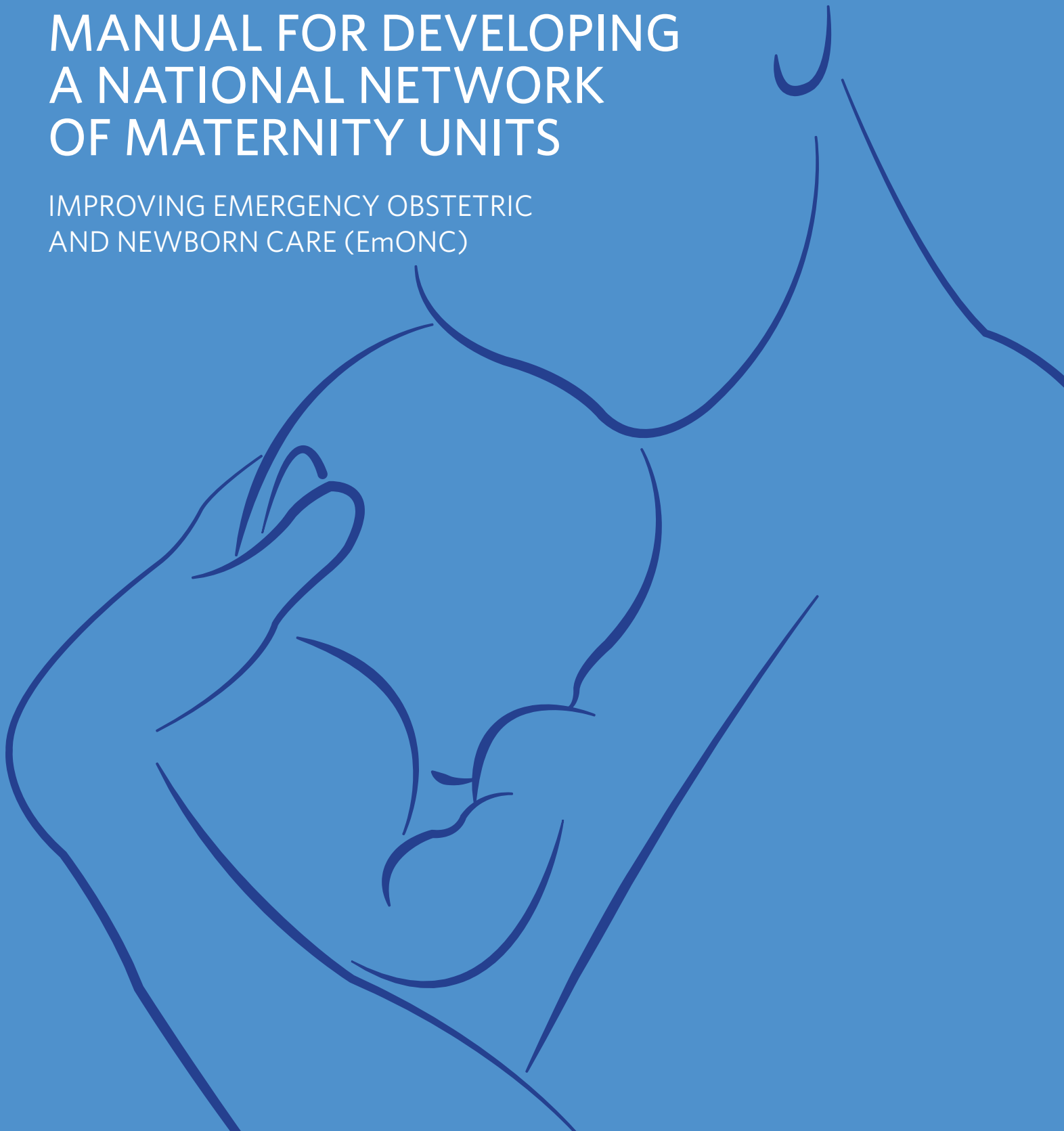# IMPLEMENTATION MANUAL FOR DEVELOPING A NATIONAL NETWORK OF MATERNITY UNITS

IMPROVING EMERGENCY OBSTETRIC AND NEWBORN CARE (EmONC)

UNFPA

In collaboration with:

COLUMBIA | MAILMAN SCHOOL OF PUBLIC HEALTH
AVERTING MATERNAL DEATH & DISABILITY

UNIVERSITÉ DE GENÈVE

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IMPLEMENTATION MANUAL FOR DEVELOPING A NATIONAL NETWORK OF MATERNITY UNITS

IMPROVING EMERGENCY OBSTETRIC AND NEWBORN CARE (EmONC)

September 2020

CONTENTS

ABBREVIATIONS AND ACRONYMS

AMDD	Averting Maternal Death and Disability Program
BEmONC	Basic Emergency Obstetric and Newborn Care
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
DHIS 2	District Health Information System (version 2)
EmONC	Emergency Obstetric and Newborn Care
ENAP	Every Newborn Action Plan
EPMM	Ending Preventable Maternal Mortality
FHI 360	Family Health International 360
FIGO	International Federation of Gynaecology and Obstetrics (Fédération Internationale de Gynécologie et d'Obstétrique)
FGM/C	Female Genital Mutilation or Cutting
GIS	Geographic Information System
H6	Partnership between UNAIDS, UNFPA, UNICEF, UN WOMEN, WHO, The World Bank Group
HIS	Health Information System
HMIS	Health Management Information System
ICM	International Confederation of Midwives
QI	Qualitative improvement
MDG	Millennium Development Goal
MDSR	Maternal Death Surveillance and Response
MHTF	Maternal and Newborn Health Thematic Fund
MMR	Maternal Mortality Ratio
MNH	Maternal and Newborn Health
MVA	Manual Vacuum Aspiration
NGO	Non-Governmental Organization
PMTCT	Prevention of Mother-To-Child Transmission
SARA	Service Availability and Readiness Assessment
SDG	Sustainable Development Goal
SRHR	Sexual and Reproductive Health and Rights
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UN WOMEN	United Nations Entity for Gender Equality and the Empowerment of Women
WHO	World Health Organization

ACKNOWLEDGEMENTS

FOREWORD

Maternal mortality is decreasing globally, but not fast enough and with critical inequalities across the regions of the world. Dying while giving birth is not only an unacceptable human right violation but also a violence against women in times where the majority of the maternal deaths are preventable if appropriate healthcare is provided.

The United Nations Funds for Population (UNFPA) is mandated to support countries to eliminate preventable maternal and newborn deaths. The agency particularly promotes midwives who, together with obstetricians, are essential in realizing this vision. We also support primary healthcare, where Emergency Obstetric and Newborn care (EmONC) is a key component. By the provision of quality healthcare in maternity health facilities it is possible to manage obstetric complications during pregnancy, childbirth, or immediately after birth. UNFPA also supports countries to monitor progress in improving the quality of maternal and neonatal healthcare at all levels of the health system and to identify and address identified gaps.

