)	World Bank (2020)
HIV incidence	2.44 per 1,000 uninfected population	4.11 (2015) - 2.44 (2020)	World Bank (2020)

1.2.6.4. SDGs met through addressing surgical care

The WHO called on member states to prioritise emergency, critical, trauma and surgical care, to help achieve SDGs. The following SDGs can be achieved through strengthening SOA and ECO care capacity and quality.

- Reduction in death and disability due to road traffic injuries and NCDs (SDG 3.6): *improving pre-hospital care, emergency and surgical treatment; as well as strengthening ICU capacity, surgical and diagnostic services*
- Reduction in death and disability due to NCDs (SDG 3.4.1): *strengthen surgical services for definitive NCD management, management of morbidity and palliative care*
- Reduce the maternal mortality ratio (MMR) (SDG 3.1): *treatment for early detection and management of obstetric emergencies (CEmONC care)*
- Scaling up the health workforce (SDG 3C): *training of SOA workforce; PPP strategies*
- Decent work and economic growth (SDG 1, 8): *protection from DALYs due to surgical disease; financial risk protection*
- Ensuring UHC (SDG 3.8.1)

1.2.7. Children's surgery

1.2.7.1. Overview

Of the 4.8 billion people without access to essential surgical care globally, 1.7 billion are children and adolescents [6]. It is estimated, that a child born in Sub-Saharan Africa has an 85% risk of requiring surgical care by the age of 15 [6], [37]. Improving surgical care for children will lead to a reduction in morbidity and mortality caused by several common conditions affecting children, such as: congenital anomalies; trauma, injury and burns; cancer; and general surgical emergencies[30], [37]. Furthermore, children requiring surgical care may require critical care services at some point in their management. These are resources that can be shared and repurposed for a variety of disease entities threatening child health. Thus, surgical care plays a critical role in improving child health.

In Namibia, 36% of the population are 0-14 years old [22], [25]. The paediatric population often have unique emergency, critical, surgical, anaesthetic and obstetric care needs in perioperative and post-operative periods. Only three certified paediatric surgeons work in Namibia with only one newly dedicated operating theatre designated for children's surgery. While many of the resources and skills required to manage paediatric surgical conditions are common to those required for managing adult emergency, critical and SOA care conditions, the current capacity of the health system is sub-optimal for managing the burden of children's surgical care needs. Holistic capacity-building is required to incorporate children's surgical care into the Namibia NSOAP and allocation of appropriate resources (human, financial and infrastructural) towards children's surgery.

1.2.7.2. Spectrum of children's surgical disease

Over the last two decades, there has been a change in the aetiology of deaths for children under five years of age, globally. There has been a decline in deaths caused by infectious diseases and an increase in the burden of deaths caused by non-communicable diseases such as (i) congenital anomalies, (ii) childhood cancer and (iii) trauma, injury and burns [7], [25], [37].

(i) Congenital Anomalies

Congenital anomalies are the fifth leading cause of death of children under five years of age. They affect 3-6% of global live births. In LMICs and HMICs (like Namibia), the high prevalence of congenital anomalies is likely due to greater maternal exposure to micronutrient deficiencies and teratogens, intrauterine infections and low termination rates due to limited antenatal diagnosis [37]. According the WHO, in 2018, congenital anomaly deaths in Namibia contributed to 1.65% (289) of total deaths [38].

Surgically correctable congenital anomalies contribute to the burden of morbidity and mortality in children, adolescents and adults. Reducing the burden of congenital anomalies require a comprehensive strategy that addresses the following:

- Improved antenatal screening, integration with antenatal care programmes/strategies and planned deliveries at facilities offering appropriate antenatal care
- Improved emergency neonatal care capacity (such as neonatal resuscitation skills development) across all levels of care
- Improved neonatal critical care capacity
- Improved surgical care capacity for definitive management of congenital anomalies
- Improved data capturing and reporting of the prevalence and practices surrounding the management of congenital anomalies in Namibia
- Strengthening referral pathways for neonates
- Implementation of guidelines for the management of congenital anomalies

Mortality due to congenital anomalies can be reduced through the improvement of antenatal services, strengthening of DH services and expanding the capacity of the facility providing definitive care. Thus, the management of congenital anomalies requires multi-disciplinary, cross-sectoral collaboration [37].

(ii) Trauma, Injuries and Burns

According to the WHO, approximately 1 million (17%) of deaths due to trauma occur in children annually [29], [37], [39]. The leading causes of trauma deaths are road traffic accidents, falls, burns, drowning and poisoning. A reduction of deaths due to trauma, both accidental and non-accidental injuries require a multi-disciplinary strategy to address the following key aspects:

- Pre-hospital systems and triage guidelines/regulation
- Emergency department management and referral capacity development
- Definitive surgical and anaesthetic management capacity development
- Critical care capacity development
- Community engagement and health promotion strategies
- National and international trauma and injury registry participation

Morbidity and mortality due to trauma, injuries and burns can be reduced through the integration of community-based approaches, multi-disciplinary engagement and capacity-building as well as cross-sectoral capacity-building.

(iii) Cancer

Childhood cancer was the ninth leading cause of childhood disease burden globally in 2017. Mortality from cancer accounts for at least 60% of deaths in children in LMICs. According to the Cancer Association of Namibia, 136 new cases of childhood cancer were reported annually from 2013 [41]. The exact prevalence of paediatric cancer and the types of childhood cancers in Namibia is unknown. A study published in 2014 suggested that the most common childhood cancers at Windhoek Central Hospital - the only oncology referring centre in Namibia - reported findings from 191 new childhood cancer cases diagnosed from 2003-2010. These were leukaemia's (22.5%), retinoblastomas (16.2%), renal tumours (13.6%), soft tissue tumours (13.6%) and lymphomas (12.0%) [42]. Childhood cancer is expensive to treat and often difficult to detect - particularly in the context of communicable disease that may mask or mimic symptoms of malignancy (such as TB). A reduction of morbidity and mortality due to childhood cancer can be achieved through the following strategic applications in the NSOAP:

- Improved awareness and screening programmes
- National and international cancer registry participation
- Optimisation of PPPs
- Improved access to best treatment and guidelines

(iv) Emergency and elective general paediatric surgery

Little is known about surgical conditions affecting the paediatric population in LMICs. However, available data suggests that the distribution of surgical pathology for standard general paediatric surgery consists of inguinal hernia, hydrocoeles, umbilical hernias, intussusception and SSI [43].

Voluntary medical male circumcision (VMMC) is an essential surgical procedure as defined by the DCP-3 [5]. VMMC forms an integral part of preventative interventions targeting males to reduce the transmission of HIV/AIDS. VMMC is integrated into existing new-born and maternal health programmes. The benefits of a VMMC programme,

particularly targeting children, is mutually beneficial for the Namibia National Strategic Framework for HIV/AIDS 2017/18-2022/23 targeting a reduction in HIV transmission, and also to strengthen surgical services for male congenital anomalies or complications of male circumcision (Musau and Chang, 2018). The prioritisation of VMMC programmes aligns with several WHO and the U.S. president's emergency plan for AIDS relief (PEPFAR) strategic interests.

1.2.7.3. SDGs met by addressing children's surgical care

Improving surgical care for children is crucial to achieving the Namibia's Vision 2030 and several health-related SDGs, particularly:

- Ending preventable deaths among new-borns and children under five (SDG 3.1.1, 3.2.1, 3.2.2, 3.3)
- Reduction in death and disability due to road traffic injuries and non-communicable diseases (SDG 3.6)
- Reduction in deaths due to non-communicable diseases (SDG 3.4.1)
- Ensuring UHC (SDG 3.8.1)
- Increasing the healthcare workforce (SDG 3C)
- Decent work and economic growth (SDG 1, 8)

1.3. Situational analysis

1.3.1. Overview

In October 2021, an updated situational analysis of SOA care capacity was carried out by the MoHSS. The PGSSC WHO-SAT tool was used to conduct the situational analysis. The findings from the survey provided a foundational, contextually appropriate framework for the development of the Namibia NSOAP. These findings are presented in this section of the NSOAP. Of the facilities invited to participate in the survey, 79.3% of the hospitals that responded were publicly owned hospitals (n=23 facilities) and 20.7% of facilities were privately-owned (n=6 facilities). All the DHs that responded were public (n=19), all the secondary hospitals were private (n=5) and 20% (n=5) of the teaching hospitals were private.

Of the facilities that responded, the highest number of responses was among DHs (48.7% of respondents, n=19). This is important as most patients utilise DHs as the first point of call. Furthermore, strengthening district health systems is a fundamental to NSOAP development.

The following facilities participated in the situational analysis:

Table 4: The distribution of facility responses across levels of care and health sectors, with the catchment populations served

DHs (65.5%, n=19)	*(population served)	Secondary Hospitals (17.25%, n=5)	*(population served)	Teaching Hospitals (17.25%, n=5))	*(population served)
Eenhana DH	74,440	Mediclinic Windhoek Private	-	Katutura Intermediate	155,518
Engela DH	170,445	Oanob Rehoboth Private	-	Onandjokwe Intermediate	200,000
Gobabis DH	80,134	Okahandja Private	-	Ongwediva Medipark	-
Grootfontein DH	46,327	Ondangwa Private	-	Oshakati Intermediate	216,063

Khorixas DH	19,000	St Mary's Rehoboth	35,000	Rundu Intermediate	124,771
Mariental DH	36,916				
Nankudu DH	51,000				
Okahandja DH	33,091				
Okakarara DH	26,742				
Okongo DH	29,995				
Omaruru DH	20,733				
Omuthiya DH	83,684				
Opuwo DH	68,187				
Outjo DH	30,208				
Swakopmund DH	79,126				
Tsandi DH	38,464				
Tsumeb DH	35,647				
Usakos DH	21,290				
Walvis Bay DH	89,000				
19	1,034,430	5	**	5	***696,352

*Oshikuku Hospital submitted a late submission and thus did not form part of the report

**Insufficient information to calculate

***Note, not all fields reported in category

1.3.2. Capacity

The absolute number of hospital beds is a routine indicator of health facility capacity globally. 'Number of beds' is a crude estimate of a facility's capacity to deliver in-patient health services. A single bed can be used as a surrogate indicator of the basket of services (including medication, equipment, workforce and administrative capacity) required to provide healthcare services at a facility for a single patient. This means a bed and bed occupancy can also be used to estimate the cost of a basket of healthcare services, which includes elective and emergency services. Often, allotted bed numbers are not fixed, as beds allocated to particular specialities or wards are repurposed based on need. This was the case during the Covid-19 pandemic, where surgical beds were reassigned to non-surgical patients admitted with Covid-19-related disease.

In Namibia, the distribution of total beds and surgical beds between the private and public sector represents the distribution of population utilisation between the sectors more closely. However, when the density of beds per 100,000 population is considered, the private sector has a higher density of surgical and critical care beds. This means that the private sector is likely to have a greater capacity to deliver SOA care, compared to the public sector.

The distribution of critical care beds is almost equal between the public and private sectors with the former only slightly exceeding the latter. However, the density of critical care beds per 100,000 population in the private sector is double that of the public sector. This is likely due to the increased cost of operating a functional critical care unit. Critical care services are crucial for optimising patient outcomes and should be considered essential for delivering high-quality SOA services. In terms of functioning operating theatres, although there are three times as many operating theatres in the public sector compared to the private sector, the relative provision of surgical care capacity in terms of operating theatre density, is greater in the private sector (Table 4).

Table 5: Health system capacity in public and private healthcare sectors.

Description	Total	Public Sector	Density per 100,000 population	Private Sector	Density per 100,000 population	Remarks
Number of beds	5,528	5083 (92%)	239	445 (8%)	118	
Surgical beds	843	702 (83%)	33	141 (17%)	38	
Critical care beds	141	85 (60%)	4	56 (40%)	15	More critical care beds in private hospital
Functioning theatres	67	51 (76%)	2	16 (24%)	4	Relatively more theatres in private hospitals

1.3.3. Service delivery capacity

Most facilities had access to basic amenities, almost all of the time. All facilities included in the situational analysis survey reported always having running water and oxygen, and all except one DH always had access to electricity. The provision of oxygen back-up facilities was variable, with 26% of DHs sometimes only having oxygen tubing, 16% of DHs not having an oxygen back-up source available at all, and another 21% of the facilities only occasionally having back-up oxygen sources. Thirty-two percent of DHs had intermittent internet access.

Most facilities reported having the basic infrastructure and instruments required for providing emergency SOA care. All five teaching hospitals had a full complement of basic equipment for providing essential surgery. Two out of the five secondary hospitals did not have a blood bank, but had the other minimum infrastructure metrics: working anaesthetic machine/s, medical record systems, haemoglobin (Hb) and urine testing capabilities, as well as a functional x-ray machine.

However, there was variability among DHs in terms of the frequency of availability of various items. For example, while 97% of facilities reported having a functional anaesthesia machine, only 32% of facilities reported having a blood bank all of the time. This reflects the need to strengthen DHs to enable them to deliver essential SOA care to the Namibian population.

Radiology and imaging services are a crucial component of emergency, critical and SOA care. These services enable healthcare providers to make accurate diagnoses, evaluate patient progress and plan for definitive treatment options. Robust radiology and medical imaging services are valuable for various specialties beyond SOA and critical care. Since the first situational analysis in 2018, radiology and imaging services have increased in Namibia (Table 5). It is important to note that more private sector facilities were included in the 2021 situational analysis. This may cause an overestimation of the increase in radiology and imaging capacity in Namibia.

X-rays are considered a basic radiological tool. In terms of radiology and imaging services, the majority of facilities have a functioning X-Ray machine (93%) and functioning ultrasound machine (93%). Deficits in the availability of X-ray and ultrasound machines occurred only at district level. However, the concurrent presence of a radiographer or operator for the equipment was not evaluated.

