



Federal Republic of Nigeria

National Policy on Medical Oxygen in Health Facilities

Federal Ministry of Health



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FOREWARD

The *National Policy on Medical Oxygen*, the first of its kind in Nigeria, lays the foundation for the improvement of equitable access to medical oxygen in health facilities in Nigeria. Indeed, access to quality assured medical oxygen can mean the difference between life and death for patients. In order to safe guard the quality of oxygen from manufacturer to patient, to ensure its appropriate administration to patient, and even to drastically improve the screening of hypoxaemia patients, an enabling environment is required to streamline efforts to ensure that patients receive oxygen therapy when needed.

This policy provides the foundational principles for engaging stakeholders in oxygen supply, distribution, administration, and equipment maintenance. It also reinforces the commitment of the Federal Government of Nigeria to systematic and coordinated improvement in providing life-saving commodities, in this case, medical oxygen, to patients.

The successful implementation of the *National Policy on Medical Oxygen* will require the sustained involvement and input of all stakeholders. I therefore urge all stakeholders to study the policy carefully and identify how they can contribute to achieving its aims and objectives.



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Honourable Minister of Health

PREFACE

The publication of this first comprehensive *National Policy on Medical Oxygen* marks a significant step in improving access to life-saving medical oxygen to patients in Nigeria. The policy provides a solid basis for planning at both national and state levels for the scale-up of medical oxygen.

Fulfilling its mandate to provide quality stewardship and service for the health of all Nigerians, the Federal Ministry of Health has led the development of this policy on medical oxygen, establishing a legal framework for the national roadmap for improving medical oxygen access and availability. This policy was developed through a consultative process with multiple stakeholders who participated in review meetings and provided additional input on drafts of the document electronically.

This policy document is organized into four sections. The first two, the introduction and situational analysis, provide the context for the urgency of the medical oxygen policy, and aptly describe evidence from research studies pointing to the barriers to medical oxygen access in Nigeria. The third section, policy scope and justification, outlines the goals, objectives, and parameters of the policy. The fourth section, the policy implementation framework, details how the policy will be enacted through a 5-year national strategic plan for medical oxygen scale-up, and additional policy and guideline alignments.

Implementation of the *National Policy on Medical Oxygen* will contribute to saving the lives of patients in Nigeria, including the lives of up to 120,000 under-5 children annually. It will also contribute to accelerating Nigeria's ability to reach the 2030 SDG3 health targets of reducing under-5 mortality to as low as 25 per 1,000 live births, and of reducing premature mortality from non-communicable disease by one third.

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State Primary Health Care Board: Niger

Paediatrics Association of Nigeria

University of Abuja Teaching Hospital

University College Hospital/University of Ibadan

Jos University Teaching Hospital

University of Maiduguri Teaching Hospital

Federal Medical Centre: Keffi

National Hospital Abuja

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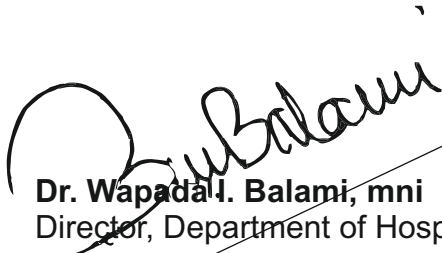
Maternal Newborn and Child Health Programme

Clinton Health Access Initiative

Nigerian Association of Biomedical Engineers and Technologists

University of Melbourne's Centre for International Child Health

Hospitals Management Boards: Bauchi, Kano, Lagos, Niger, and Rivers



Dr. Wapada I. Balami, mni
Director, Department of Hospital Services

LIST OF ACRONYMS

FMoH	Federal Ministry of Health
HMBHospitals	Management Board
HMISHealt	Management Information System
NAFDAC	National Agency for Food and Drug Administration and Control
NPHCDA	National Primary Health Care Development Agency
PHC	Primary Healthcare Centre
SHF	Secondary Health Facility
SMoH	State Ministry of Health
SON	Standards Organisation of Nigeria
SPHCB	State Primary Health Care Board
SpO₂	Blood oxygen saturation level
THF	Tertiary Health Facility

1. INTRODUCTION

Globally, oxygen therapy has been used in medicine for nearly a century¹. Yet, Nigeria still faces a staggering burden of deaths due to lack of access to oxygen. In Nigeria, more than 625,000 deaths annually occur due to diseases associated with hypoxaemia—insufficient oxygen in the blood or low blood oxygen saturation². In children, hypoxaemia is a major fatal complication of pneumonia, accounting for 120,000 under-5 deaths in Nigeria per year³. Evidence from secondary health facilities in Nigeria also show that 25% of neonates and 12% of under-5 children admitted to hospital with pneumonia are hypoxaemic on admission⁴.