In its final report in 2015, the independent Expert Review Group on Information and Accountability for Women's and Children's Health (iERG) highlighted that "the global health community has largely failed to make progress in mobilizing action for emergency obstetric care". One of the areas that require immediate commitment and action is the deployment of skilled health personnel at birth. The lack of sufficient and competent personnel, that are able to manage all obstetric and neonatal complications is a major cause of high maternal mortality in too many countries. Efforts to educate skilled health personnel in maternal and newborn health and to effectively organize networks of referral maternities have been insufficient. Too many women and too many newborns do not have timely access to quality healthcare and life saving interventions, at the time when they face an obstetrical or newborn emergency, resulting in fatal outcomes.

This implementation manual aims to respond to the need of accelerating progress in the quality of EmONC. It describes an innovative approach to develop a national network of referral maternities accessible by the population and able to manage all obstetric and neonatal complications with quality of care. It proposes a reorganization of the health system based on the selection of a limited number of referral maternities (EmONC) on which to focus resources, while ensuring their access by the majority of the population. New

indicators allow to measure the coverage of the population by these referral maternities within one or two hours of travel time.

It provides concrete steps for public health authorities and stakeholders to implement the EmONC framework developed in 2009 by WHO, UNFPA, UNICEF, and the University of Columbia. It includes the most recent developments in geographic modelling to optimize physical access to health facilities. Finally, it proposes new programmatic approaches to strengthen routine management and use of maternal, newborn, and reproductive health data and leverages the concepts of implementation research to improve quality of care in referral maternity facilities.

This implementation manual was developed over several years. The proposed approach builds on the lessons learned from its progressive implementation in several countries. I would like to thank the colleagues from UNFPA's Technical Division, and particularly from the Maternal and Newborn Health Thematic Fund (MHTF), and from our Regional and Country Offices who have contributed to the development of this approach as well as the colleagues from the countries' Ministry of Health and partner organizations, particularly from the University of Geneva and Columbia University, Averting Maternal Death and Disability program (AMDD).

By 2020, twelve countries have implemented this approach at national scale. It is part of UNFPA' strategy for ending preventable maternal deaths. The education of midwives, the availability of essential medicines and commodities, and the strengthening of quality healthcare in these networks of EmONC health facilities, when supported with sufficient and sustainable funding, will have a major role in achieving the sustainable development goal 3.1 on the reduction of maternal mortality. The management of all maternal and neonatal emergencies and their medical referral need to be included in the Universal Health Coverage (UHC) package of services. The regular monitoring of these referral maternities is feasible at national scale and is essential for an effective national maternal and newborn health programme. Once set-up with the required infrastructure and staff, the referral maternities (EmONC) can serve as platforms for the integration of other reproductive health services.

Dr. Julitta Onabanjo
UNFPA Deputy Executive Director (Programme) *ad interim*

INTRODUCTION

The importance of a manual for developing a national network of referral maternity facilities

CONTEXT

Since the first International Safe Motherhood Conference, held in Nairobi in 1987, there has been much reflection on the provision of obstetric and newborn care, and the extent to which it is accessible[1]. This led to the publication of a handbook in 1997, by the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and the United Nations Population Fund (UNFPA), for monitoring the availability and use of obstetric services. This handbook was updated in 2009[2] by the same United Nations organizations and Columbia University's Averting Maternal Death and Disability (AMDD) Program. It describes the indicators that countries, particularly those with high maternal mortality and morbidity, can use to design and develop a network of health facilities in which skilled staff are able to provide quality care and manage obstetric and newborn emergencies - forming a network of referral maternity facilities. The 2009 handbook also reaffirms the need for a two-level network of referral maternity facilities, at least for the time being, in most countries with high maternal mortality. These two levels should be established within the pool of maternity facilities that provide routine obstetric and newborn care. The first level should provide routine obstetric and newborn care and Basic Emergency Obstetric and Newborn Care (BEmONC) and should primarily serve peripheral or rural areas, whereas the second level should provide Comprehensive Emergency Obstetric and Newborn Care (CEmONC) and should generally consist of hospitals in urban centres. This network aims to increase women's access to Emergency Obstetric and Newborn Care (EmONC) in countries with limited resources and also reinforce a set of strategies recommended by WHO and partners for improving Maternal and Newborn Health (MNH)[3]. To achieve Sustainable Development Goals (SDG) 3.1 and 3.2[i], every pregnant woman should have the possibility to deliver in an EmONC facility that provides safe care[4]. This should be possible through birth plans, improved transportation and organized referrals between peripheral health facilities and EmONC facilities.

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i   3.1 By 2030, reduce the global maternal mortality ratio to less than 70per 100,000 live births. Recommended country targets are described in: https://bit.ly/2XIU2XO
3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce newborn mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.

Various thematic funds for sexual, reproductive, maternal, newborn, child, and adolescent health, such as the inter-agency Muskoka Fund,[ii] the H6 Joint Programme[iii] and the UNFPA Maternal and Newborn Health Thematic Fund (MHTF)[iv] have used the 2009 handbook as a basis for supporting the development of referral maternity facilities in a number of countries. This manual builds on the work that these thematic funds have carried out in certain countries. Its development was led by the Sexual and Reproductive Health Branch of the UNFPA Technical Division and, specifically, by the MHTF team within this branch. It will evolve over time, gradually incorporating further innovative approaches.

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ii   The multilateral Muskoka Fund (UNFPA, UNICEF, UN-Women, WHO) supported 10 countries in sub-Saharan Africa and Haiti over the period 2010-2015 to improve RMNCH, with financial support from France.

iii   The H6 Joint Programme (UNAIDS, UNFPA, UNICEF, UN-Women, WHO, and the World Bank) supported 10 countries in sub-Saharan Africa over the period 2012-2017 to improve RMNCAH, with financial support from Canada and Sweden.

iv   Created in 2008, the Maternal and Newborn Health Thematic Fund (MHTF) supports 32 countries with a high burden of maternal mortality to improve access to quality SRH/MNH services. The MHTF is financially supported by Sweden, Germany and Luxembourg and is managed by UNFPA. The Business Plan of MHTF Phase III (2018-2022) is available on: https://www.unfpa.org/fr/node/18565

OBJECTIVES OF THE MANUAL

As we aim towards a reduction of the global maternal mortality ratio below 70 per 100,000 live births (SDG 3.1), it is important to note that most countries with high maternal mortality are encountering problems in planning and operationalizing their national network of referral maternity facilities. These referral health facilities are responsible for administering essential obstetric and newborn care services and managing BEmONC or CEmONC 24h/7d. The presence of these emergency services is measured using tracers, with the principal ones termed "signal functions". These tracers reflect a facility's capacity to manage the main obstetric emergencies that are responsible for maternal and newborn deaths (haemorrhages, eclampsia, infections, dystocia, complicated abortions). There are seven signal functions for BEmONC facilities and nine for CEmONC facilities, and these constitute the first step for analysing availability of services (Figure 1).