Computed Tomography (CT) is considered an essential imaging modality, particularly for the management of acute general surgery, surgical oncology and trauma. However, only 21% (n=6) of facilities reported having CT scanners. CT scanners were only found at secondary and teaching hospitals and half (n=3) were located in the private sector. Magnetic Resonance Imaging (MRI) was only available at two private hospitals: one secondary and one teaching hospital (Table 5).

Table 6: Radiology and imaging capacity in Namibia

Modality	Total (% of facilities with item) - 2018	Total (% of facilities with item) - 2021
X-Ray	91	93
Ultrasound	84	93
CT scanner	10	21
MRI	0	7

1.3.4. Health workforce for SOA care

Specialist providers (SPs) are registered medical practitioners trained specifically to provide SOA care. There are approximately 1.87 surgeons, 1.47 obstetricians and gynaecologists, and 0.68 anaesthetists per 100,000 population. The current SAO workforce densities (SAODs) do not meet the LCoGS target for 2030 of 20 specialist providers per 100,000 population. In order to meet this target, Namibia would need five times the current density.

Non-specialist providers (NSPs) (such as GP - anaesthetists and GP - surgeons) are important providers of SOA care in Namibia. The density of NSP surgeons and anaesthetists are 9.2 and 5.7 respectively, per 100,000 population (Figure 3). The combined density of specialist and non-specialist providers is 11.5 surgical providers and 6.6 anaesthesia providers per 100,000 population. These combined metrics provide a more realistic view of the service delivery capacity of the Namibian SOA health workforce. However, Namibia has a shortage of other specialist providers essential to providing SOA care, such as, pathologists and radiologists. This may negatively affect quality and efficiency of care. Across all levels of care, scrub nurses make up a density of 5,72 providers per 100,000 population, registered nurses 75,92 providers per 100,000 population and total nurses (including enrolled nurses) 145 providers per 100,000 population (Figure 2.2). Most nurses work at teaching hospitals.

Since 2018, the SOA and auxiliary SOA health workforce has increased (Figure 3). This may be attributed to increased training opportunities, job creation, job opportunities (in both sectors) and job retention strategies in Namibia.

FIGURE 2. 1 : SPECIALIST AND NON-SPECIALIST SOA WORKFORCE DISTRIBUTION BY LEVEL OF CARE

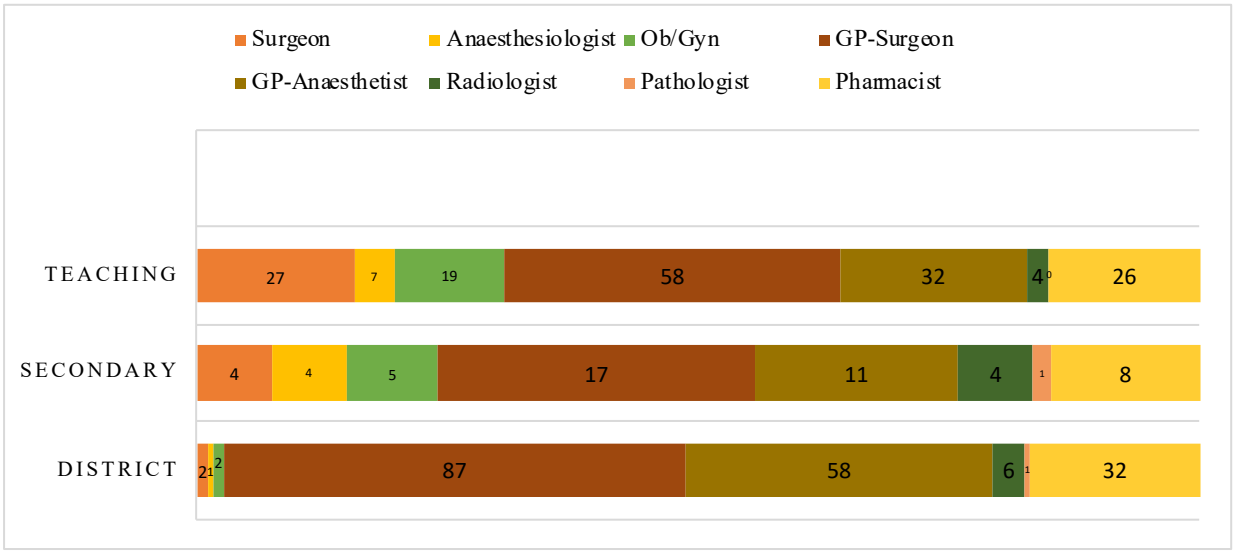
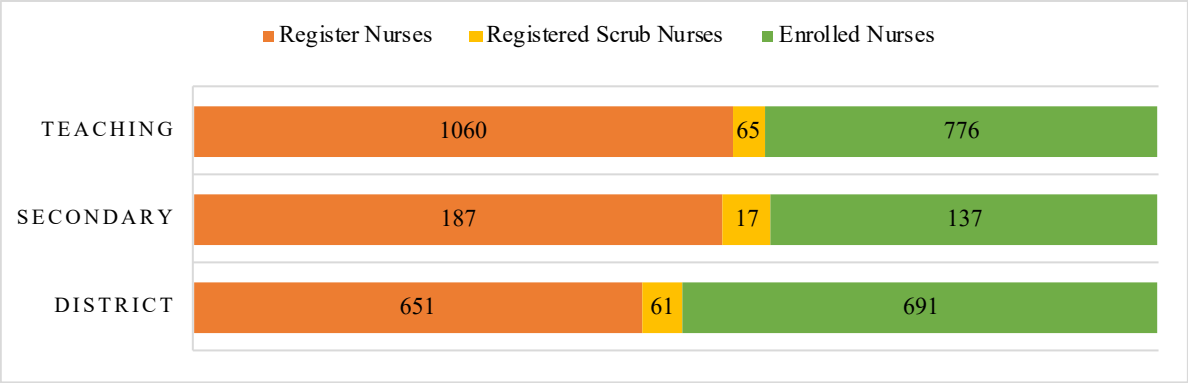
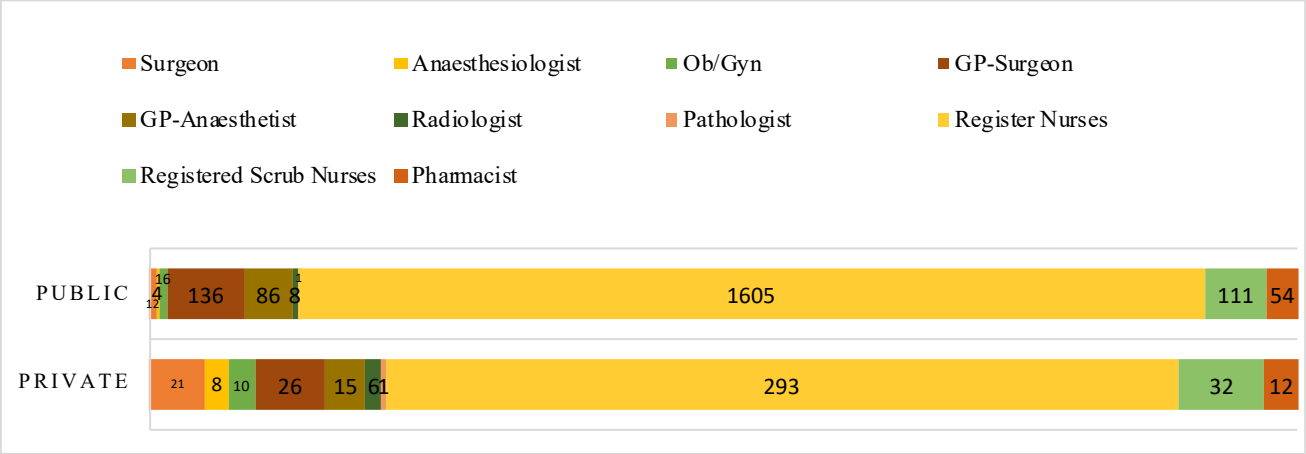


FIGURE 2. 2 : NURSING WORKFORCE DISTRIBUTION BY LEVEL OF CARE



The unequal distribution of the SOA workforce between the private and public sectors is a challenge shared among most LMICs. In Namibia, the distribution of the SOA workforce between the private and public sector is fluid. The fact that PPPs are encouraged and that remuneration in the private sector for SOA providers exceeds that of the public sector, makes it difficult to retain healthcare workers who work exclusively in the public sector. The majority of SPs work at private facilities. Approximately 64% of surgeon SPs, 67% of anaesthetist SPs and 38% of obstetrician and gynaecologist SPs work in the private sector in Namibia. Smaller specialties such as radiology and pathology had an almost equal distribution between the private and public sectors. There are however more registered nurses working at public compared to private facilities (Figure 2.3).

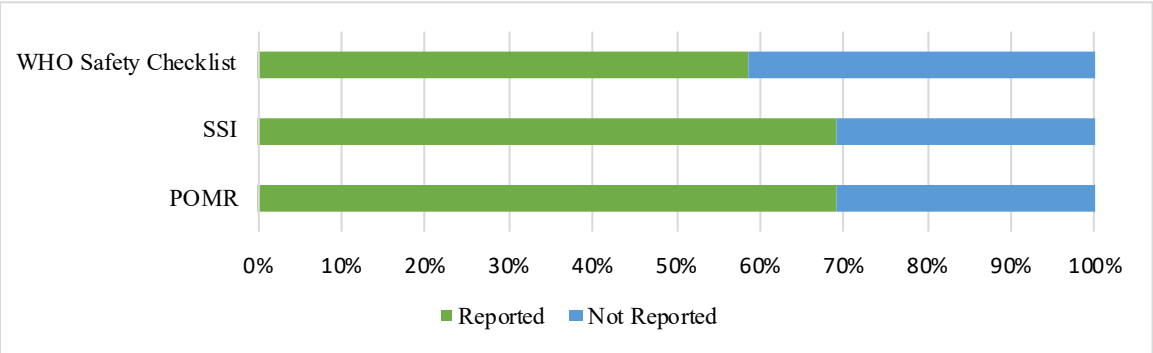
FIGURE 2. 3 : SOA WORKFORCE DISTRIBUTION BETWEEN THE PRIVATE AND PUBLIC SECTORS



1.3.5. SOA best practices and quality improvement (QI)

The utilisation of evidence-based guidelines is a fundamental component of providing best medical practices for patients. Thirty-eight percent of facilities had access to surgery guidelines, 38% had access to anaesthesia guidelines and 55% had access to analgesia guidelines, while 72% had access to emergency care guidelines. Similar trends in guideline utilisation were common at district, secondary and teaching hospitals. Of note, access to guidelines does not necessarily indicate compliance. More than half of the facilities (54%) reported using the WHO surgical safety checklist and approximately 75% of facilities routinely report SSIs. Approximately 80% of facilities were engaged in QI initiatives, with only five facilities never undertaking QI initiatives. In terms of perioperative mortality rate (POMR) reporting, 20 of the facilities (68.9%) reported perioperative deaths (Figure 3). This is encouraging for Namibia's goal to meet 100% of facilities reporting POMR by 2030 and suggests there may be appropriate infrastructure in place to achieve this goal [8].

FIGURE 3. 1 : PROPORTION OF FACILITIES REPORTING SOA QUALITY IMPROVEMENT METRICS



1.3.6. Surgical service delivery

Surgical service delivery is measured in terms of service utilisation and delivery. Indicators for service utilisation include total patients assisted at out-patient departments (OPD), total admissions, numbers referred for surgery (usually to higher levels of care). Surgical service delivery is measured in terms of number of cases performed per 100,000 population per annum.

As expected, significantly more patients were admitted to hospital and assisted by surgical OPDs in the public sector compared to the private sector. This may be due to different follow-up structures, but likely reflects the differences related to population treated. The proportion of admitted patients requiring surgical interventions and the number of children under 15 years of age requiring surgery was similar between the two sectors (Figure 7).

Table 7: Surgical service delivery across public and private sectors in Namibia

Indicator	Total patients	Total Public sector (%)	Total Private sector (%)	Remarks
Total number of OPD patients seen per year	2,680,146	2,644,175 98.7%	35,971 1.3%	Majority of OPD patients were seen at public health facilities
Total number of admissions per year	197,661	171,690 86.9%	25,971 13.1%	More patients were admitted in state-owned health facilities
Number requiring surgery	22,302	12,950 58%	9352 42%	36% of admissions at private facilities are surgical cases with 11% at state facilities
Number of patients referred to next level for surgery	20,872	20,612 98.7%	260 1.3%	More patients were referred for surgery than necessary
Children < 15 requiring surgery	2,452	1,009 41%	1,443 59%	More children with surgical conditions in private facilities

A total of 4,785 procedures were performed in the operating theatre per 100,000 population. When evaluating the LCoGS indicator of cases per 100,000 population, it is important to consider case mix. The Bellwether procedures

are index procedures used to measure essential surgery capacity and delivery. Of the Bellwether procedures performed, 83% of facilities were able to provide caesarean sections; 55% were capable of providing laparotomies; and 31% were able to manage an open fracture. Teaching hospitals were able to offer all the Bellwether procedures. Among secondary and DHs, only 46% of facilities were able to provide laparotomies and only 16.7% were able to manage of open fractures.

Since 2018, there has only been a slight increase in the number of facilities providing caesarean sections and laparotomies, with a decrease in the number of facilities providing management of open fractures. There is variability in the range of procedures provided by level of care. However, capacity to deliver Bellwether procedures should better-correlate with capacity to deliver a range of other essential procedures. Certain procedures and the associated basket of skills and care are closely related to Bellwether procedures. In terms of laparotomy-related procedures, 55% of facilities were able to perform appendicectomy and 52% were able to perform hernia repairs. These figures correlate facilities' capacity to perform laparotomies. In addition to Bellwether procedures, most facilities were able to perform family planning and abortive procedures, intercostal drain insertion, and joint dislocation management.