In Nigeria, as in other countries in sub-Saharan Africa, lack of access to oxygen and pulse oximeters—non-invasive WHO-recommended devices for screening for hypoxaemia—can be attributed to a host of prevailing conditions that this policy sets to address. In particular, the absence of an enabling environment in terms of coordinated policies and regulations, as well as fragmented supply and distribution systems for oxygen and oxygen delivery systems worsen facility-level barriers to oxygen access for patients. Moreover, the absence of clinical governance structures to ensure hypoxaemia cases are recognized and appropriately treated, and the paucity of comprehensive data on oxygen supply landscapes and clinical practice, contribute to putting hypoxaemic patients in Nigeria at risk.

This *National Policy on Medical Oxygen* in health facilities in Nigeria therefore seeks to lay the foundation for sub-national policies, for a national strategy for the scale-up of oxygen, and for clinical guidelines on oxygen therapy that taken together will improve access to life-saving oxygen, a drug on the WHO list of essential medicines.

1. Duke T, Graham SM, Cherian MN, Ginsburg AS, English M, Howie S, et al.; Union Oxygen Systems Working Group. Oxygen is an essential medicine: a call for international action. *Int J Tuberc Lung Dis*. 2010 Nov;14(11):1362–8. PMID: [20937173](https://pubmed.ncbi.nlm.nih.gov/20937173/)

2. Secondary analysis conducted by CHAI of Nigeria hypoxia-related deaths using the Global Disease Burden Study 2013, and other literature review

3. UNICEF. A Promise Renewed Progress Report 2015. September 2015

4. Unpublished data, H Graham, A.G. Falade, May 2016

2. SITUATIONAL ANALYSIS

In Nigeria, a handful of facility-based studies have been conducted to understand management of hypoxaemia, as well as the availability and supply of oxygen delivery systems. Evidence from these studies suggests that reliance on clinical signs for hypoxaemia screening is predominant in Nigeria, and that the use of pulse oximetry for this purpose in surveyed health facilities, is minimal. In particular, a 2016 study in four southwestern states in Nigeria found that only three of 12 hospitals assessed had pulse oximeters in paediatric areas, and that the hospitals did not routinely assess children using pulse oximeters⁵. Additionally, in a 2016 multi-facility oxygen assessment in eight states, only a subset of PHCs (3%) and referral facilities (24%) had pulse oximeters. In the Secondary Health Facilities (SHFs) and Tertiary Health Facilities (THFs) with paediatric inpatient departments surveyed in the study, only 24% had pulse oximeters⁶, and much fewer (11%) of these were functional.

Availability of oxygen delivery systems in health facilities in Nigeria is equally inconsistent or limited, and existing oxygen equipment is often of poor or unverified quality. The multi-facility oxygen assessment in eight states found that only 4% of PHCs assessed had functional oxygen equipment—cylinders and concentrators—and that frequency of refilling cylinders varied considerably by facility. Among the SHFs and THFs surveyed, only 55% provided oxygen therapy with the neonatal wards most frequently providing oxygen therapy (93%). Furthermore, the study in the southwest found that only 5% of the surveyed facilities had oxygen analysers, instruments meant to verify that oxygen delivered to patients was at least 85% saturation, considered medical grade oxygen.

Based on currently available data, at least 30 public sector oxygen plants have been established in Nigeria, of which 21 are purportedly functioning; 6 are of unknown status, and three are non-operational⁷. Moreover, in a 2015 case study of 4 facility-based plants, factors such as inadequate power supply and wear-and-tear on pipes delivering oxygen to hospital wards were threats to optimising the use of these plants⁸. Comprehensive data on oxygen plants and oxygen equipment inventories is limited, and points to the critical need to improve coordination of the supply and distribution of life-saving oxygen for patients.

5. Graham HR, et al. Oxygen for children and newborns in non-tertiary hospitals in South-west Nigeria: A needs assessment. *African Journal of Medicine and Medical Sciences*. 2016; 45: 31-39. States include Oyo, Ondo, Ogun, and Osun.

6. CHAI. Oxygen Supply and Maintenance Landscape, 2017. Based on data from facility audits carried out in 651 PHCs and 181 SHFs and THFs in eight states (Lagos, Kaduna, Kano, Niger, Rivers, Bauchi, Cross Rivers and Katsina).

7. Bis

8. Study conducted by Dr. Sanusi Ibrahim (University of Maiduguri Teaching Hospital). The tertiary facilities in the case study include Jos University Teaching Hospital, University of Port Harcourt Teaching Hospital, Lagos University Teaching Hospital, and University of Maiduguri Teaching Hospital.