FIGURE 1: EmONC SIGNAL FUNCTIONS

BASIC EmONC SIGNAL FUNCTIONS (B EmONC)	COMPREHENSIVE EmONC SIGNAL FUNCTIONS (C EmONC)
1. Administer parenteral antibiotics	BEmONC signal functions (1-7)
2. Administer uterotonic drugs	+
3. Administer parenteral anticonvulsants	8. Perform Blood transfusion
4. Perform manual removal of the placenta	9. Perform Caesarean section
5. Remove retained products	
6. Perform assisted vaginal delivery	
7. Perform basic neonatal resuscitation (with bag and mask)	

Services available 24h/24 and 7d/7

Source: AMDD, UNFPA, UNICEF, WHO. Monitoring Emergency Obstetric: a handbook. World Health Organization, 2009.

The definitions of the EmONC signal functions are detailed in the 2009 EmONC handbook. Moreover, Technical Sheet no. 1 outlines the responsibilities assigned to the BEmONC facilities within the health system.

This manual aims to share an innovative approach implemented in several countries with a high burden of maternal and newborn mortality and morbidity, each with widely differing contexts, to develop their national network of referral maternity facilities. The objective of this approach is to support countries to gradually and realistically improve the coverage of the population accessing EmONC and to improve the quality of obstetric and newborn care. This approach was implemented with the support of the MHTF in Haiti in 2010 and subsequently in Togo and Madagascar in 2014-16. In 2017-19, other countries, such as Burundi, Benin, Chad, Guinea, Senegal, and Sudan also implemented it. These countries have addressed many problems related to developing a national network of EmONC facilities, and have explored many avenues to improve access to quality EmONC, failed, started again and eventually succeeded.

This manual aims to collate these cumulative experiences over the last nine years, in order to outline a process for developing a national network of referral maternity facilities that will help improve MNH and support progress towards achieving the health related SDGs, in particular SDGs 3.1 and 3.2. These pioneer countries reviewed their MNH strategies in detail and have gradually implemented three interventions:

1. identification of a national network of maternity facilities that can provide BEmONC and CEmONC;

2. proactive and regular monitoring of the RMNH services provided in these EmONC facilities;

3. effective support to the staff working at these facilities to maximize their opportunities to innovate and address problems related to organizing services and improving quality of care. The proposed approach enables stakeholders at every level of the health system to become agents of change.

LIMITATIONS OF THE MANUAL

This manual principally addresses the strategy for developing EmONC in a national network of referral maternity facilities. Other strategies for reducing maternal mortality are not explored in detail in this document, for example:

- The status of midwives, their responsibilities, how their initial training is organized and how they are deployed in the field, although these are essential for running the maternity facilities;

- The problem of funding obstetric and newborn care (particularly emergency care and medical evacuations), which regularly presents a challenge for countries with limited resources;

- The links between the national network of EmONC health facilities, peripheral health facilities and their communities. These issues are discussed with countries once they have identified their EmONC facilities, and outlined their responsibilities and their interactions with the community. The Republic of the Congo, Madagascar and Guinea are very keen to strengthen the links between the EmONC facilities and the peripheral health facilities and communities. However, most of the countries that are developing an EmONC network as described in this manual are, for now, focusing on strengthening the EmONC network and the referral links between BEmONC and CEmONC facilities. Organizing catchment areas for referral maternity facilities is an aspect that requires more government commitment and more financial resources across the board;

- A number of key sexual and reproductive health services are included in the description of the responsibilities of the EmONC facilities (see Technical Sheet no. 1). However, this manual does not elaborate on the means for improving such integration and for implementing family planning/contraceptive services, elimination of Mother-To-Child Transmission (EMTCT) programmes and cervical cancer prevention programmes. These reproductive health services can be arranged as and when basic organizational elements and quality of care are established, based on the operational and technical capacities of the health facility teams and on the Ministry of Health's priorities. We refer the reader to the specific documents and guidelines concerning these priorities, particularly those from WHO and UNFPA.

- Ultimately, newborn health, which features prominently in this document, requires further consideration. This task is currently being carried out by the Every Newborn Action Plan (ENAP) technical group. Future versions of this manual will

gradually incorporate that essential work on how to improve care for newborns. From a programme perspective, this manual highlights on several occasions the importance of intrinsically linking the care for the mother to that for the newborn. The proposed data-collection tool ("monitoring sheet" - see Technical sheet no.4) takes this into account, giving more importance to the newborn.

TARGET AUDIENCE

This manual should be implemented in conjunction with the Monitoring Emergency Obstetric Care handbook developed by AMDD, UNFPA, UNICEF, and WHO in 2009. It is, first and foremost, intended for people who are responsible for developing and improving maternal and newborn care in their country, whether at a district, regional, provincial or national level. It is also aimed at managers of the Ministry of Health and technical advisers, particularly from United Nations Organizations, who are seeking clarification on the approach to effectively develop and implement a national network of referral maternity facilities. Lastly, it is intended – particularly the first part – for decision makers who are aiming to develop a network of referral facilities able to provide quality care and to monitor and report on the care provided to women and newborns.

DOCUMENT STRUCTURE

The manual is divided into two parts. After describing key notions in EmONC, the first part details the process to support the development of a national network of referral maternity facilities. It enables the reader to understand the proposed approach and the seven phases that form its implementation process (see Figure 2):

- Phase 1: advocate for the approach of developing a national network of referral maternity facilities to ensure that the main political stakeholders and decision makers in MNH are involved and are committed to the proposed principles and processes;
- Phase 2: design the processes and the necessary tools for developing and monitoring the national network of referral maternity facilities;
- Phase 3: identify the national network of referral maternity facilities;
- Phase 4: collect data;

- Phase 5: analyse data;
- Phase 6: use these data to address gaps in availability and quality of care of identified health facilities, while also directly informing the health system on how effectively the maternal health programme is managed;
- Phase 7: monitor the implementation of the process.