FIGURE 4. 1 : PROPORTION OF FACILITIES PROVIDING BELLWETHER PROCEDURES

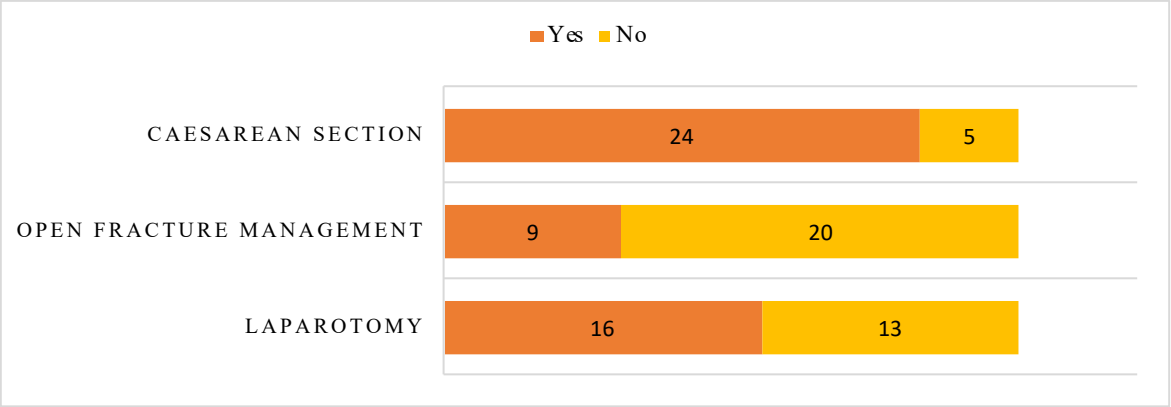
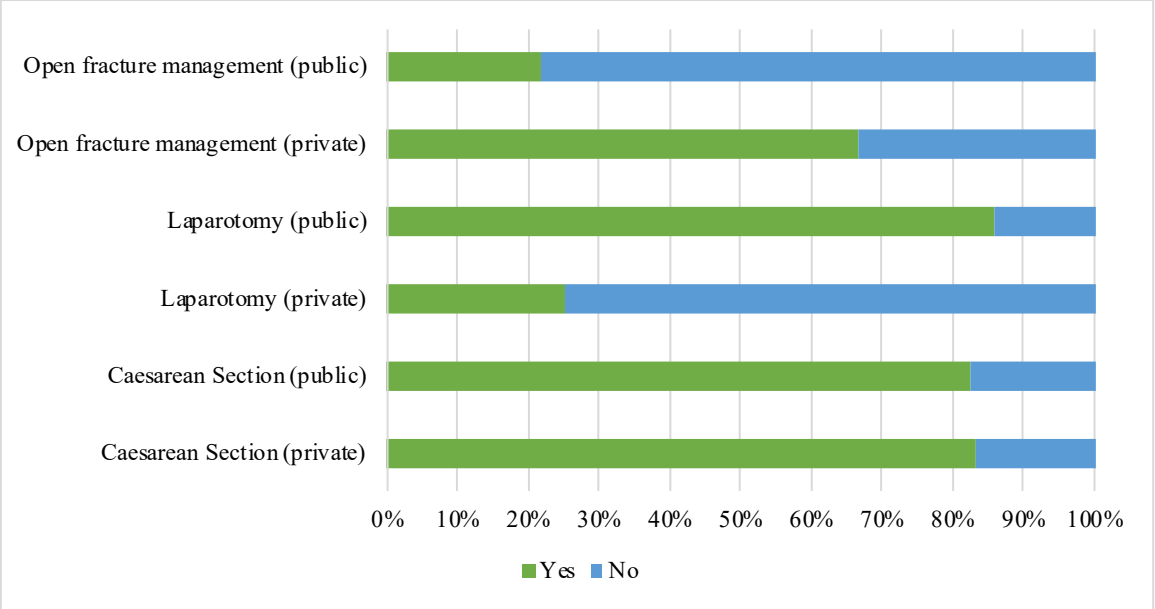


FIGURE 4. 2 : PROPORTION OF FACILITIES PROVIDING BELLWETHER PROCEDURES BY SECTOR



1.3.7. Basic medicines, equipment and supplies

All but one facility had access to most basic medicines to perform essential surgical procedures (narcotics, antibiotics, IV fluids, paralytic agents, sedatives and vasopressors). Further analysis is needed to evaluate whether the availability of supplies is associated with changes in service delivery, case volume and outcomes.

1.3.8. Impoverishing and catastrophic health expenditure

The final LCOGS metric to evaluate impoverishing or catastrophic expenditure is the most difficult to evaluate. Unfortunately, despite this indicator being a crucial part of Namibia's NSOAP development, costing and implementation, the indicator was not included in the situational analysis. This was largely due to accepted difficulties in collecting this metric. However, it is important to note that while healthcare in Namibia is theoretically "free of charge" (in that it is funded by government) it is expected that the indirect and direct, non-medical costs of seeking SOA care, are high for individuals. Further research is needed to quantify the catastrophic expenditure incurred by individuals and plan appropriate responses according to the findings.

1.4. SWOT Analysis

During the Namibia *Stakeholders Meeting to Draft the NSOAP*, hosted by the MoHSS QAD in Windhoek, November 2021, stakeholders were divided into groups to cover four thematic areas of the NSOAP identified by the MoHSS. This modified working group allocation reflects how the LCOGS indicators and NSOAP pillars have been collated to align more closely with existing healthcare systems policy planning and evaluation structures in Namibia. These four streams are:

- Infrastructure and equipment
- Surgical workforce
- Service delivery and supplies
- Health information systems and QI

A SWOT analysis was developed by stakeholders to provide a comprehensive, contextualised analysis of the WHO-SAT situational analysis data. The findings are presented below describing the *Strengths, Weaknesses, Opportunities and Threats (SWOT)* of each NSOAP pillar.

1.4.1. Infrastructure and equipment

This includes all basic amenities, infrastructure and general equipment required to provide essential SOA and ECO care.

STRENGTHS	WEAKNESSES
• Procurement Act in place • Procurement/economising committees in place at every level of care • Availability of basic infrastructure in every region • Availability of oxygen supply at all facilities • Dedicated medical and ancillary equipment available • Existing PPPs in place for administration of infrastructure and equipment • Existing budget for infrastructure development • Availability of Ministry of Works (MoW) department responsible for planning, management and maintenance of government buildings and infrastructure	• Centralised and prolonged procurement process • Procurement/economising committees not empowered to make procurement decisions • Procurement/economising committees not inclusive of the end-users involved in delivering SOA care • Available infrastructure limited in structure and numbers needed • Inadequate responsibility taken for poorly maintained infrastructure • Oxygen generating capacity is not adequate at facility level • Available equipment is limited in numbers and absent at some facilities • Poorly maintained existing equipment • PPPs not functioning optimally • Inadequate funds for infrastructure development • MoW's interests not aligned with the needs of MoHSS
OPPORTUNITIES	**THREATS**
• The Procurement Act makes provision for clear and transparent procurement processes • The Procurement Act makes provision for procurement/economising committees to be autonomous • End-users are willing to be included in procurement committees • International and local partners support infrastructure development • Can strengthen PPPs to maintain infrastructure • Oxygen capacity expansion is underway due to COVID-19 Pandemic • A strengthened maintenance policy and its implementation at some facilities is underway • The equipment given during the Covid period can be used for SOA services • Optimisation of cooperation between private and public is possible • Expertise and partners are available	• Potential for abuse of some procurement provisions • Sustainability of infrastructure development and partner interest is not assured • Financial commitment from partners not ensured • Financial sustainability of maintenance not assured • Some SOA facilities are being repurposed into COVID-19 facilities • Cooperation from private partners not assured in terms of sustainability and financing • Sustainability of infrastructure development and long-term partner interest not assured

1.4.2. Surgical workforce

This describes the human resources and staff required to establish a surgical workforce to provide essential, high-quality SOA and ECO care.

STRENGTHS	WEAKNESSES
• Existence of appropriate and diverse cadres that could take up SOA work • Presence of task-sharing mechanisms • Availability of human resource establishments for recruitment of SOA personnel • Availability of training opportunities for career improvement with government sponsorship • Availability of limited private practice for SOA care providers in public service • Presence of performance appraisals	• Continued shortages of personnel in each cadre at all levels • Lack of standardisation of measurable outputs for each cadre • Poor distribution of SOA workforce between various regions • Lack of retention strategies for those that are government-sponsored for training • Tendency to prioritise private work over public service, hence conflict of interest • Underperformance by healthcare workforce inadequately addressed • Lack of accreditation of continuous medical education (CME) courses offered at the facility leve
OPPORTUNITIES	**THREATS**
• Availability of trained Namibian SOA workforce in the diaspora • Opportunity to standardise career development courses offered by various facilities and organisations • Government commitment and political will to address the SOA human resource crisis at all facilities that require SOA services • Potential to liaise with development partners to develop means of assessment of the impact of graduates on service delivery • Policy allows for SOA private care providers to remain in public service • There is room to improve disciplinary action against under-performing staff	• Low uptake of local professional opportunities by SOA health workers in the diaspora to return home and work in Namibia • Lack of complementary staff and equipment at facilities that require SOA workforce • Local 'brain drain' of SOA workforce to the private sector in Namibia • Conflict of interest on the part of those working in public and private sectors • Demoralised SOA workforce owing to systemic challenges in providing high-quality SOA care

1.4.3. Service delivery and supplies

This describes the range of essential services and the supplies required to enable the facilities and workforce to deliver the requisite services.

STRENGTHS	WEAKNESSES
• Availability of operating theatres (OTs) at most DHs (highest density of functional OTs at district level) Good cooperation between hospitals at district, intermediate, and tertiary levels • Established referral systems and pathways • Strong political will to ensure adequate service delivery and supplies • Existing MoU between Ministry and private healthcare facilities to allow "pooling" of resources • National outreach programme allows access to surgical services. • Procurement management unit oversees procurement and distribution of supplies centrally	• Most of the operating theatres are unutilised • Limited numbers of skilled healthcare workers per facility • Poor implementation of the MOU between district and referral facilities and between state and private facilities • Poor communication and feedback (regarding outcomes) between district and referral facilities and between state and private facilities • Outdated referral policy between facilities • Sub-optimal data collection, storage and analysis systems lead to sub-optimal service delivery and procurement • Centralised and overburdened procurement unit
OPPORTUNITIES	**THREATS**
• There is the will among all stakeholder groups to improve theatre functionality and productivity • There is the will among all stakeholder groups to train more SOA providers through formal specialisation and in-service training • There is a commitment from MoHSS to recruit more skilled SOA staff • There is capacity and expertise to review and update the referral policy among stakeholder groups • The MOU between public and private facilities can be strengthened • Possibility of procuring funding from development partners • There is capacity to strengthen outreach services • The MoHSS is moving towards decentralising the procurement unit and process to facilitate a more rapid and appropriate response to the needs of each facility	• The funding required to improve surgical service capacity (particularly operating theatres) is significant • Private health sector (public sector needs incentives, better working conditions) • Increased morbidity (disability) and mortality due to missed cases, delayed, and/or cancelled surgical cases • Poor health-seeking behaviours at the pre-hospital level result in delays in seeking care at community level • Middlemen in procurement chain leads to overpricing and lack of quality assurance

1.4.4 Information management and QI

This describes the health information and data management systems required to deliver essential, high-quality SOA and ECO care and research.

STRENGTHS	*WEAKNESSES*
• Existing District Health Information Software 2 (DHIS 2) currently in use at all facilities in the country • MoHSS is committed to transitioning to an E-Health system (plans are in place) • Health information and research directorate is operational • Policy and guidelines for data capturing established • Health information officers available at all levels of care • E-Birth and E-Death registration in place • MoHSS QAD prioritises data analysis and reporting • NQPS for 2021/2-2025/6 published • The Patient's Charter is used • Regional data review meetings ongoing • Internet access available at most facilities	• All facilities use paper-based medical records either in combination with electronic record keeping (48,3%) or exclusively (52%) • Health information management is not integrated into the pre-service training curriculum • Lack of capacity and skills to conduct research • The approval process is not decentralised • Data sharing shortcomings between private and public sector • Inadequate Health Information officers • No adequate information regarding SOA deaths • Poor data utilisation by quality improvement teams • No consistent data review meetings specifically for SOA care • Lack of data dissemination both at community and healthcare facilities for planning and prevention • Internet coverage at facilities only at 79%
OPPORTUNITIES	*THREATS*
• Training institutions can support pre-service training • Support by MoHSS and partners is possible • E-Health and DHIS tools are already being utilised in other SADC countries • International organisations are willing to help • Leadership engagement and strong political will	• Limited capacity to sustain E-Health • Finances and unassured support from partners • No data security policy for healthcare in place • Lack of capacity at district and regional levels • Unassured source of funding for research • High staff turnover • Unassured support from the private sector • NSOAP systems, services and progress indicators not included in DHIS 2

CHAPTER 2: STRATEGIC FOCUS FOR THE NSOAP PLAN

2.1. Vision and mission

Vision: A nation of healthy and economically productive individuals.

Mission: To enhance healthcare access, capacity, and standards through collaborative partnerships, education, infrastructure development, and evidence-based practices in surgical, obstetric, critical, emergency, and anaesthesia care across Namibia.

2.2. Overall strategic objective

To provide safe, timely, cost-effective and equitable, critical, emergency and SOA care to all Namibians.