3. POLICY SCOPE AND JUSTIFICATION

Improving availability and use of medical oxygen in health facilities has significant potential to reduce mortality from hypoxaemia. A national oxygen policy is indeed necessary to establish the legal framework for improving oxygen access and align implementation efforts across key stakeholders, at state and national levels. Specifically, the policy will help establish a favourable environment, through strong leadership from FMOH, for the planning, implementation, monitoring and evaluation of effective medical oxygen delivery systems at relevant levels of the health system.

3.1 Key Priority Areas

Oxygen shall be administered in operating theatres and also when hypoxaemia is detected in the following:

- **Children and neonates:** Prematurity, birth asphyxia, acute sepsis, shock, severe pneumonia, meningitis, brain injury, coma, anaemia, severe malaria, heart failure, and acute asthma.
- **Adults:** Chronic obstructive pulmonary disease (COPD), acute asthma, pneumonia, interstitial lung disease, pulmonary sarcoidosis, lower and upper respiratory infections, pneumoconiosis, severe malaria, meningitis, ischaemia.

3.2 Legal Framework

This policy is set within the framework of the National Health Policy 2016 and is subject to the provision of the National Health Act. The policy shall be reviewed every five years or as deemed fit by the Honourable Minister of Health in consultation with the National Council on Health.

3.3 Policy Goal and Objectives

The National Policy for Medical Oxygen aims to reduce morbidity and mortality from hypoxaemia by improving access to oxygen systems. Key objectives include:

- Scaling up the accessibility, affordability, availability, and acceptance of pulse oximeters and oxygen therapy in Nigeria across all tiers of health service delivery;
- Encouraging rational drug (oxygen) use to treat all hypoxaemia-related diseases in both children and adults; and

- Provision of the necessary framework for appropriate clinical practice and skills strengthening in the management of hypoxaemia.

3.4 Policy Declarations

Since the introduction of medical oxygen in the WHO essential medicines list, the Federal Ministry of Health recognizes the need for proper use of medical oxygen for the treatment of severely ill patients, in emergencies, during anaesthesia, and with surgical service in health facilities. The administration of supplemental oxygen is an essential element of appropriate management for a wide range of clinical conditions. However, oxygen is a drug and therefore requires prescribing in all situations. Failure to administer oxygen appropriately can result in serious harm to the patient. The safe implementation of oxygen therapy with appropriate monitoring is an integral component of the Healthcare Professional's role.

The following shall apply to the implementation of this policy:

Clinical application

- a. That oxygen should be used to treat hypoxaemia and not breathlessness or dyspnoea.
- b. That pulse oximetry is included as part of routine vital signs for all patients.
- c. That any patient with SpO₂ <90% on pulse oximetry or clinical signs of hypoxaemia should receive oxygen. For some conditions—severe anaemia, heart failure, shock, severe sepsis or brain injury/infection/coma—it is also appropriate to give oxygen when the SpO₂ is ≤ 94%.
- d. That all critically ill patients should be given oxygen (by paramedics, nurses, or other health professionals) while awaiting medical review and history.
- e. That all patients who require supplementary oxygen therapy should be given oxygen in line with the clinical guidelines on oxygen

Equipment and maintenance

- f. A functional and clinically appropriate pulse oximeter must be available at each location that oxygen is used
- g. Functional oxygen delivery systems and oxygen analysers must be made available

Training and competencies

- i. That any qualified health professional can commence oxygen therapy in an emergency situation.

- j. Healthcare professionals involved in prescribing or administering oxygen should be familiar with clinical guidelines on medical oxygen.
- k. Healthcare professionals should receive regular and continuous training in oxygen therapy.
- l. Biomedical engineers and equipment technicians should receive regular and continuous training on maintenance of oxygen equipment.

Patient safety

- m. That measures must be put in place by all relevant stakeholders to ensure oxygen is affordable to patients
- n. That appropriate measures must be in place to ensure safety of patients and the environment

Overall management

- o. That the policy is for general use within all clinical settings.
- p. That the policy, when adopted, is made available to health institutions and implemented without delay.
- q. That compliance with all relevant policies and guidelines that support the use and delivery of medical oxygen is adhered to by all medical and health institutions in the country.

4. POLICY IMPLEMENTATION FRAMEWORK

The *National Policy on Medical Oxygen* provides the legal framework for all other supporting policies, guidelines, protocols, and procedures for the management of patients requiring oxygen in Nigeria. The following contains specific guidance for the implementation of the *National Policy on Medical Oxygen*.