FIGURE 2: PROCESS FOR DEVELOPING A NATIONAL NETWORK OF REFERRAL MATERNITY FACILITIES
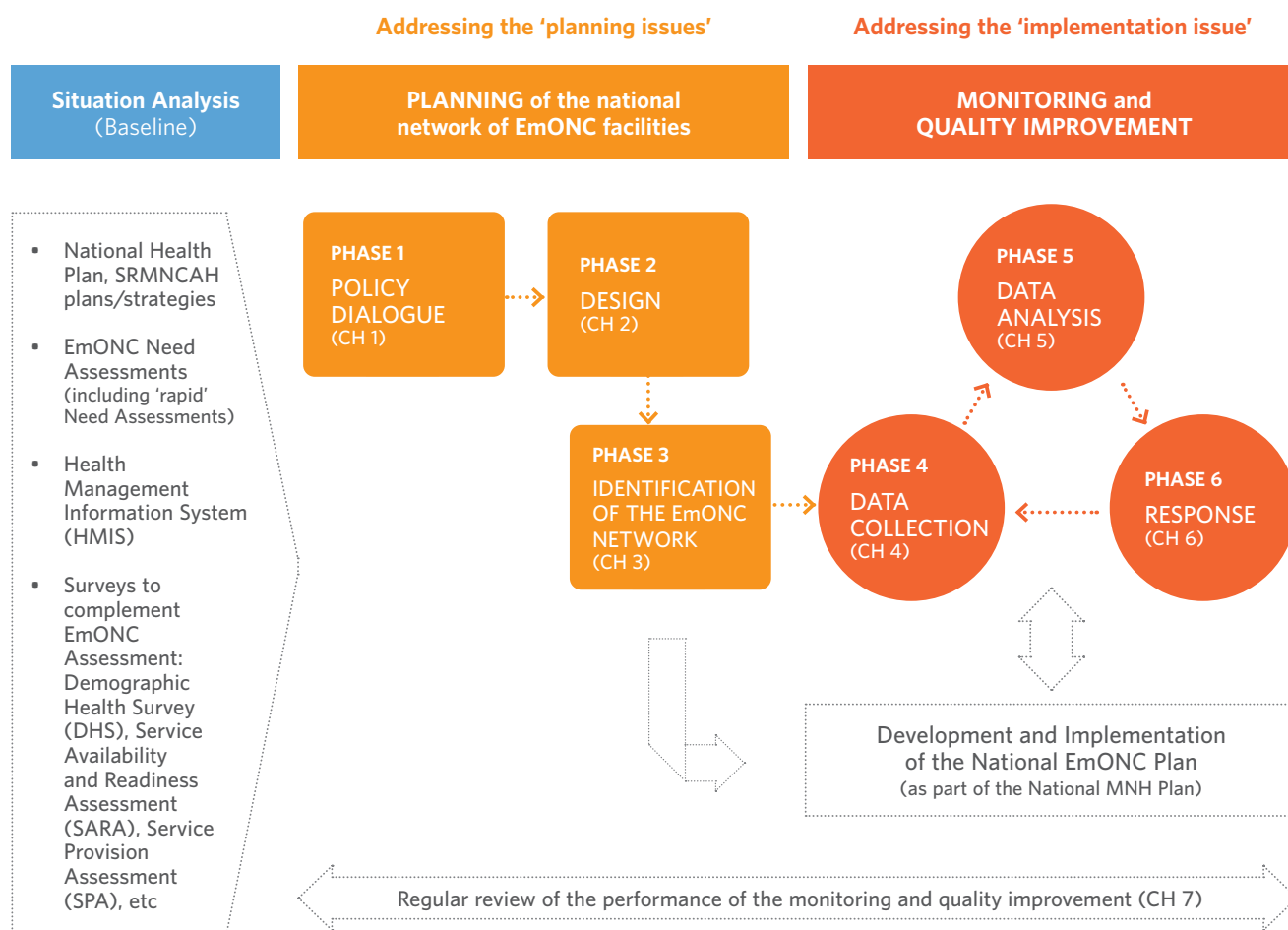
Source: The Maternal Health Thematic Fund. Towards Equality in Access, Quality of Care and Accountability, Annual Report 2016, 2017, p. 26

Based on current experiences in implementing this process in countries, the average cost for implementing the planning phases (phases 1-3) is estimated at US$ 120,000 for a duration of four to six months[5]. The average cost for implementing the monitoring phases (phases 4 on data collection and 5 on data analysis) is estimated at US$60,000-80,000, depending on the size of the national EmONC network. The estimated cost for the response/quality improvement (phase 6) is US$500,000-1,000,000 per year for each region/province (based on estimates in Guinea, Senegal for quality improvement interventions including on-site mentorship, improvement of referral mechanisms, addressing immediate gaps in essential medicines and human resources, ensuring linkages with midwifery schools for pre-service education).

The second part of the manual consists of technical chapters that provide more detail on how these different phases can be organized. It also includes technical sheets dedicated to important aspects of implementing this approach, starting with a presentation of the UNFPA's vision of a BEmONC facility, and the way in which Geographic Information Systems (GIS) and the evidence from implementation science can help develop a national network of referral maternity facilities. The second part is primarily intended for the technical advisers and managers from the Ministry of Health responsible for managing the process at the national and subnational levels.

As such, the reader can either quickly glance over the whole process or spend more time reviewing a particular part of the manual.

PART ONE

The process for developing a national network of referral maternity facilities (EmONC facilities)

CHAPTER 1

Advocate for the development of a national network of referral maternity facilities

"Women are not dying of conditions we can't treat... They are dying because societies have yet to make the decision that their lives are worth saving"

Professor Mahmoud Fathalla, former President of the International Federation of Gynecology and Obstetrics (FIGO)

1. The importance of advocating for the development of a national network of referral maternity facilities

1.1. The political dimension of maternal and newborn mortality

During the last three decades, advocacy for MNH within civil society and the international community has gradually succeeded in making maternal and newborn mortality an increasingly important political matter. The mobilization prompted by MDG5 on improving maternal health and its target 5.A to reduce the MMR has helped encourage countries to define and implement strategies for achieving the ambitious goal of reducing the global MMR by three quarters between 1990 and 2015.

The SDGs do not have a specific goal on maternal health, but have an ambitious target of reducing the MMR (target 3.1 in SDG 3). On the upside, this target on maternal health is part of a wider group of health targets. However, the downside is that it has been diluted within a broader health goal, risking a possible decrease in political attention and financing for maternal health.

1.2. The difficult journey from policy to implementation of the maternal and newborn health programme

While most countries with the highest MMR defined strategies for reducing the number of deaths by 75 per cent between 1990 and 2015 (MDG target 5.a), unfortunately a majority have not managed to meet this target. The reasons for this relative failure vary but also reflect the difficulties in translating a policy into effective implementation.