2.3. MoHSS core principles alignment

To provide integrated, timely, high-quality, safe, cost-effective, and equitable essential critical, emergency and SOA care to all Namibians. These core principles can be evaluated in terms of the following key priorities:

- "integrated": *Integration into NQPS metrics to ensure streamlined and pragmatic/frugal allocation of scarce health resources*.
- "timely": *Access to timely essential critical, emergency and SOA care*
- "high-quality" and "safe": *provision of quality and safe SOA care as per the MoHSS quality standards for hospitals and PHC facilities*
- "cost-effective" and "affordable": *SOA workforce density and surgical case volume in terms of perioperative mortality rate*
- "equitable": *UHC*
- "essential": *Access to timely essential critical, emergency and SOA care; surgical case volume*

2.4 Key priorities of the Namibia NSOAP

- Integrate the NSOAP into the Namibia NQPS
- Ensure access to timely, equitable, high-quality, essential, critical, emergency and SOA care for all
- Fulfil the NSOAP strategic objectives to deliver UHC

Table 8: Key priorities of Namibia NSOAP

Priority	Indicator
Integration into the NQPS	Report of NSOAP M&E incorporated into NQPS
Ensure access to timely, equitable, high-quality, essential, critical, emergency and SOA care for all	
	*M&E framework summary of indicators

CHAPTER 3: MISSION AND VISION

3.1. Overview

To achieve the vision, mission, and strategic focus of the Namibian NSOAP, emergency, critical, surgical, anaesthetic and obstetric care will be improved in the following domains:

i. Infrastructure and equipment

ii. Surgical workforce

iii. Service delivery and supplies

iv. Information management and quality improvement (QI)

Each strategic objective will be achieved through key activities and specific programmes. The progress towards achieving every strategic objective is measured through verifiable indicators in the M&E framework.

Financing of the NSOAP will be coordinated by the Ministry of Finance and the MoHSS in consultation with the private sector, WHO and other key partners. Careful consideration of strategies to mitigate the risk of impoverishment for health system users is crucial. The costing framework was completed with the support of the WHO.

Governance of the Namibia NSOAP plan will be coordinated by the MoHSS QAD. The MoHSS QAD has custodianship over the programme and is responsible for programme implementation, measurement and evaluation. The MoHSS QAD will work with local and international organisations including WHO, WitSSurg and other key strategic partners to ensure that high quality governance and accountability structures are in place.

The overall objective of the NSOAP will be attained through specific strategic objectives (SOs) for each domain:

i. Infrastructure and equipment:

- To ensure infrastructure at facilities, across all levels of care and in both the private and public sectors, meet the minimum standards for providing essential emergency, critical and SOA care.

ii. Surgical workforce

- To ensure the availability of an adequate number of trained and motivated SOA providers to provide a basic package of essential SOA and integrated ECO care services.

iii. Service delivery and supplies

- To ensure that all facilities, across all levels of care and in both the private and public sectors, have the capacity to deliver essential SOA care.

iv. Information management and QI

- To improve the collection, data management and reporting capabilities of essential and standardised SOA care indicators, at all facilities, across all levels of care and in both the private and public sectors.

3.2. Comprehensive strategic framework:

3.2.1. Domain 1: Infrastructure and equipment

3.2.1.1. Overview

The provision of ECO and SOA care is fundamentally reliant on the availability of functional infrastructure and equipment. Infrastructure integrates a healthcare facility into the broader healthcare system and facilitates the

provision of effective, efficient, timely, safe and equitable services. Infrastructure and equipment require an adequately functionally built environment consisting of basic amenities and the specialised features required to provide SOA care. Regular maintenance, renovation, procurement and modernisation is required to ensure that services provided with the existing infrastructure and equipment meets best practices and national quality standards. This upkeep often requires consumables, multi-disciplinary contribution and a sense of ownership. A comprehensive overview of the strategic objectives for Domain 1 are outlined in Table 9.

3.2.2. Domain 2: Surgical workforce

3.2.2.1. Overview

The surgical workforce requires improvement and skills development across all cadres of care. A needs-driven training agenda with appropriate incentives and remuneration will be employed. This strategy will be integrated into existing strategic plans to expand the health workforce. A comprehensive overview of the strategic objectives for Domain 2 are outlined in Table 10.

3.2.3. Domain 3: Service delivery and supplies

3.2.3.1. Overview

A needs-driven training and service delivery strategy, with appropriate governance and evaluation will be employed. This strategy will ensure that all operating theatres, emergency and critical care spaces, across all levels of healthcare, are equipped with the requisite infrastructure, supplies and equipment, as well as the workforce to deliver high quality services. A comprehensive overview of the strategic objectives for Domain 3 are outlined in Table 11.

3.2.4. Domain 4: Information management and QI

3.2.4.1. Overview

A needs-driven information management and QI strategy, with appropriate governance and evaluation will be employed. The strategy will establish infrastructure, training, implementation and review processes to deliver high quality, secure data management and feedback strategies. A comprehensive overview of the strategic objectives for Domain 4 are outlined in Table 12.

Definitions:

Total hospitals: includes all hospitals intended to provide surgical care, including the public and private sectors.

Table 9: Domain 1- Infrastructure and equipment strategic objectives, activities over the planned years, indicators to be measured, and respective targets

Strategic objective	Activity	Programmes	Verifiable indicators
SO1: Ensure improved infrastructural capacity to provide effective and efficient critical and SOA care			
	1.1 To ensure all facilities have a well-equipped and functional emergency section		
		1. Establish and equip designated areas to provide emergency care	Proportion of facilities with designated, operational emergency care units
	1.2 Ensure all facilities have functional OT infrastructure and equipment		
		1. Install basic infrastructure needed to commission OTsas functional as per hospital quality standards and WHO-SAT	Proportion of facilities with functional OTs
		2. Install back-up power generators and/or solar panels	Proportion of hospitals with electricity back-up systems
		3. Establish and equip recovery areas at each theatre complex	Proportion of hospitals with designated operational perioperative/recovery areas
		4. Revise Theatre Operations Manual and Central Sterile Services guidelines to reflect current needs	Proportion of hospitals utilising revised manuals
	1.3 Ensure the presence of dedicated paediatric OTs at all intermediate level hospitals and above (where appropriate also DHs)		
		1. Convert or construct paediatric OT where needed, in collaboration with stake-holders	Proportion of hospitals with paediatric OTs
	1.4 Ensure all facilities have functional critical care infrastructure		
		1. Identify and equip areas for critical care provision	Portion of facilities with operational critical care areas
	1.5 Ensure that all DHs have dedicated surgical wards		
		1. Establish standard operating procedures (SOPs) to procure adequate infrastruc-ture, equipment, supplies and staff for dedicated surgical beds	Dedicated beds provided for surgical patients
	1.6 Ensure adequate routine maintenance and equipment procurement strategies		
		1. Develop standardised maintenance manuals for surgical equipment	Health facilities with well-maintained equipment
		2. Establish operational, well-staffed, -funded and -equipped maintenance departments at all facilities	Proportion of facilities with operational maintenance departments
		3. Appropriate budgetary allocation for equipment maintenance	Maintenance funds allocated in annual budgetary appropriations
		4. Establish a SOA medical and surgical equipment checklist (in keeping with national hospital standards, WHO-SAT and other tools)	Approved SOA medical and surgical equipment checklist

	1.7 To ensure that all facilities have well-equipped, functional diagnostic facilities (including laboratories), blood product storage and pharmacies		
		1. Ensure timely access to functional essential laboratory and radiology equipment	CT scanners at all intermediate hospitals
			MRI Scanners at key facilities
			X-Ray machines at all facilities
			Ultrasound machines at all facilities
			Mammogram equipment at key facilities
	1.8 To strengthen communication and transport infrastructure at all facilities		
		1. Support infrastructure to provide adequate internet access 24/7 to all facilities	Most facilities provided with reliable internet connectivity
		2. Support plans for acceptable and reliable road access	-
		3. Ensure all facilities have an acceptable number of functional ambulances	Adequate number of functional ambulances per facility
	1.9 To ensure all hospitals meet minimum standards for basic amenities and infrastructure needed to provide essential critical and SOA care.		
		1.Strengthen comprehensive checklist of standards for equipment and infrastructure needed to deliver essential SOA and critical care, according to level of care	Modified checklist of infrastructure for SOA care established
		2. Support all facilities to meet quality standards and WHO-SAT checklist for delivering SOA care	Proportion of facilities meet the spatial requirements and standards for necessary functional infrastructure and equipment to provide efficient SOA care
****Abbreviations: OT (operating theatre)***			

Table 10: Domain 2 - Surgical workforce strategic objectives, activities over the planned years, indicators to be measured, and respective targets

Strategic objectives	Activity	Programmes	Verifiable indicators
SO1: Create new positions for qualified emergency, critical and operative care providers in SOA services			
	1.1. To develop an SOA facility needs assessment tool	1. Strengthen ministerial workload indicator for staffing needs (WISN) to include perioperative nursing and emergency, critical and SOA care providers	SOA workforce needs assessment tool to track staffing requirements (modified WISN)
	1.2. To conduct SOA needs assessment for each facility based on their catchment population (per 100,000)	1. Administer WISN	Proportion of facilities using the WISN tool
	1.3. To advocate for the inclusion of new SOA positions for each facility into the ministerial HRH recruitment plan	1. Expand facility's annual HRH recruitment plan submission	Number of SOA positions submitted for inclusion into the facility HRH recruitment plan
			Number of providers/100,000 population
	1.4. To expand the facility SOA staff establishment in accordance with the Public Service Commission (PSC) Wage Bill Policy	1. Revise PSC Wage Bill Policy	Revised SOA staff establishment submitted at the PSC for approval
SO2: Train and recruit adequate and qualified healthcare workers to provide safe SOA services for all regions			
	2.1 Accelerate training of local personnel to specialise in SOA care	1. Develop local training partners for adult and paediatric SOA care training programmes across all cadres (University of Namibia (UNAM), The College of Surgeons of East, Central and Southern Africa (COSECSA), College of Anaesthesiologists of East, Central and Southern Africa (CANECSA), The East, Central and Southern Africa College of Obstetrics and Gynaecology (ECSACOG), Perioperative Nursing Training	*SOA workforce density (by cadre)

	2.2 To certify and license on-the job skills training short course CMEs (SAFE course, Basic Surgical Skills, BLS/ACLS)	1. Accelerate HPCNA accreditation of training programmes	Proportion of training programmes accredited Number of trained personnel per year
SO3: Ensure equitable distribution and retention of available qualified specialists in emergency, critical and operative care			
	3.1 To develop policies and regulations for equitable distribution and retention of all SOA providers	1. Develop and implement a remote service programme	Remote service programme implemented
	3.2 To ensure the presence of non-monetary incentives like internet, housing, schools and recreation facilities in all areas for SOA providers	2. Develop and implement regional councils' decentralisation programme	Proportion of SOA providers retained
	3.3 To establish dual recruitment of SOA providers via MoHSS and training institutions (e.g. UNAM)	1. Strengthen implementation of SOA HRH private public partnership (PPP) programme	Number of MoUs on SOA for HRH, PPP signed
	3.4 To strengthen governance of SOA care (management and leadership)	1. Develop programme for regional SOA supervision, technical support and outreach programmes	Number of SSVs conducted per region, per facility
		2. Develop Ministerial SOA technical working group (TWG)	SOA TWG established
		3. Establish Namibian SOA centre for global surgery programme in collaboration with local and international stakeholders (academic institutions, professional associations, NGOs, etc)	Namibian Centre for Global Surgery established
****Abbreviations: SOA (surgical, obstetric and anaesthetic); MoU (memorandum of understanding); WISN (workload indicator for staffing needs); PSC (Public Service Commission); HPCNA (Health Professionals Council of Namibia); HRH (human resources for health); SSV (support supervisory visits)***			

Table 11: Domain 3 - Service delivery and supplies - strategic objectives, activities over the planned years, indicators to be measured, and respective targets

Strategic objectives	Activity	Programmes	Verifiable indicators
SO1: Ensure all operating theatres (OTs), as well as emergency and critical care spaces deliver effective and efficient services			
	1.1 To ensure adequate infrastructure, functioning equipment and adequate supply of consumables		
		1. Provide functional OTs at all DHs	Facility functional OT density
			Proportion hospitals with functional OTs
		2. Provide functional critical care* facilities at all hospitals (SOP to stratify critical care services by HDU and intensive care unit (ICU), capacity)	Number of operational critical care beds per facility
			Total number of functional critical care beds per facility
		3. Establish compliance of all OTs, surgical wards, and critical care areas with national hospital quality standards	Proportion of facilities meeting OT service standards
		4. Ensure availability of essential medicine and surgical supplies	Proportion of facilities meeting stock level score standard
		5. Ensure constant supply of high-quality medical air and oxygen	Proportion of facilities providing high quality medical air (above 96% purity)
	1.2 To provide adequately skilled workforce for high-quality SOA and critical care service provision		
		1. Accelerate training of local personnel to specialise in SOA and critical care	SOA workforce density
		2. Certify 'on-the-job' skills training and short courses	Proportion of facilities providing CPD training, for minimum CPD requirements
SO2: Provide timely, equitable, access to quality SOA and critical care services			
	2.1 To deliver essential SOA care at all levels of care		
		1. Train healthcare providers to deliver Bellwether procedures	SOA workforce density
		2. Train personnel to provide critical care	SOA workforce density
		3. Train personnel to provide emergency care	SOA workforce density
		4. Provide services for acute management of trauma and injury	Trauma and injury service density

	2.2 To strengthen OT data quality		
		1. Expand standardised electronic operating theatre data-capturing tool to all facilities	Proportion of facilities utilising the electronic OT data-capturing tool
		2. Build capacity for data-capturing and data management	Proportion of staff trained in data management
	2.3 To develop robust, accessible and equitable referral systems		
		1. Strengthen implementation of the national referral guidelines	Proportion of patients referred for SOA care
			Proportion of patients referred for critical care/100,000 per annum
		2. Ensure ambulances are well-equipped and functional as per national hospital standards	Proportion of functional ambulances per facility
		3. Ensure availability of trained intermediate emergency responders	*SAO density
		4. Strengthen PPP to improve essential SOA and critical care, as per MoU	Total number of patients referred from public to private sector per region per annum
		5. Establish centralised service for EMS dispatch	A centralised EMS dispatch service established
	2.4 To strengthen and promote preventative, rehabilitative and palliative care		
		1. Improve cervical cancer screening programmes	Proportion of women screened for cervical cancer (with pap smear) per year
			Cervical cancer incidence
		2. Strengthen screening and awareness of breast cancer	Proportion of women screened for breast cancer per year
			Breast cancer incidence
		3. Strengthen screening and awareness for prostate cancer	Proportion of men screened for prostate cancer per year
			Prostate cancer incidence
		4. Strengthen integration of voluntary medical male circumcision (VMMC) into health system services	Proportion of males receiving VMMC