4.1 National Strategy for the Scale-up of Medical Oxygen

The National Strategy for the Scale-up of Medical Oxygen in Health Facilities (hereafter referenced to as the “National Strategy”) will provide the implementation framework for the National Policy on Medical Oxygen. The National Strategy will implement the intentions expressed in the *National Policy on Medical Oxygen* through a comprehensive 5-year roadmap for expanding access to medical oxygen in Nigeria. Led by the Oxygen Desk at FMoH, an inter-agency coalition will coordinate partnerships and stakeholder engagements to ensure the implementation of the National Strategy. The five strategic pillars of the National Strategic Health Development Plan 2 (NSHDP II) serve as the guiding principles for this effort.

4.2 National Clinical Guidelines on Medical Oxygen Use

The National Clinical Guidelines on Medical Oxygen Use will provide specific recommendations to clinicians on the appropriate treatment and care of patients requiring oxygen, and on the appropriate screening of hypoxaemia in patients visiting all tiers of the healthcare facilities. The document, which will focus on the clinical aspects of oxygen therapy for patients in health facilities, will also describe practical aspects for clinical health care workers, biomedical engineers, administrators, and health officers.

4.3 Updates to Supporting Policy Documents

Existing supporting policy documents such as the Essential Medicines List (EML), the Essential Equipment List (EEL), National Standard Treatment Guidelines, and National Standing Orders, will be updated to reflect global recommendations for medical oxygen. Supporting policy documents that also exist at the state level, such as the EML and the EEL, will be updated in tandem with revisions to national documents to avoid policy and guideline misalignments.

4.4 Stakeholders and Partnerships

The implementation of the *National Policy on Medical Oxygen* will be led by FMOH, and driven by collaboration between various partners in the public and private sector, and supported by implementing partners, as well as bilateral and multi-lateral agencies. Government ministries and agencies at national and state levels will be instrumental to creating the enabling environment for public-private partnerships to thrive, and to create sustainable oxygen delivery and financing schemes that will make medical oxygen access affordable and available to patients. At the facility level, health care personnel including doctors, nurses, community health extension workers, biomedical engineers, and equipment technicians will be instrumental in ensuring adequate management of hypoxaemia. Clinical governance and outcomes monitoring will ensure that healthcare teams are delivering the best service to hypoxaemic patients.

4.5 Resource Mobilization

In order to meet the objectives of the *National Policy on Medical Oxygen*, funds must be deployed for the implementation of medical oxygen scale-up. Funding will be required for the implementation of the national strategy for oxygen. Funding will also be required for monitoring and evaluation of scale-up efforts to ensure that the interventions are meeting key performance metrics. FMOH, with support from implementing partners, will lead fundraising efforts for the scale-up of medical oxygen, and will work towards galvanising funding commitments from other Ministries, Departments and Agencies (MDAs) including revenue generating agencies and funds recovery agencies.

4.6 Sources of Funding

All tiers of government—federal, state, and local—will garner strong political will to ensure the prioritization of efficient oxygen delivery systems in health facilities. States and health facilities will explore sustainable funding mechanisms—such as inclusion in facility drug revolving fund schemes (DRFs), annual operational budgets, and other functional state-funded free MNCH services programmes—to reduce the financial burden on patients and improve the value chain for oxygen delivery. Federal and state governments will also assess opportunities to establish or strengthen relationships with the private sector, which will be critical for ensuring sustained improvements for oxygen generation and systems maintenance. Other potential sources of funding include international and national development agencies as well as philanthropic organisations.

4.7 Roles and Responsibilities of Different Tiers of Government

FMoH and NPHCDA will be responsible for updating national policies, clinical guidelines, regulations, and other standards, and disseminating them to relevant stakeholders for implementation.

Regulatory agencies (NAFDAC, SON) will update regulations to clarify registration and importation requirements for oxygen supply equipment and diagnostics meeting international standards (e.g., WHO specifications).

SMoH and relevant agencies (SPHCB, HMB) will work with respective facilities levels (THF, SHF, PHC) to adopt national guidelines and policies and oversee the delivery of pulse oximetry and appropriate oxygen delivery systems in health facilities. SMoH and relevant agencies will also conduct training and allocate state resources to provide adequate commodities and oxygen delivery systems in health facilities.

4.8 Partner Responsibilities

Implementing Partners will provide required technical support for the implementation of the National Policy and will mobilize additional resources to support the implementation of efficient oxygen delivery systems at national and state levels.

Private Sector will contribute sustainable funding mechanisms and funding for the scale-up of commodities, equipment, and spare parts. Private sector will also work with government to devise provisions for equipment maintenance such as maintenance contracts and training of biomedical engineers and equipment technicians.

Private Medical Facilities, Not-for-Profit Mission Hospitals, and Medical/Clinical Professional Associations will support continuing professional development and training of health personnel on oxygen therapy. They will also improve performance tracking by strengthening reporting to relevant state HMIS platforms that collect information on hypoxaemia and oxygen use.