FIGURE 3: PHASE 1 - POLICY DIALOGUE

Addressing the 'planning issues' **Addressing the 'implementation issue'**

Situation Analysis (Baseline)	**PLANNING of the national network of EmONC facilities**	**MONITORING and QUALITY IMPROVEMENT**

- National Health Plan, SRMNCAH plans/strategies
- EmONC Need Assessments (including 'rapid' Need Assessments)
- Health Management Information System (HMIS)
- Surveys to complement EmONC Assessment: Demographic Health Survey (DHS), Service Availability and Readiness Assessment (SARA), Service Provision Assessment (SPA), etc

PHASE 1 POLICY DIALOGUE (CH 1)

PHASE 2 DESIGN (CH 2)

PHASE 3 IDENTIFICATION OF THE EmONC NETWORK (CH 3)

PHASE 4 DATA COLLECTION (CH 4)

PHASE 5 DATA ANALYSIS (CH 5)

PHASE 6 RESPONSE (CH 6)

Development and Implementation of the National EmONC Plan (as part of the National MNH Plan)

Regular review of the performance of the monitoring and quality improvement (CH 7)

Within the parameters of the maternal health programme, we note that the countries not achieving MDG target 5.a were lacking sufficient funding[6] and an effective development of EmONC facilities. They also lacked the ambition to confer a professional status to midwives in recognition of their ability to manage 87 per cent of the requirements in essential services for sexual, reproductive, maternal and newborn health, once they are trained and their profession regulated according to international standards.[7]

Beyond the aforementioned shortcomings, the implementation of the 'programmatic cycle' (Figure 4) in maternal health also posed problems in a number of countries, particularly in regard to the following:

FIGURE 4: THE PROGRAMMATIC CYCLE

a) Situation Analysis

Solely focusing on EmONC facilities, there have been gaps noted in many countries in the analysis of their strengths and weaknesses and the way in which a national network of referral facilities should be organized. Similarly, it was only late on in the MDG era that countries took into consideration the importance of the link between quality of care and pre-service education curricula meeting the competency-based standards recommended by the International Confederation of Midwives (ICM), the International Federation of Gynaecology and Obstetrics (FIGO) and WHO. Furthermore, robust and detailed maternal health situation analyses were often lacking. Since 2009, only 35 countries have carried out an EmONC Needs Assessment developed by AMDD[v] that enables countries to conduct a proper analysis of the situation, to establish a database on the activities of maternity facilities as a whole and to produce the process indicators detailed in the Monitoring emergency obstetric care handbook (2009). It is essential to note that SARA and SPA surveys only provide data on the availability of health services and not on their utilization. Only (rapid) EmONC Needs Assessments can be used to prepare the phase 3 of the identification of the national EmONC network.

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v   Available on: https://www.mailman.columbia.edu/research/averting-maternal-death-and disability-amdd/ toolkit

b) Planning

There has often been a disparity between the aims of the national MNH programme and the human and financial resources actually allocated to it. This is explored in more detail in Chapters 2 and 3, with the example of the planning issue encountered in many countries for identifying the required number of EmONC health facilities.

c) Implementation and monitoring

Due to a cumbersome, slow and unreliable Health Management Information System (HMIS) in most of the countries with a high burden of maternal mortality, the implementation of the maternal health programme in these countries has generally not been supported by regular monitoring of the maternal health indicators.

As an example, the Countdown to 2015-Maternal, Newborn & Child Survival responsible for the global monitoring of MDGs 4 and 5 has not been able to monitor the progress of EmONC indicators in the 75 countries with a high burden of maternal mortality, particularly in relation to availability of EmONC services. Furthermore, in its 2013 annual report on MNH services, UNFPA's MHTF noted that most of the countries with the highest MMR are not able to annually document the number of maternity facilities offering EmONC services, nor what proportion of the staff working in these facilities are qualified in obstetric care.[vi] This inability to regularly measure key indicators on EmONC is still an issue in many countries with a high burden of maternal and newborn mortality and morbidity and has hampered the efficient and reactive implementation of the MNH programmes.

d) Evaluation

AMDD recommends carrying out an EmONC Needs Assessment at the end of each programmatic cycle (every three to five years, depending on the country). However, since these assessments were introduced in the early 2000s, only two countries have managed to carry out these assessments at five and 10 year intervals respectively. A few others have collected information with another type of assessment – generally the Service Availability and Readiness Assessment (SARA)[vi]. However, unlike the EmONC Needs Assessment, SARA is usually based on a sample of health facilities. The absence of regular EmONC Needs Assessments has made evidence-based evaluations of the MNH programme difficult at the end of each programmatic cycle.

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vi   Available on: https://www.who.int/healthinfo/systems/sara_introduction/en/

In summary, despite its importance in reducing maternal and newborn mortality, the process of setting up a national network of referral maternity facilities that can offer quality obstetric and newborn care, as well as manage emergency situations, has not been given due attention over the last decade.

2. Advocacy principles for developing a national network of referral maternity facilities

Evidence-based analysis of the maternal and newborn health situation should drive the discussion in countries between the Ministry of Health, technical and financial partners and civil society, as well as, if required, prompt a review of the existing strategies.

It is worth noting that certain periods are more favorable for advocating for the development of a national network of EmONC facilities: for example, when new MMR estimates are published, at the end of a national programmatic cycle, or the end of global programmatic period, such as the MDGs in 2015. The most recurrent opportunity for such advocacy is at the national workshop that generally rounds off and validates the conclusions and recommendations emerging from an EmONC Assessment. This survey (or its shortened version developed by UNFPA West and Central Africa Regional Office – UNFPA WCARO)[vii] implemented by the Ministry of Health is the only survey that provides the information essential for initiating a robust development and monitoring process for the network of EmONC facilities. This manual therefore recommends that countries use this type of survey, in order to have a complete database that includes every maternity facility. The survey methodology established by AMDD (which is also adopted in the shortened version) also ensures good data quality, which provides a solid basis for analysing the information collected.

However, regardless of the circumstances that lead to discussions on the development of EmONC facilities between partners and the Ministry of Health, the results from analysing the situation vary little between countries. Most of the EmONC Needs Assessments highlight the following points:

a) There are many maternity facilities and planned/designated EmONC facilities (cf. definitions in Table 1), but the number of functioning EmONC facilities remains well below the minimum recommended by international standards of five per 500,000 population;

TABLE 1: NETWORK OF EMONC FACILITIES - KEY DEFINITIONS

Designated/planned EmONC health facility	Functioning EmONC health facility	Potential EmONC health facility
Health facility designated by the Ministry of Health to be part of the national network of EmONC facilities in the current (or next - in the short term) programmatic cycle. A designated EmONC health facility can be functioning or not functioning. The objective for the current programmatic cycle is to have all designated EmONC facilities functioning.	Designated EmONC facility providing services 24h/7d and for which all signal functions have been performed over the last 3 months of the data collection.	Health facility conducting deliveries with the potential to become an EmONC facility in a future programmatic cycle (in the medium/long term).
Other health facilities with deliveries: health facilities conducting normal deliveries but that are not expected to become an EmONC facility		

b) The development of BEmONC facilities poses the most challenges;

c) The EmONC indicators measured show low met need for EmONC (well below 50 per cent coverage). They also show a cesarean section rate below 5 per cent, high mortality due to direct obstetric causes and extremely high perinatal mortality;

d) There is a significant lack of staff qualified in CEmONC (obstetricians and anaesthetists) and BEmONC (midwives);

e) There is insufficient expertise in EmONC across all levels of qualified staff;

f) There are significant stock outs in essential MNH supplies that compromise the running of obstetric and newborn services;

g) Lastly, as previously mentioned, the Health Management Information System (HMIS) does not allow for thorough and regular monitoring of the development of EmONC facilities.