		5. Strengthen and capacitate the clubfoot management programme at national level	Proportion of facilities providing clubfoot services
		6. Improve integration of PHC services in SOA care management	-
	2.5 To strengthen maternal and child health (MCH) screening for SOA conditions		
		1. Ensure the availability of maternal sonographers at all levels of care	Proportion of facilities providing maternal sonography screening
		2. Strengthen maternal screening programme	Facility maternal sonography screening service provision
			Proportion of women referred for post-maternal sonar per year to higher levels of care
	2.6 To strengthen collaboration with parastatal organisations (e.g., Blood Bank, Namibia Institute of Pathology (NIP)		
		1. Measure and reduce waiting times for blood products	Laboratory test result turn-around time (per facility)
		2. Expand electronic system to access laboratory test results	Proportion of facilities with functional electronic laboratory results system
SO3: Deliver high-quality SOA and critical care services			
	3.1 To strengthen implementation of surgical care safety measures		
		1. Ensure the utilisation of the WHO surgical safety checklist	Proportion of facilities meeting WHO surgical safety checklist utilisation standards
		2. Monitor and improve implementation of IPC programmes	Proportion of facilities with IPC service element score of at least 80%
		3. Routine reporting of peri-operative mortality rate (POMR)	* POMR
			Proportion of facilities reporting SOA quality indicators at least 80% of the time
		4. Routine reporting of surgical site infection (SSI) rate	SSI rate
	3.2 To improve central sterile services department (CSSD) facilities		
		1. Build capacity of CSSD staff	Number of staff trained in CSSD per facility
		2. Ensure the implementation of national hospital quality standards for CSSD	Proportion of facilities meeting CCSD service standard

		3. Ensure availability and maintenance of functional equipment	Proportion of facilities with functional CSSD equipment
	3.3 To strengthen management and leadership capacity around SOA care		
		1. Ensure capacity-building in leadership and health system management	Proportion of staff trained in leadership and health system management
	3.4 To strengthen Customer Care services		
		1. Establish customer care offices at all health facilities	Proportion of facilities with operational customer care offices
		2. Document, implement and improve the complaint management procedures at healthcare facility level	Proportion of facilities meeting customer survey satisfaction rate standard
		3. Engagement with community stakeholders regarding NSOAP service delivery	
SO4: Protect patients from impoverishing direct, indirect and direct non-medical costs of SOA and critical care			
	4.1 To evaluate and respond to patient impoverishment due to service requirements		
		1. Establish programme for evaluation of patient costs and out-of-pocket-payments (OPPS)	Proportion of facilities reporting patient incurred costs for SOA care
		2. Community engagement programme focused on cost reductions	

Table 12: Domain 4 - Information management - strategic objectives, activities over the planned years, indicators to be measured, and respective targets

Strategic objectives	Activity	Programmes	Verifiable indicators
SO1: Ensure systematic and comprehensive collection of good SOA and critical care data			
	1.1 To identify missing, core SOA and critical care indicators		
		1. Map out the SOA indicators	A set of core indicators for SOA approved by MoHSS
		2. Review, and where needed develop, contextually appropriate tools for collecting missing indicators	List of tools for indicator collection approved by MoHSS
		3. Engage health information research directorate (HIRD) to incorporate indicators into DHIS2	Proportion of SOA and critical care indicators incorporated in DHIS2
	1.2 To ensure utilisation of data collection tools at all service points		
		1. Conduct annual facility assessment with WHO-SAT tool	Proportion facilities completing WHO-SAT per annum
		2. Train staff to utilise and report core indicators	Proportion facilities reporting full set of core indicators (as per checklist)
		3. Create district and regional platforms to disseminate verified data	Proportion facilities participating in regional data review
	1.3 To ensure adequate capacity to capture appropriate data		
		1. Train (and recruit) data clerks	Proportion of facilities with adequate number of data clerks
		2. Train all staff on data handling and reporting practices	Proportion of staff trained on data capturing and reporting per facility per annum
		3. Collaborate with local and international stakeholders to support data-capturing effort	Number of stakeholders engaged with documented MoUs
	1.4 To implement mandatory reporting of core SOA, critical care and data indicators		
		1. Incorporate data reporting in healthcare workers' performance agreements	Proportion facilities with incorporation of data reporting requirements into workers' performance agreements
		2. Ensure that data reporting is a requirement for annual licensing renewal for private sector facilities	Proportion of private facilities reporting SOA data

SO2: Strengthen data management infrastructure and data security			
	2.1 Identify facilities that can be used as data storage facilities		
		1. Ensure secure record-keeping of data as per the MoHSS hospital quality standards	Number of HIS storage facilities
		2. Procure the required technology and infrastructure to support programme implementation	Proportion of facilities with required health information management systems and infrastructure
	2.2 To provide personnel with the necessary skills for high-quality data management		
		1. Train staff on data management practices	Number of staff trained in health information management per facility per year
		2. Employ IT personnel in all state hospitals	% of facilities with at least one employed IT staff member
		3. Ensure HIS personnel are recruited as per the staff establishment	Proportion of facilities with employed HIS officers recruited as per staff establishment
	2.3 To adopt a HIS data protection and security policy		
		1. Engage HIRD to incorporate existing policies	Number of engagement activities
		2. Develop and implement data security policy	Proportion of facilities with the Data Protection Policy
		3. Implement and monitor the Data Security Policy	Proportion of facilities adhering to the data protection policy, at least 80% standard
	2.4 To transition from paper-based to electronic HIS		
		1. Expand the MoHSS E-Health strategy to all levels of care	Proportion of facilities with E-health services
			Proportion facilities with electronic record-keeping (as per WHO-SAT)
	2.5 To strengthen essential infrastructure for data management processes		
		1. Provide 24/7 internet connectivity at all facilities	Proportion of facilities with internet connectivity at least 80% of the time
		2. Procurement of equipment needed for health information system operations	Proportion of facilities with HIS equipment

SO3: Improve information dissemination capacity for SOA and critical care data			
	3.1 To train staff across all cadres on data analysis and interpretation		
		2. Training on data analysis and interpretation	Number of healthcare workers trained on data analysis per facility
	3.2 To create district and regional platforms to disseminate verified data		
		1. Incorporate SOA data review into the existing platforms at the district and regional levels	Proportion of facilities with platforms for data review
	3.3 To ensure regular feedback from national level on the data that is submitted		
		1. Publish annual national NSOAP report	Annual report published
SO4: Develop telemedicine services for emergency, critical and SOA care			
	4.1. To create a plan for telemedicine programmes		
		1. Conduct situational analysis and recommendations of potential telemedicine strategies for SOA and critical care	Telemedicine situational analysis and recommendations approved by MoHSS
		2. Implement telemedicine programmes according to recommendations	Proportion of health facilities with functional telemedicine services
		3. Develop a guideline for SOA telemedicine implementation	Proportion of facilities with guideline on telemedicine available
SO5: Improve QI practices related to emergency, critical and SOA care			
	5.1. To strengthen QI practices related to critical and SOA care		
		1. Establish operational SOA QI committees	Proportion of facilities with active QI committee
		2. Conduct regular QI training for all staff	Proportion of staff trained in QI
	5.2 To integrate SOA services into existing audit systems		
		1. Conduct monthly patient record audit as per the hospital quality standards	Proportion of facilities with records audit reports
	5.3 To implement routine reporting of quality indicators related to surgery		
		1. Establish facility and district committees to report on SOA quality indicators routinely	Proportion of facilities with functional SOA outcomes review committee

		2. Routine review of SOA, emergency and critical care provision and outcomes at regular morbidity and mortality meetings	Proportion of facilities conducting regular morbidity and mortality meetings for SOA, emergency and critical care services
SO6: Improve research and audit capacity			
	6.1 To increase research capacity at all facilities		
		1. Provide ethics and research training to all staff	Proportion of facilities conducting operational research and ethics training
		2. Collaborate with health training institutions to support SOA and critical care-related research activities.	Number of research projects/publications per facility per year
		3. Collaborate with local and international training institutions to support academic research and higher degree programmes	Number of higher degree research projects conducted per facility per year
	6.2 To decentralise research ethics review activities		
		1. Appoint an ethics review committee at the district and regional levels.	Proportion of facilities with functional research ethics review committee.
****Abbreviations: MoU (memorandum of understanding); PPHRD (policy planning and human resource development); HIS (health information system)***			

Table 13: Essential critical, emergency and SOA care capacity goals by hospital level of care

Thematic goal/indicator	Health centre	District	Regional	Tertiary/academic
Caesarean section/ emergency obstetric and new-born care (EmONC)	Robust stabilisation and referral procedures	100% capacity for emergency care (24/7)	100% capacity (24/7)	100% capacity (24/7)
Critical care capacity	-	TBD	100% HDU capacity, limited ICU capacity	100% ICU capacity
Anaesthesia capacity	-	100% capacity for emergency care (24/7)	100% capacity (24/7) to provide emergency and expanded essential services	100% capacity (24/7) to provide emergency services and essential services
Emergency surgery, trauma surgery and orthopaedics	Robust stabilisation and referral procedures	100% capacity (24/7) to provide emergency services	100% capacity (24/7) to provide emergency and expanded essential services	100% capacity (24/7) to provide emergency and essential services

CHAPTER 4: MONITORING AND EVALUATION FRAMEWORK

4.1. Overview

Monitoring and evaluation (M&E) of the implementation and costing frameworks will be conducted through existing and new strategies focused on improving and maintaining the quality of healthcare in Namibia. The concept of integration is a fundamental aspect of NSOAP implementation and will allow for ongoing health systems strengthening across a variety of sectors. The Namibia NSOAP M&E Framework will be integrated and aligned with the NQPS for the next five years.

4.2. M&E metrics

The M&E framework will utilise the following metrics to benchmark progress and identify (address and respond to) barriers to NSOAP implementation on an ongoing basis:

- *NSOAP Indicators*
- *Access to SOA care*
- *Case volume per 100,000 population*
- *SAOD*
- *POMR*
- *Protection from impoverishment*
- Examples of additional verifiable indicators (Table 14)
- *Facility level essential equipment and infrastructure for SOA care (using WHO-SAT for Namibia)*
- *Monitor percentage of SSIs reported by both public and private health-care facilities (NQMSP Objective 2.2.3)*
- *Evaluation of implementation of WHO surgical safety checklist (NQMSP objective 3.4): Number/percentage of hospitals using the WHO surgical safety checklist*

4.3 Monitoring framework process

MoHSS QAD is responsible for the coordination and governance of the NSOAP monitoring and review process. The MoHSS QAD will utilise a combination of routinely collected health data and the NSOAP indicators above to monitor implementation on a regular basis. These indicators will be collected and reported at a frequency described in Table 14.

4.4 Evaluation framework indicators

This framework consists of:

Indicator definitions and targets

Review framework and feedback

Timeline for review

Tools for review: WHO-SAT; ORECS; national hospital quality standards [45]

Table 14: M&E framework for Namibia NSOAP

Verifiable indicator	Indicator definition	Baseline value	Data source	Type of feedback	Frequency	2023	2024	2025	2026
DOMAIN 1: INFRASTRUCTURE AND EQUIPMENT									
SO1: Ensure all DHs (DHs) and above have upgraded infrastructural capacity to effectively respond to emergency, critical and operative care									
Proportion of DHs and above with designated operational recovery areas	**Numerator:** Total number of DHs and above with designated operational recovery in the country. **Denominator:** Total number of DHs and above in the country	60%	SAT report	Report, support supervisory visits	Annually	100%	65%	75%	85%
Proportion of hospitals with revised theatre manuals that reflect current needs	**Numerator:** Total number of hospitals with revised theatre manuals that reflect current needs in the country **Denominator:** Total number of hospitals in the country	0%	Internal review	Report, support supervisory visits	Annually	100%	100%	100%	100%
Proportion of intermediate hospitals with paediatric operating theatres	**Numerator:** Total number of intermediate hospitals with paediatric OTs in the country **Denominator:** Total number of intermediate hospitals in the country	0%	Round table	Report, support supervisory visits	Annually	100%	10%	25%	50%
Proportion of hospitals with operational ICUs	**Numerator:** Total number of hospitals with operational ICUs in the country **Denominator:** Total number of hospitals in the country	12%	SAT report	Report, support supervisory visits	Annually	100%	20%	40%	65%

Percentage of surgical beds available	**Numerator:** Total number of surgical beds available in the country **Denominator:** Total number of surgical beds required in the country	56%	SAT report	Report	Annually	100%	60%	70%	80%
Proportion of hospitals with functional theatre table	**Numerator:** Total number of hospitals with functional theatre table in the country **Denominator:** Total number of hospitals in the country	50%	SAT report	Report	Annually	100%	60%	70%	80%
Proportion of hospitals with functional CSSD	**Numerator:** Total number of hospitals with functional CSSD in the country **Denominator:** Total number of hospitals in the country	90%	SAT report	Report	Annually	100%	95%	100%	100%
Proportion of hospitals with functional defibrillator	**Numerator:** Total number of hospitals with functional defibrillators in the country **Denominator:** Total number of hospitals in the country	5%	Round table	Report	Annually	100%	25%	50%	75%
Proportion of hospitals with functional diathermy machine	**Numerator:** Total number of hospitals with functional diathermy machines in the country **Denominator:** Total number of hospitals in the country	5%	Round table	Report	Annually	100%	25%	50%	75%
Proportion of hospitals with up-to-date, written maintenance plans	**Numerator:** Total number of hospitals with up-to-date maintenance plan in the country **Denominator:** Total number of hospitals in the country	0%	Round table	Report	Annually	100%	90%	100%	100%

Proportion of hospitals with operational maintenance departments	**Numerator:** Total number of hospitals with operational maintenance departments in the country **Denominator:** Total number of hospitals in the country	50%	Round table	Report	Quarterly	100%	75%	100%	100%
Maintenance funds allocated on annual budgetary appropriation	Numerator: Total number of hospitals with maintenance budgetary allocation in the country **Denominator:** Total number of hospitals in the country	0%	Round table	Report	Annually	100%	50%	75%	100%
CT scanners installed at each intermediate hospitals and above	**Numerator:** Total number of intermediate hospitals and above with operational CT scanners in the country **Denominator:** Total number of intermediate hospitals and above in the country	50%	SAT report	Report	Annually	100%	75%	100%	100%
MRI scanners installed at tertiary (Windhoek Central Hospital) and all intermediate hospitals	**Numerator:** Total number of MRI scanners installed **Denominator:** Total number of MRI scanners needed at tertiary and intermediate hospitals in the country	0%	SAT report	Report	Annually	100%	25%	50%	75%
Proportions of hospitals with functional X-Ray Machines	**Numerator:** Total number of hospitals with operational X-Ray Machines in the country **Denominator:** Total number of hospitals in the country	50%	SAT report	Report	Annually	100%	60%	70%	80%

Proportion of hospitals with functional ultrasound machines	**Numerator:** Total number of hospitals with operational ultrasound machines in the country **Denominator:** Total number of Hospitals in the country	50%	SAT report	Report	Annually	100%	60%	70%	80%
Proportion of hospitals with functional mammogram machines	**Numerator:** Total number of health facilities with operational mammogram machines in the country **Denominator:** Total number of health facilities in the country	5%	Round table	Report	Annually	50%	15%	25%	35%
Domain 2: Soa Workforce									
SO1: Create new positions for qualified emergency, critical and operative care providers in SOA services									
SOA workforce needs assessment tool developed (modified WISN)	WISN Tool modified to include emergency, critical, SOA care and perioperative nursing health workforce information	TBD	MoHSS report, SOA modified WISN	Report	Annually	100			100%
Proportion of facilities using the WISN tool	**Numerator:** Total number of health facilities assessed using the SOA modified WISN tool **Denominator:** Total number of health facilities	TBD	SOA, modified WISN assessment report	Report	Quarterly	100			100%
Number of SOA positions submitted for inclusion into the facility HRH recruitment plan	**Total number** of SOA staff positions created at each health facility and included in the annual HRH recruitment plan	TBD	MoHSS HRH directorate, annual recruitment plan report, WHO-SAT	Report	Annually	100			100%

Revised SOA staff establishment submitted at the PSC for approval	SOA staff positions created at each health facility included in the staff establishment and submitted to the PSC for approval	TBD	MoHSS HRD Directorate, staff establishment submission document, HRH submission	Report	Annually		100		
Modified checklist of infrastructure for SOA care established	**Modified checklist utilised**	*	WHO-SAT, hospital quality standards	Report	Annually	100			
Proportion of facilities meeting standard for functional infrastructure and equipment needed to provide SOA care	**Numerator:** Total number of facilities meeting standard of 80% or above for having functional essential SOA and critical care infrastructure **Denominator:** Total number of facilities	* (baseline assessment)	WHO-SAT	Report		TBD			
SO 2: Train and recruit adequate and qualified healthcare workers to provide safe SOA services for all regions									
***SOA workforce density**	**Numerator:** Total Number of SOA providers **Denominator:** Total population, multiplied by 100,000	11,5	MoHSS HRD recruitment report, MoHSS HRD annual report, HRM report; WHO-SAT tool	Report (facility, regional national); human resource forum - annual plan review; HRM report; HRD	Monthly, quarterly, annually	11,5	15	17	20
	Specialist surgeons/100,000 population	1,87							
	Specialist anaesthetists/100,000 population	0,68							
	Specialist obstetricians & gynaecologists/100,000 population	1,47							

	Specialist paediatric surgeons/100,000 population	*							
	Nurse providers/100,000 population	145							
	Non-specialist physician surgical care providers/100,000 population	9,2							
	Non-specialist physician anaesthetic care providers/100,000 population	5,7							
	Non-specialist physician obstetrician/gynaecological care providers/100,000 population	*							
	Non-specialist physician paediatric surgical care providers/100,000 population	*							
	Physician critical care providers/100,000 population	*							
	Physician emergency medicine care providers/100,000 population	*							
	Theatre nurses/100,000 population	5,72							
	Critical care nurses/100,000 population	unknown							

	Intermediate Emergency Responders/ 100,000	unknown		HR report meeting		incremental			
	Maternal sonographers/100,000	unknown							
	Radiographers/100,000	unknown							
Proportion of training programmes accredited	**Numerator:** Total number of training programmes accredited by the HPCNA **Denominator:** Total number of programmes submitted for accreditation	40%	Report from HPCNA	Report	Annually	100	100		100%
SO3: Ensure equitable distribution and retention of available specialised qualified emergency, critical and operative care providers									
Remote service programme implemented	Remote Service Programme Bill passed in parliament and implemented	0	MoHSS HRD directorate retention report	Report (HRH submission)	Annually		100		100%
Proportion of SOA providers retained	**Numerator:** Total number of SOA retained at healthcare facilities **Denominator:** Total number of providers recruited and placed at facilities in need	0	MoHSS HRD directorate, retention report	Report (HRH submission)	Annually	25%	50%	75%	100%

Number of MoUs on SOA HRH PPP signed	Number of MoUs on SOA signed between the MoHSS hospitals and partners	*	MoU report	Report	Annually	25%	50%	75%	100%
Number of SSV conducted per region/facility	Number of SSVs conducted in each region/facility out of total visits planned	*	SSV report	Report	Annually	100	100	100	100
SOA TWG established	SOA TWG established	*	TOR	Report	Annually	25%	50%	75%	100%
Namibian Centre for Global Surgery established	***Namibian Centre for Global Surgery*** established in collaboration with multiple stakeholders (academic institutions, professional associations, NGOs) local & international partners	0	Namibian Centre for Global Surgery registration certificate	Report	Bi-annually				-
DOMAIN 3: SERVICE DELIVERY AND SUPPLIES									
SO1: Ensure all operating theatres, emergency care and critical care spaces deliver effective and efficient services.									
Facility functional OT density	**Numerator:** Total number of functional OTs **Denominator:** Total number of OTs at facility	97%	Hospital reports	annual plan review	Quarterly, annually	60%			
Proportion hospitals with functional OTs	**Numerator:** Total number of facilities with functional OTs **Denominator:** Total number of facilities	50%	Hospital annual reports, WHO-SAT	Annual plan review, theatre users committee plan review	Annually (district); quarterly (national)	60%			
Number of operational critical care beds per facility	Total number of critical care beds per facility	Unknown	Hospital reports, WHO-SAT	Annual plan review, stock-takings	Quarterly, annually	TBD			

Proportion of facilities meeting OT service standard	**Numerator:** Total number of hospitals with OT service element score of 80% or above **Denominator:** Total number of facilities	Unknown	Hospital reports	Theatre users committee and annual report	Quarterly, annually	TBD			
Proportion of facilities meeting stock level score standard	**Numerator:** Total number of facilities with stock level score of 80% or above **Denominator:** Total number of facilities	Unknown	Pharmacy E-reports	Pharmaceutical committee meeting, stock-taking, pharmaceutical review meeting	Monthly, quarterly, annually	TBD			
Proportion of facilities providing high quality medical air (above 96% purity)	**Numerator:** Total number of facilities providing high quality medical air (above 96% purity) **Denominator:** Total number of facilities	50%	Hospital reports	Annual plan review;	Annually	75%			
Proportion of facilities providing CPD training, for the minimum CPD requirement	**Numerator:** Total number of facilities providing CPD training **Denominator:** Total number of facilities	50%		Performance agreement	Quarterly, annually	60%			
SO2: Provide timely, equitable, access to quality SOA and critical care services									
***Surgical case volume**	*Total procedures performed in theatre per year/100,000 population	4,785	Theatre registry, theatre annual report, WHO-SAT, HIS	Theatre users committee (facility, district and national level); HIS	Quarterly, annually	TBD			
	Total number of caesarean sections per 100,000 per year	Unknown				TBD			

	Total number of external fixation procedures per 100 000 per year	Unknown				TBD			
	Total number of laparotomies per 100,000 per year	Unknown				TBD			
	Total number of paediatric surgery procedures per 100,000 per year	Unknown				TBD			
Trauma and injury service density	**Numerator:** Total number of patients who receive acute management for trauma and injury at a facility **Denominator:** Total number of patients seen in emergency departments	Unknown	Hospital registry	DCC, district data review meetings, hospital management committee	Monthly, quarterly, annually	TBD			
Proportion of facilities utilising the electronic OT data-capturing tool	**Numerator:** Total number of facilities utilising the electronic OT data **Denominator:** Total number of facilities	Unknown	Hospital report , E-report	Theatre users committee report	Monthly, quarterly, annually	TBD			
Proportion of patients referred for SOA care	**Numerator:** Total number of patients referred for SOA to higher level of care **Denominator:** Total number of referrals to higher level of care (per year)	Unknown	Hospital referral registry	Health facilities meetings	Quarterly, annually	decremental			
Proportion of patients referred for critical care/100,000 per year	**Numerator:** Total number of patients referred for critical care; **Denominator:** Total number of referrals to higher level of care (per year)	Unknown	Hospital referral registry	Health facilities meetings and referral registers	Quarterly, annually	Decremental			

Proportion of functional ambulances per facility (*total number of ambulances)	**Numerator:** Total number of functional ambulances at facility **Denominator:** Total number of ambulances per facility	Unknown	Fleets report system	Transport committee meetings	Monthly	Incremental			
Proportion of women screened for cervical cancer (with pap smear) per year	**Numerator:** Total number of pap smears **Denominator:** Total number of women eligible for screening * (per year)								
Cervical cancer incidence	**Numerator:** Total number of new cervical cancer diagnoses **Denominator:** Total number of women* (without cervical cancer) multiplied by 100,000	Unknown	Cervical cancer screening registers, HIS	Monthly statistics reviews	Monthly, quarterly, annually				
Proportion of women screened for breast cancer per year	**Numerator:** Total number of women screened for breast cancer **Denominator:** Total number of women **eligible for breast cancer screening (aged 14-45) (per year)	Unknown	Breast cancer Screening Registers	Monthly statistics reviews	Monthly, quarterly, annually	TBD			
Breast cancer incidence	**Numerator:** Total number of new breast cancer diagnoses; **Denominator:** Total number of women (without breast cancer) multiplied by 100,000	Unknown	Breast cancer Screening Registers;		Monthly, quarterly, annually	TBD			

Proportion of men screened for prostate cancer per year	**Numerator**: Total number of men screened for prostate cancer with PSA test **Denominator:** Total number of men eligible for screening (per year)	Unknown	Prostate cancer screening registry	Monthly statistic review	Monthly, quarterly, annually	Incremental			
Prostate cancer incidence	**Numerator:** Total number of new prostate cancer diagnoses **Denominator:** Total number of men without prostate cancer multiplied by 100,000	Unknown	Prostate cancer screening registers and nip reports		Monthly, quarterly, annually	TBD			
Proportion of males receiving VMMC	**Numerator:** Total number of VMMC performed **Denominator:** Total number of males eligible for VMMC multiplied by 100,000	Unknown	VMMC registry	Special programme review meeting, facility-level reporting	Monthly, quarterly, annually	Incremental			
Proportion of facilities providing clubfoot services	**Numerator:** Total number of facilities providing Clubfoot services **Denominator:** Total number of facilities	(Two facilities)	Annual plan	Annual plan review	Annually	Incremental (4)			
Proportion of facilities providing maternal sonography screening	**Numerator:** Total number of facilities with working maternal sonographer **Denominator:** Total number of facilities	Unknown	HRM report, HRD	HR report meeting, staff establishment	Quarterly, annually	Incremental		(every DH)	
Facility maternal sonography screening service provision	**Count:** Total number of screening maternal sonars per facility	Unknown	Sonar statistic report	Health facility meeting	Quarterly, annually	Incremental			

Proportion of women referred post-maternal sonar per year to higher level of care	**Numerator:** Total number of women referred post-maternal sonar to higher level of care **Denominator**: Total number of maternal screening sonars per year	Unknown	Referral registry book, sonar statistic report	Health facility meeting	Quarterly, annually	TBD			
Laboratory test result turn-around time (per facility)	***Count:** average wait time for laboratory test results	Unknown	NIP database, WHO-SAT			TBD			
Proportion of facilities with functional electronic laboratory results system	**Numerator:** Total number of facilities with functional electronic laboratory results system **Denominator:** Total number of facilities	Unknown	IMS report	Health facilities meetings	Annually	incremental			
SO3 Deliver high-quality SOA and critical care services									
Proportion of facilities meeting WHO Surgical Safety Checklist utilisation standard	**Numerator:** Total number of facilities utilising the WHO Surgical Safety checklist, 80% of the time **Denominator:** Total number of facilities	Unknown	Theatre report, file audit	Theatre users committee	Monthly, quarterly, annually	incremental		80%	
Proportion of facilities with IPC service element score of at least 80%	**Numerator:** Total number of facilities with IPC service element score of at least 80% **Denominator:** Total number of facilities	Unknown	IPC report	IPC committee meeting	Monthly, quarterly, annually	Incremental			