In most of the countries with a high burden of maternal and newborn mortality, some if not all of these observations are present and should be exemplified with national data. Based on this analysis, the Ministry of Health and partners should discuss the approach proposed below, which is established on three recommended interventions, to support the development of an EmONC network and the improvement of quality of care:

2.1. Define a national network of EmONC facilities

This intervention is justified primarily by the analysis of 15 EmONC Assessments carried

out over the last 10 years, which has highlighted the situation outlined in Figure 5[viii]. It shows the challenges related to planning and implementing the development of a national network of EmONC facilities. Similar observations were made in the countries supported by UNFPA's Maternal and Newborn Health Thematic Fund (MHTF).

FIGURE 5: EmONC SITUATION IN COUNTRIES WITH A HIGH BURDEN OF MATERNAL AND NEWBORN MORTALITY
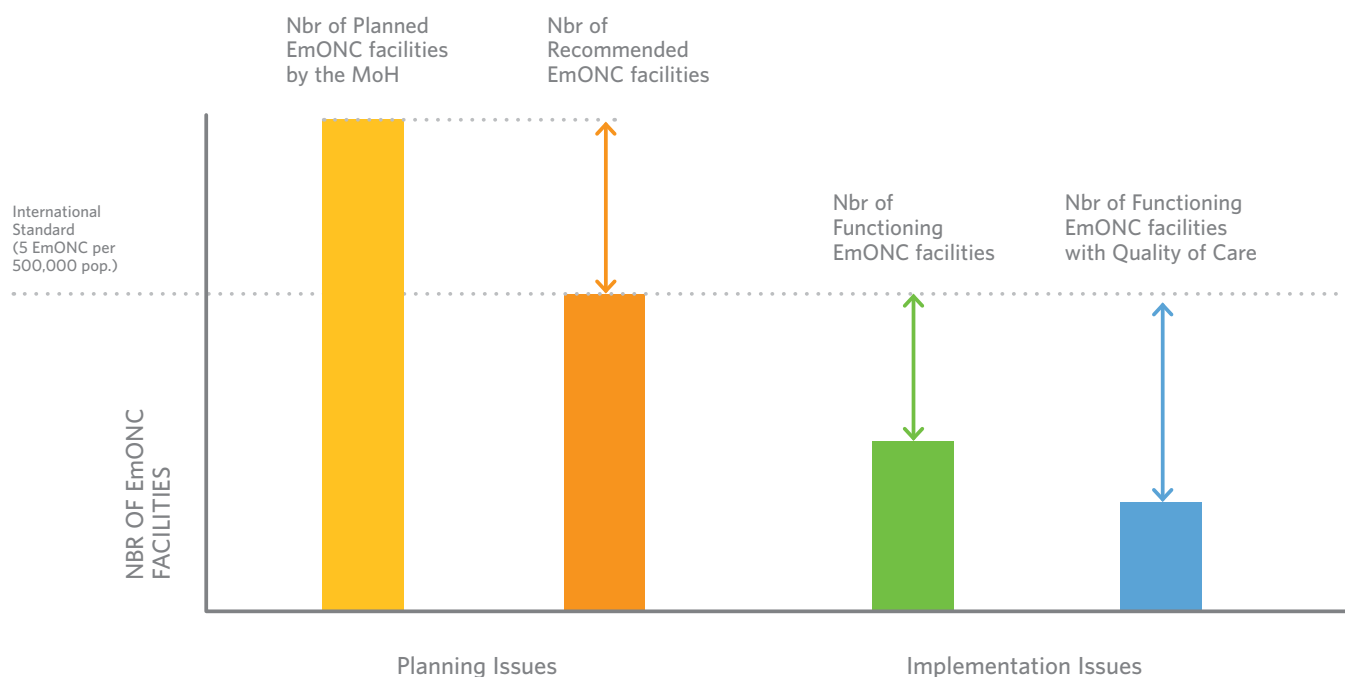
Source: Adapted from 2016 unpublished graph by Lynn Freedman (AMDD, Columbia University) and Patricia Bailey (FHI360) based on EmONC Needs Assessments of 15 countries.

In general, in countries with a high burden of maternal mortality, the number of health facilities planned or designated to become functioning EmONC health facilities where qualified staff offer 24h/7d EmONC services (yellow bar) is two to four times the recommended international standard (orange bar) of five EmONC facilities, including at least one CEmONC, per 500,000[2] population. In countries with limited resources, this planning challenge leads to implementation challenges because it drives the available limited resources (such as equipment, infrastructure and in particular human resources) to be distributed too widely; it also requires increased maintenance and supervision costs. The EmONC facilities that are

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viii   Adapted from 2016 unpublished graph by Lynn Freedman, Averting Maternal Death and Disability, Columbia University, New York, and Patricia Bailey (FHI) (based on EmONC Needs Assessments of 15 countries)

actually functioning are therefore often very limited in number (green bar). They represent on average only 10 to 30 per cent of the international standard. This is a significant obstacle in accelerating the annual reduction of maternal and newborn mortality, which is needed to achieve SDG targets 3.1 and 3.2. Last but not least, it is important to realize that a functioning EmONC facility is not necessarily a guarantee of quality of care. It is only a first required step toward quality of care (blue bar). This issue is further developed in Chapter 6, when the improvement of quality of care becomes the core subject of the suggested approach, once the availability of staff, equipment and commodities has been resolved.

Populated with national data, this figure can serve as a key resource when it comes to advocating for the development of an EmONC network with the Ministry of Health. It helps launch a prioritization (identification) process for finding the best compromise between meeting the need for maximizing the coverage of the population accessing EmONC facilities within a certain travel time (typically 2 hours being the maximum average time between onset of untreated severe postpartum haemorrhage - a leading cause of maternal death- and death[58,59]) and allocating sufficient resources to each EmONC facility to ensure quality services 24h/7d. This process consists of identifying a national network of designated EmONC facilities that can, after one or two programmatic cycles, form a network of functioning EmONC facilities.

There is generally a significant geographical dimension to the process of prioritizing EmONC facilities, since the network of designated EmONC facilities should, in theory, optimize the population's physical access to EmONC services. Where possible, UNFPA recommends using a Geographic Information System - and a software to model physically accessibility to health services (AccessMod - detailed in the second part of this document – Technical Sheet no. 3) to support the prioritization process, especially to help create an analysis combining both physical access to EmONC facilities (for example within 2 hours' journey time) and population catchments of health facilities.

2.2. Establish a regular data-collection and data-analysis system in the EmONC facilities, supported by the qualified staff in each facility

As with any programme, implementing the maternal and newborn health programme requires regular monitoring and rapid feedback of information at all levels of the health system. This allows strategies for improving the availability and quality of care to be regularly adjusted. As such, this programme cannot rely solely on surveys carried out every three to five years or even annually. It requires a process to be set up whereby information is regularly collected (usually quarterly) and analysed (usually twice a year). Such a process

should depend on the skilled staff working in the maternity facilities, as they are best placed to collect, analyze and use data within a short time frame. This manual describes the relevant steps and implementation tools required for monitoring the national network of EmONC facilities and for implementing quality of care improvements.