***Peri-operative mortality rate (POMR)**	**Numerator:** Total all-cause mortalities, before discharge (up to 30 days), in all patients who have received any anaesthesia for a procedure in an OT **Denominator:** Total number of procedures, per year, (expressed as a percentage)	Unknown	Theatre registry, E-Death register; morbidity and mortality meetings	Mortality review meeting (facility, regional, national)	Monthly, quarterly, annually	Decremental			
Surgical site infection (SSI) rate	**Numerator:** Total number of SSI **Denominator**: Total number of procedures performed in OTs per year	Unknown	IPC report	Infection control committee meetings	Monthly, quarterly, annually	Decremental			
Proportion of facilities reporting SOA quality indicators at least 80% of the time	**Numerator:** Total number of facilities reporting SOA quality indicators at least 80% of the time **Denominator:** Total number of facilities	Unknown	Hospital report, WHO-SAT, morbidity and mortality meetings	Annual report	Monthly, quarterly, annually	Incremental			
Number of staff trained in CSSD per facility	Number of staff trained in CSSD per facility	Unknown	HRM report	HR report meeting	annually	Incremental			
Proportion of facilities meeting CCSD service standard	**Numerator:** Total number of facilities with CSSD service element score of 80% or above Denominator: Total number of facilities								
Proportion of facilities with functional CSSD equipment	**Numerator:** Total number of facilities with functional CSSD equipment **Denominator:** Total number of facilities	Unknown	Hospital report, annual plan	Annual plan review	Annually	Incremental			

Proportion of staff trained in leadership and health system management	**Numerator:** Total number of staff trained in leadership and health system management **Denominator:** Total number of staff compliment	Unknown	HRM report (facility, regional, national level)	HR report meeting	Quarterly, annually	Incremental			
Proportion of facilities with operational Customer Care offices	**Numerator:** Total number of facilities with operational customer care offices **Denominator:** Total number of facilities	Unknown	Health facility report	RMT meeting	Monthly	Incremental			
Proportion of facilities meeting Customer survey satisfaction rate standard	**Numerator:** Total number of facilities with customer satisfaction rate score at 80% or above **Denominator:** Total number of facilities	Unknown	Customer satisfaction survey report	RMT meeting	Monthly, quarterly, annually	Incremental			
SO4: Protect patients from impoverishing direct, indirect and direct non-medical costs of SOA and critical care									
Proportion of facilities reporting patient incurred costs for SOA care	Numerator: Total number of facilities reporting patient incurred costs (direct non-medical and indirect costs) Denominator: Total number of facilities	Unknown	Finance report	Economising meeting	Monthly, quarterly, annually	Incremental			
DOMAIN 4: INFORMATION MANAGEMENT AND QI									
SO1: Ensure systematic and comprehensive collection of good SOA and critical care data									
A set of core indicators approved by MoHSS	Specific SOA core indicators as approved by MoHSS	0	WHO SAT, DHIS2	Ministry reports, meetings, workshops	Every three years	100%	100%	100%	100%

List of tools for indicator collection approved by MoHSS	Specific SOA indicators collection tools as approved by MoHSS	0	WHO SAT, DHIS2	Ministry reports, meetings, workshops, support supervision	Every three years	50%	100%	100%	100%
Proportion of SOA and critical care indicators incorporated in DHIS2	**Numerator:** Number of SOA and critical care indicators incorporated in DHIS2 **Denominator:** Total number of SOA and critical care indicators	0	DHIS2	Feedback meetings and workshop	Annually	30%	60%	100%	100%
Proportion facilities completing WHO-SAT per annum	**Numerator:** Number of facilities completing WHO-SAT per annum **Denominator:** Total number of facilities.	0	HIRD, QA Division	Feedback meetings and workshop	Annually	50%	70%	90%	100%
Proportion facilities reporting full set of core indicators (as per checklist)	**Numerator:** Number of facilities reporting all SOA indicators **Denominator:** Total number of facilities	0	DHIS2	Data review meetings, reports, workshop	Monthly	20%	50%	70%	100%
Proportion facilities participating in regional data review	**Numerator:** Number of facilities participating in regional data reviews **Denominator:** Total number of facilities	0	Regional HIS Office, HIRD	Review meetings, workshops	Monthly and quarterly	20%	50%	70%	100%
Proportion of facilities with adequate number of data clerks	**Numerator:** Number of facilities with an adequate number of Data Clerks **Denominator:** Total number of facilities	Unknown	HR (regional & national), stakeholders	Reports, meetings	Annually	50%	70%	90%	100%

Proportion of staff trained on data capturing and reporting per facility per year	**Numerator:** Number of staff trained on data capturing and reporting **Denominator:** Total number of staff to be trained	Unknown	HR database, quality assurance database	Meetings, reports, DCC, hospital management committee	Annually	50%	70%	80%	100%
Proportion stakeholders engaged with documented MoUs for critical and SOA care	**Numerator:** Number of stakeholders engaged **Denominator:** Total number of stakeholders	0	Quality assurance, HIRD	Meetings, reports	Annually	30%	70%	90%	100%
Proportion facilities with incorporation of data reporting requirements into health workers' performance agreements	**Numerator:** Number of facilities that incorporate data reporting requirements into health workers' performance agreements **Denominator:** Total number of facilities	0	HR (regional & national)	Meetings and reports	Quarterly	30%	50%	70%	100%
Proportion of private facilities reporting SOA data	**Numerator:** Number of private hospitals reporting SOA data **Denominator:** Total number of private hospitals	0	QA Division, PPHRD	Meetings and reports	Quarterly	30%	50%	70%	100%
SO2: Strengthen data management infrastructure and data security.									
Proportion of facilities with required health information management systems (HIMS) and infrastructure	**Numerator:** Number of facilities with required HIMS and infrastructure **Denominator:** Total number of facilities	Unknown	PPHRD, Regional CAO	Meetings, reports, TSSV	Annually	50%	70%	90%	100%

Proportion of staff trained in health information management per facility per year	**Numerator:** Number of staff trained on health information management **Denominator:** Total number of staff to be trained	Unknown	HR database, QA data base	Meetings, reports	Annually	50%	70%	80%	100%
Proportion of facilities with at least one employed IT staff member	**Numerator:** Number of facilities with at least 1 employed IT staff member; **Denominator:** Total number of facilities	0	HR database, QI assurance data base, policy planning and human resource development (PPHRD), IT department	Meetings, reports	Annually	20%	50%	70%	100%
Proportion of facilities with employed HIS Officers recruited as per staff establishment.	**Numerator:** Total number of facilities with HIS officers recruited as per staff establishment **Denominator:** Total number of facilities	Unknown	HR (regional and national), HIRD	Meetings, reports	Annually	50%	70%	90%	100%
Proportion of facilities with the data protection policy	**Numerator:** Total number of hospitals with data protection policy **Denominator:** Total number of hospitals	0	District HIS, SAO, CAO	Meetings, reports	Annually	20%	50%	70%	100%
Proportion of facilities adhering to the data protection policy, at least 80% standard	**Numerator:** Total number of hospitals adhering to the data protection policy, at least 80% standard **Denominator:** Total number of hospitals	0	QA division, DCC &RMT	Meetings, reports	Annually	20%	50%	70%	100%

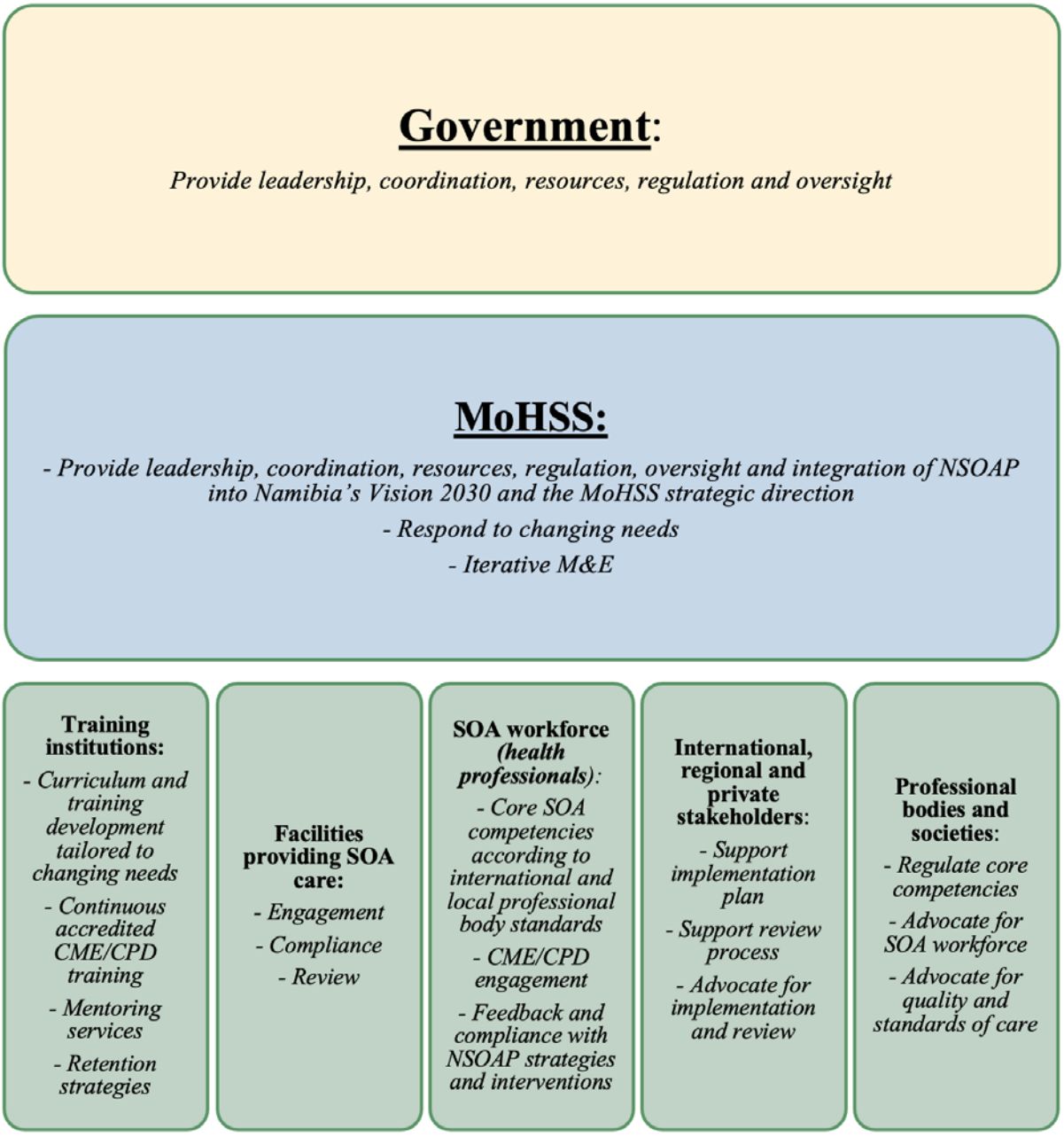
Proportion of facilities with E-Health services	**Numerator:** Total number of hospitals with E-Health services; **Denominator:** Total number of hospitals	0	PPHRD, DCC & RMT	Meetings, reports	Annually	10%	30%	60%	90%
Proportion of facilities with electronic record-keeping (as per WHO-SAT)	**Numerator:** Number of hospitals with electronic record-keeping (as per WHO-SAT) **Denominator:** Total number of hospitals	Unknown (check WHO SAT)	PPHRD, DCC & RMT	Meetings, reports	Annually	10%	30%	60%	90%
Proportion of facilities with internet connectivity at least 80% of the time	Numerator: Total number of hospitals with internet connectivity at least 80% of the time **Denominator:** Total number of hospitals	(check WHO SAT)	PPHRD, DCC & RMT	Meetings, reports	Annually	80%	100%	100%	100%
SO3: Improve information dissemination capacity for SOA and critical care data.									
Proportion of healthcare workers trained on data analysis per facility	**Numerator:** Total number of staff trained on data analysis per facility **Denominator:** Total number of staff to be trained	Unknown	HR database, QA data base	Meetings, reports	Annually	10%	30%	60%	90%
Proportion of districts with platforms for SOA data review	**Numerator:** Total number of Districts with platforms for SOA data review **Denominator:** Total number of districts	0	DDC & RMT	Meetings, reports	Annually	20%	50%	70%	100%

Annual SOA report published	Annual SOA report	0	QA Division, Stakeholders	Meetings, workshop, conferences, reports	Annually	0%	100%	100%	100%
SO4: Develop telemedicine services for emergency care, critical care, and SOA care.									
Telemedicine situational analysis and recommendations approved by MoHSS	Telemedicine situational analysis report	0	QA Division, Stakeholders	Meetings, workshop, conferences, reports	Annually	0%	100%	100%	100%
Proportion of health facilities with functional telemedicine services	**Numerator:** Total number of hospitals with functional telemedicine services **Denominator:** Total number of hospitals	0	PPHRD, HIRD, DCC & RMT, stakeholders	Meetings, reports	Annually	10%	20%	30%	40%
Proportion of facilities with guideline on telemedicine available	**Numerator:** Total number of hospitals with guideline on telemedicine **Denominator:** Total number of hospitals	0	PPHRD, HIRD, DCC & RMT, stakeholders	Meetings, reports	Annually	0%	50%	70%	100%
SO5: Improve QI practices related to emergency, critical and SOA care									
Proportion of hospitals with active QI committee addressing SOA activities.	**Numerator:** Total number of hospitals with active QI committees addressing SOA activities **Denominator:** Total number of hospitals	0	DCC & RMT, QA division	Meetings, reports	Annually	30%	50%	70%	100%
Proportion of staff trained on QI	**Numerator:** Total number of staff trained on QI **Denominator:** Total number of staff to be trained	Unknown	HR database, QA database	Meetings, reports	Annually	30%	50%	70%	90%

Proportion of facilities with records audit reports	**Numerator:** Total number of hospitals with monthly record audit reports **Denominator:** Total number of hospitals	0	DCC & RMT, QA division	Meetings, reports	Quarterly	20%	50%	70%	100%
Proportion of regions with the research ethics review committee	**Numerator:** Total number of regions with research ethics review committee **Denominator:** Total number of regions	0	DCC & RMT, QA division	Meetings, reports	Annually	0%	20%	30%	40%
Proportion of facilities conducting regular morbidity and mortality meetings for SOA, emergency and critical care services	**Numerator:** Total number of hospitals conducting morbidity and mortality meetings for SOA, emergency and critical care services **Denominator:** Total number of hospitals	Unknown	DCC & RMT, QA division	Meetings, reports	Monthly and quarterly	40%	60%	70%	100%
SO6: Improve research and audit capacity									
Proportion of facilities conducting operational research	**Numerator:** Total number of hospitals conducting operational research **Denominator:** Total number of hospitals	0	DCC & RMT, HIRD, QA division	Meetings, reports	Annually	0%	20%	30%	50%
Proportion of facilities with research publications per year	**Numerator:** Total number of hospitals with research publications per year **Denominator:** Total number of hospitals	1	DCC & RMT, HIRD, QA division	Meetings, reports	Annually	0%	20%	30%	50%
***Lancet commission on global surgery core indicators**									

4.5 Key Stakeholder Responsibilities

The MoHSS shall be the central coordination entity for the NSOAP. The NSOAP will be incorporated into the structure and functions of the healthcare system where the existing infrastructure to facilitate NSOAP implementation, monitoring and evaluation is. The NSOAP will be integrated into future health sector policy frameworks and the MoHSS strategic direction.