2.3. Make staff at health facilities aware of their responsibilities and task them with improving the quality of care at the local level ("bottom-up" approach)

Most health systems are based on a hierarchical model whereby the peripheral level, particularly health facilities, generally has little decision-making autonomy. As a result, problems identified by health facilities are often handled by the district, the region or even at the national level. This increases the risk of bottlenecks as such a system does not rely enough on the staff in the maternity facilities, who often become demotivated as a result. In contrast, a health system that encourages autonomy among teams of health-care professionals within health facilities creates huge capacity and opportunities for innovation, motivates staff and helps the system to run more efficiently.

This "bottom-up" approach should be used to manage the monitoring of obstetric and newborn care. The focus on data aims to encourage staff to identify and implement improvements for quality of care and to better organize health services. As detailed in Chapter 6, the virtuous quality of care cycles created based on the monitoring of key SRH/MNH information should be supported, in their initial stages, by a robust "implementation support team" (complementing the supportive supervision) to assist with start-up of the monitoring and quality improvement (cf. Technical Sheet 7). This support is a strong recommendation from the field of implementation science, and intended to provide staff with a system for constantly researching the best ways of achieving their objectives. This manual aims to leverage the numerous learnings from this science to apply them to the field of SRH/MNH in countries with high burden of maternal and newborn mortality and morbidity.

Once the Ministry of Health has endorsed these three interventions, the subsequent step of developing a national network of EmONC facilities is to ensure that actors in the health system – particularly those working in the referral maternity facilities – also endorse them. This is achieved by designing a national process to develop the network of EmONC facilities (cf. Chapter 2) which should be incorporated into the 'maternal and newborn health' chapter of the national health strategy and the annual plans of the Ministry of Health (and other ministries concerned).

CHAPTER 2

Designing a national network of referral maternity facilities

FIGURE 6: PHASE 2 - DESIGN

Addressing the 'planning issues'

Addressing the 'implementation issue'

Situation Analysis (Baseline)

PLANNING of the national network of EmONC facilities

MONITORING and QUALITY IMPROVEMENT

- National Health Plan, SRMNCAH plans/strategies

- EmONC Need Assessments (including 'rapid' Need Assessments)

- Health Management Information System (HMIS)

- Surveys to complement EmONC Assessment: Demographic Health Survey (DHS), Service Availability and Readiness Assessment (SARA), Service Provision Assessment (SPA), etc

PHASE 1
POLICY DIALOGUE
(CH 1)

PHASE 2
DESIGN
(CH 2)

PHASE 3
IDENTIFICATION OF THE EmONC NETWORK
(CH 3)

PHASE 5
DATA ANALYSIS
(CH 5)

PHASE 4
DATA COLLECTION
(CH 4)

PHASE 6
RESPONSE
(CH 6)

Development and Implementation of the National EmONC Plan
(as part of the National MNH Plan)

Regular review of the performance of the monitoring and quality improvement (CH 7)

1. Objectives of designing a national network of referral maternity facilities

The successful implementation of a national network of EmONC facilities requires collaboration among health-care staff, Ministry of Health managers and their partners. The first objective of the design phase is to help the Ministry of Health's authorities establish a national consensus on the need to improve the network of EmONC facilities and the way to do it. The second objective is to define a process for developing this network and for measuring the capacity of the health system – specifically the MNH programme – to effect the planned changes for improving availability and quality of care.

One approach that has been successfully adopted in countries implementing the process proposed in this manual, particularly in Benin, Burundi, Chad, Guinea, Madagascar, Senegal, Sudan, and Togo, is to hold a national workshop on how to develop the national network of EmONC facilities. This workshop should outline the steps for implementing the process and define by consensus the needed tools (e.g. data collection tools). Another output of the workshop is to form a national committee as well as sub-national (eg. regional) committees which, with support from technical and financial partners, should jointly ensure the development of the EmONC network and its monitoring and improvement.

Finally, the national workshop is an opportunity to (re)define the mission, role and duties of a BEMONC facility in the health system as well as to describe in a reference document the national standard for such facility in terms of infrastructure, equipment, human resources, and organization arrangements.

2. Principles for designing a national network of EmONC facilities

2.1. Limit the number of EmONC facilities for ensuring quality care 24h/7d

As seen in Chapter 1, the number of government-planned/designated EmONC facilities is well above international standards in most countries with a high burden of maternal and newborn mortality and morbidity. This means that there are often insufficient resources dedicated to each designated EmONC facility, which makes it difficult to establish a functioning EmONC network, and particularly functioning BEmONC facilities as detailed in Technical Sheet no. 1. UNFPA therefore recommends limiting the number of designated EmONC facilities in order to strategically deploy the scarce resources available (eg. skilled birth attendants) and ensure that the EmONC network provides quality MNH and broader SRH care. As illustrated by Figure 7, midwives who are educated and regulated to international standards can provide comprehensive sexual and reproductive health information and services – including family planning, antenatal care, safe normal deliveries

and basic EmONC, essential newborn care, prevention of sexually transmitted infections and transmission of HIV from mother to child, prevention of fistula and other morbidities, and prevention of female genital mutilation or cutting (FGM/C).

FIGURE 7: THE SCOPE OF WORK OF MIDWIVES

provide sexual and reproductive health services and information to young people

main caregivers for pregnant women

contraception and family planning services

manage deliveries (including BEmONC and decision to refer or call additional expertise)