CHAPTER 5: COSTING OF ACTIVITIES

5.1 Introduction

The NSOAP represents a comprehensive healthcare initiative designed to enhance surgical, obstetric, and anaesthesia services throughout Namibia. By addressing critical gaps in these domains, the plan strives to improve accessibility, as well as reduce morbidity and mortality rates associated with these healthcare areas thereby facilitating sustainable progress. This strategic initiative is slated for a five-year implementation period, incorporating both immediate and long-term objectives.

5.2 Purpose of the costing exercise

The primary goal of the cost estimation exercise for the NSOAP was to determine the financial resources necessary for the successful execution of the plan. By conducting a thorough costing analysis, both the government and relevant stakeholders can gain a comprehensive understanding of funding requirements, allocate resources effectively, and ensure the enduring viability of the plan.

5.3 Methodology

To ensure accuracy and comprehensiveness, the costing exercise employed a combination of top-down and bottom-up approaches. This process entailed collaboration between the MoHSS, healthcare experts, stakeholders, and international partners. The approach involved:

5.3.1 Costing approach

The programme costing method served as a foundation for estimating the NSOAP implementation costs. This approach entailed identifying and quantifying the activities to be costed, determining the specific inputs required for such activities, and gathering unit costs from diverse sources. Subsequently, a dedicated costing tool was developed to generate estimates of the required investment. The tool was designed to be adaptable, allowing for adjustments based on plan modifications. The following subsections provide an overview of the costing activities undertaken to formulate the cost estimates within this document.

5.3.2 Identification of cost items

The NSOAP is organised into four domains, each containing objectives, initiatives, and activities aimed at achieving those objectives. These activities formed the basis for cost items or costing units in the exercise. Approximately 34 activities under four strategic domains were identified for costing. These activities may necessitate different types of inputs for their successful execution.

5.3.3 Determining and quantification of inputs

For the activities chosen as costing units, a task force determined the type and quantity of inputs required. This decision was informed by strategic domain realisation through activity execution. Inputs were categorised into groups, which include training, meetings/workshops, supervision, equipment and infrastructure, guidelines, programme evaluation, and other relevant documents.

5.3.4 Collection of unit cost data

Unit costs for diverse inputs were sourced from various channels, including available unit cost data and consultation with MoHSS. Standards and reports provided by MoHSS were also considered. When specific costs were unavailable, data from African regional or international sources were employed. Most activity unit costs are broken down by input type, such as training, trainee per diem, transport costs, training facilitator fees, communication expenses, etc.

5.3.5 Costing assumptions

The costing exercise incorporates several assumptions. Some unit costs are based on assumptions, acknowledging that they might not precisely reflect time and location variations. Regular review and updating of assumptions are recommended throughout plan implementation.

5.3.6 Developing the costing tool and estimation of costs

Upon identifying and quantifying activities and inputs, a suitable MS Excel costing template was devised. This template facilitates the computation of activity costs and allows for adjustments. It was populated using input quantifications, assumptions, and established unit costs. The total cost of implementation can be calculated as where TC, TQ and UC denote total cost, total quantity of input and unit cost of the associated input. These costs are summed across cost types such as training, supervision, equipment, etc. All costs are calculated in local currency, and equipment depreciation is not included.

5.4 Costing summary of results

Based on the aforementioned approach, the total cost of implementing the NSOAP over the five-year period is estimated to be 1.1 billion Namibian Dollars (NAD), approximately equivalent to 61.61 million US dollars (USD) using the current exchange rate. On average, this translates to an annual investment requirement of 220 million NAD, with the minimum and maximum annual costs ranging from 112 million NAD (year five) to 327.9 million NAD (year one), respectively. Detailed annual costs, as well as investment needs under each strategic domain, objectives, and cost categories, are presented in the tables below.

Table 15: Total estimated cost under each strategic Domain (Million NAD)

Five year cost estimation for the national NSOAP plan								
No	Strategic pillar	Estimated cost (million)					5-Year estimated cost	Percentage
		Year 1	Year 2	Year 3	Year 4	Year 5		
1	**Domain 1:** Infrastructure and equipment strategic objectives, activities over the planned years, indicators to be measured, and respective	243.9	184.1	162.3	118.7	110.0	819.1	74.4%
2	**Domain 2:** Surgical workforce strategic objectives, activities over the planned years, Indicators to be measured, and respective target	60.0	40.9	40.6	40.6	0.6	182.7	16.6%
3	**Domain 3:** Service delivery and supplies - strategic objectives, activities over the planned years, indicators to be measured, and respective targets	1.9	2.1	2.1	2.1	1.3	9.7	0.9%
4	**Domain 4:** Information management - strategic objectives, activities over the planned years, indicators to be measured, and respective targets	22.1	22.7	21.9	21.9	0.3	88.8	8.1%
5	**Total cost**	**327.9**	**249.8**	**226.9**	**183.3**	**112.3**	**1,100.2**	**100%**

Table 16: Total estimated cost under each strategic domain and objectives (Million NAD)

Domain	Strategic pillar	Estimated cost (million)					5-Year estimated cost	Percentage
		Year 1	Year 2	Year 3	Year 4	Year 5		
Domain 1 Infrastructure and equipment strategic objectives, activities over the planned years, indicators to be measured, and respective	SO1: Ensure upgraded infrastructural capacity to provide effective and efficient critical and SOA care	241.26	191.33	162.50	140.27	110.05	845.42	76.79%

Domain 2: Surgical workforce strategic objectives, activities over the planned years, Indicators to be measured, and respective target	SO1: Create new positions for qualified emergency, critical and operative care providers in SOA services.	-	0.80	0.60	0.60	0.60	2.61	0.24%
	SO2: Train and recruit adequate and qualified healthcare workers to provide safe SOA services for all regions	24.98	14.27	21.41	-	-	60.67	5.51%
	SO3: Ensure equitable distribution and retention of available specialised qualified emergency care, critical care and operative care providers	-	-	-	-	-	-	0.00%
Domain 3 Service delivery and supplies - strategic objectives, activities over the planned years, indicators to be measured, and respective targets	SO1: Ensure all operating theatres (OTs), emergency care and critical care spaces deliver effective and efficient services	61.30	40.90	40.90	40.90	0.10	184.10	16.72%
	SO2: Provide timely, equitable, access to quality SOA and critical care services	0.68	0.68	0.68	0.68	0.68	3.41	0.31%
	SO3 Deliver high-quality SOA and critical care services	0.23	0.23	0.23	0.23	0.23	1.14	0.10%
	SO4 Protect patients from impoverishing direct, indirect and direct non-medical costs of SOA and critical care	-	-	-	-	-	-	0.00%
Domain 4 Information management - strategic objectives, activities over the planned years, indicators to be measured, and respective targets	SO1: Ensure systematic and comprehensive collection of good SOA and critical care data	0.19	1.18	0.60	0.60	0.60	3.19	0.29%
	SO2: Strengthen data management infrastructure and data security	-	0.19	-	-	-	0.19	0.02%
	SO3: Improve information dissemination capacity for SOA and critical care data	-	0.19	-	-	-	0.19	0.02%
	SO4: Develop telemedicine services for emergency care, critical care and SOA care	-	-	-	-	-	-	0.00%
	SO5: Improve QI practices related to emergency, critical and SOA care	-	-	-	-	-	-	0.00%
	SO6: Improve research and audit capacity	-	-	-	-	-	-	0.00%
Total cost		**328.6**	**249.8**	**226.9**	**183.3**	**112.3**	**1,100.92**	**100%**

CHAPTER 6: APPENDICES

APPENDIX A: ACKNOWLEDGMENTS

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NSOAP Stakeholder group

Table 17: Namibian NSOAP stakeholder group as present at Namibia NSOAP Stakeholder Engagement Workshop, November 2021 (alphabetical by last name)

NAME	FACILITY	POSITION
Nelago T Amagulu	Intermediate Hospital Katutura	Medical Superintendent, specialist obstetrician and gynaecologist
Job TK Akwaake	Keetmanshoop	Registered Nurse (RN)
Albertina Amupala	Intermediate Hospital Katutura	Specialist obstetrician and gynaecologist
Nicole Angermund	International University of Management	Lecturer/Midwifery
Laimi Ashipala	Directorate of Special Programmes	Chief Medical Officer
Mugisha Barongo	Kunene RH	Chief Medical Officer
Apollo Basenero	QAD MoHSS	Chief Medical Officer
Hassan Daoud	PGSSC	Research Associate
Justa de Klerk	University of Namibia (UNAM)	Lecturer/RN
Aina Erastus	WHO	Quality of Care Focal Point
Mudjanima Ester	Windhoek Central Hospital (WCH) -2WEST	RN
Renate Gases	Intermediate Hospital Katutura	Medical Officer (MO)
Fnenny Moongo	Intermediate Hospital Katutura	Senior Medical Officer (SMO)
Emma N Helao	National Health Training Centre (NHTC)	Control Health Programme Officer
Gabriella Hyman	Southern Africa Development Community's University of Witwatersrand regional collaboration centre for surgical healthcare improvement (SADC/WitSsSurg)	Research Associate
Frans E Indongo	Intermediate Hospital Oshakati	SMO
Alice Njiba Kabongo	Gobabis	SMO
Claudia Kambonde	Intermediate Hospital Katutura	Control Registered Nurse
Else Kazongominja	Gobabis	RN
Tekla Kulya	WCH Main Theatre	SRN
Kimera Lukanga	UNAM	Specialist Obstetrician and Gynaecologist
Emmanuel Makasa	SADC/WitSSurg	Consultant
Walter Makuni	Keetmanshoop	MO
Lilian S Masule	UNAM	Lecturer
Kamatuka Mercia	WCH - ICU	SRN
Esperanca J. van der Merwe	PHC - Family Health Division	Senior Health Programme Officer
Klementina Milanda	Intermediate Hospital Katutura - Acute Care	RN/Midwifery
Luli Rosa Mukuta	Rundu Hospital	RN/Midwifery
Linda M Nangombe	Intermediate Hospital Oshakati	Specialist Obstetrician and Gynaecologist
Pueya Nashidengo	WCH	Hepato-Pancreatico-Biliary Surgeon
Lusina SH Nengola	WCH - Main Theatre	EN/M
Hileni Ngolonga	WCH – Maternal Theatre	RN
Ndomba NJC	Rundu	SMO/Anaesthesia
Martha Ntinda	Walvis Bay District Hospital	SMO
Annaloice Pendura	International University of Management	Lecture Midwifery
Rosetta Podeweltz	WCH	Chief Human Resource Practitioner
Kalista Runone	UNAM	Lecturer

Saad Rwehumbiza	Onandjokwe	SMO
Sussana Severinus	QAD, MoHSS	Administrative Officer
Sarah Shalongo	WCH	Medical Superintendent, Paediatrician
Apronia Shihepo	Intermediate Hospital Katutura – Main Theatre	RN
Johannes I Shilongo	Tsandi District Hospital	MO
Herodia Shikongo	WCH – 3 West	Enrolled Nurse/Midwifery
Francina Tjituka	QAD MoHSS	Control Health Programme Officer

Table 18: Namibian NSOAP writers' workshop group as present at Namibia NSOAP writers' workshop, December 2022 (alphabetical by last name)

NAME	AFFILIATION	POSITION
Petrus Ashipala	Nursing Services, Directorate Health-Kunene Region	Chief Registered Nurse
Apollo Basenero	MoHSS QAD	CMO
Frans Enkono Indongo	MoHSS Kavango East Region	CMO
Aina Erastus	WHO	Quality of care focal point
Gabriella Hyman	WitSSurg	Research Fellow
Leonard Kabongo	MoHSS Erongo Region	CMO
Asumani Kibandwa	Oshana Health Regional Directorate	CMO
Emmanuel Makasa	WitSSurg	Director
Rosemary Mugwe	Kids Operating Room (Kids OR)	Head, Africa Operations
Linda Nangombe	Intermediate Hospital Oshakati	HOD Obstetrics and Gynaecology
Nkola JC Ndomba	Rundu Intermediate Hospital	SMO Anaesthesia/ICU
Kate Obayagbona	PGSSC	Research Fellow
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Siraji Saad Rwehumbiza	Oshikoto Region, Onandjokwe Intermediate Hospital	CMO, Acting Medical Superintendent
Sarah Shalongo	MoHSS Windhoek Central Hospital	Senior Medical Superintendent
Theresia Shivera	Medi clinic Swakopmund	Anaesthesiologist
Gloria Mutimbwa Siseho	United Nations Children's Fund (UNICEF) Namibia	Health specialist
Peregrina T Tebele	Omaheke Region	RN
Francina Tjituka	QAD MoHSS	Chief Health Programme Officer

APPENDIX B: REFERENCES

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