promote health in communities

provide sexual and reproductive health information and services
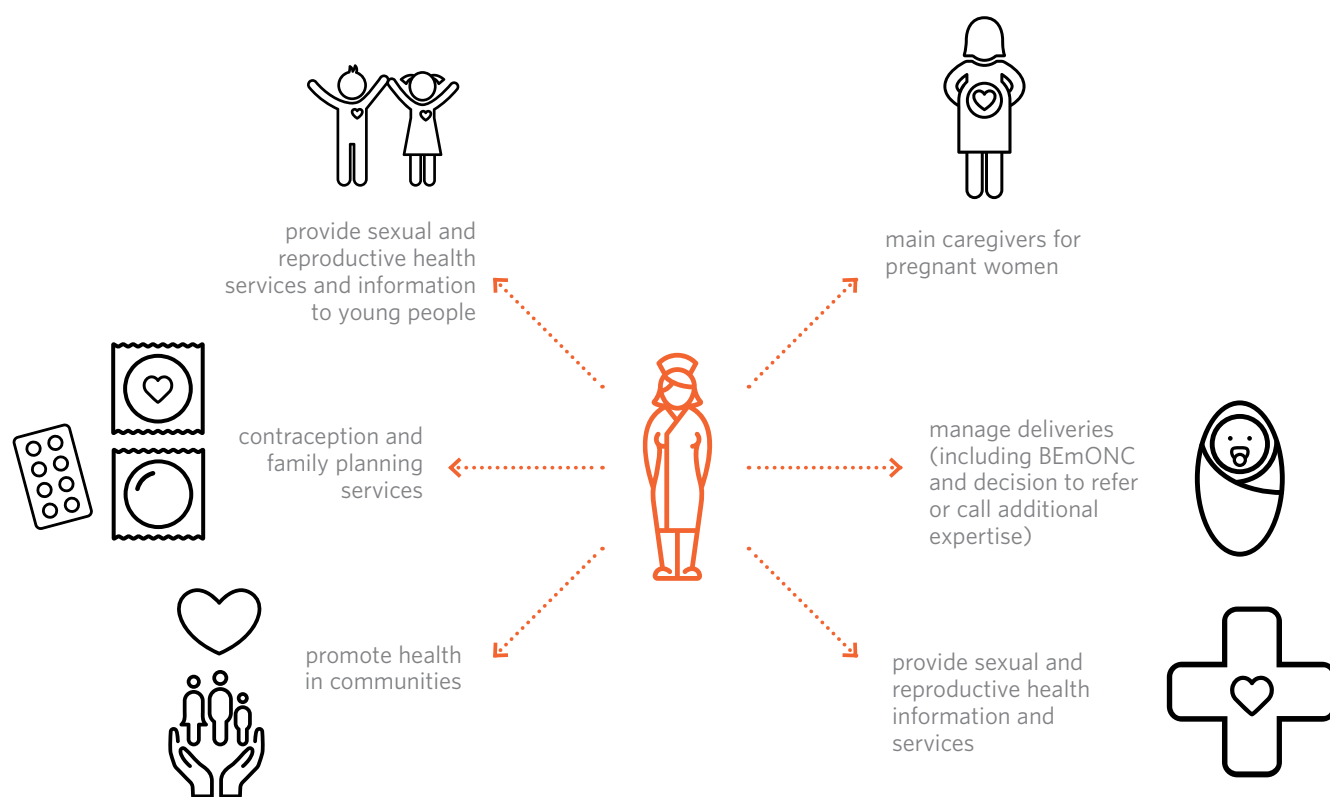
VISION - MIDWIVES NEED TO:

Provide integrated SRH services which are respectful and patient centric

Manage deliveries and decide when to refer or call additional expertise (eg. obstetrician-gynecologist, doctor)

Manage basic EmONC (7 signal functions)

UNFPA recommends that midwives manage BEmONC health facilities, working as a team to administer effective care during childbirth and treat basic complications 24h/7d.

The number of midwives forming a BEmONC team should be determined by the obstetric duties of the maternity facility, and based on national standards.[ix] Given the current availability of human resources in countries with a high burden of maternal mortality, UNFPA recommends a minimum of three midwives (ideally four as defined in Benin) in each designated EmONC facility to guarantee the availability of services 24h/7. This number has to increase according to obstetric duties based on nationally defined norms (e.g. one midwife per 20 additional monthly births in Togo, and one midwife per 30 additional monthly births in Burundi, Guinea, Madagascar, Senegal, and Sudan) and associated missions and responsibilities of midwives (e.g. more midwives in the case of community-based interventions). The maternity unit manager should also emerge from this team of midwives.

The prioritization process that will serve to identify the limited number of planned EmONC facilities, and the related national EmONC map, is detailed in Chapter 3.

2.2. Produce and analyse regular, reliable, relevant and immediately usable information

In most high burden countries, the maternal health programme cannot only rely on the HMIS to produce the information that is needed to manage the network of EmONC facilities, as this system is often designed solely for the national strategic level. In addition, the HMIS is slow and unreliable in many high-burden maternal mortality countries, collecting a limited number of indicators on maternal health at irregular intervals, which hinders and delays analysis and creates challenges for programme teams.

A modern and effective HMIS should instead envisage more reactive, integrated information subsystems for programme monitoring.[x] The District Health Information Software 2 (DHIS 2) has been implemented in most countries and is facilitating progress towards this "integrated multi-system" vision by enabling the HMIS to manage a larger quantity of information and allowing more data to be collected regularly (e.g. monthly) in health facility reports. Based on a programme management logic, the EmONC facilities information subsystem/monitoring is designed to limit data collection to only the essential

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ix   At present, WHO has not proposed an international standard for this. In 2019, the International federation of Gynecology and Obstetrics (FIGO) published a statement recommending at least four to six midwives in a BEmONC health facility with 1000 births per year. The statement if available on: https://obgyn.onlinelibrary. wiley.com/doi/full/10.1002/ijgo.12815.

x   To use an analogy, the HMIS is similar to a large flotilla; it takes time to get everyone to reach an agreement about changing course. However, programme monitoring is like a small patrol boat that separates from this flotilla on a scouting mission, and can easily change course depending on the circumstances and requirements.

programmatic information and to be done through the HMIS. The information collected may vary over time, depending on programme priorities. The limited amount of collected information should be used by health facility staff and district and regional managers, as well as by the national Department of Health. Involving staff and managers across all levels of the health system in data analysis is key to making them aware of their responsibilities. While the vision is to collect the EmONC monitoring data through HMIS/DHIS2, the proactive collection of data by regional/district 'support teams'[xi] when visiting EmONC facilities, can serve for a defined period of time as a quality control for the HMIS. For example, in Burundi, Guinea, and Togo, the MNH data is still collected by the regional support teams during their quarterly visit of EmONC facilities, in addition of the monitoring data collected by the district/health facility staff and included in HMIS/DHIS2. The Ministry of Health acknowledged the added value of this monitoring, which supplements its HMIS/DHIS2, facilitates the check of data quality, and aims to improve the management of the national network of EmONC facilities.

In order to adhere to the principle of collecting a limited amount of data in the programme information subsystems/monitoring, the data-collection tool for EmONC monitoring must "not be longer than a page."

Ideally, this data-collection tool should be developed with the involvement of all participants at the national workshop designing the EmONC approach, as was the case in Benin, Burundi, Chad, Côte d'Ivoire, Guinea, Madagascar, Senegal, and Sudan. Alternatively (as was the case in Haiti and Togo), the task can be entrusted to a technical committee. In any event, the national tool should be tested, then approved in a plenary session including national and sub-national stakeholders. It is also important that the tool is developed in conjunction with the regional/district managers who will be responsible for collecting the data and it should reflect the key elements of obstetric and newborn care in maternity facilities, such as routine deliveries, obstetric complications and reproductive health services (e.g. family planning services).

Each country should develop its own national data-collection tool, based on the issues it wants to monitor regularly. The Ministry of Health can develop its data-collection tool based on the ones that have already been developed in other countries and from the reference data-collection tool proposed in this manual (cf. Technical Sheet no. 4), which is based on work carried out in Haiti, Madagascar, and Togo. The data-collection tool must include BEmONC and CEmONC signal functions and generally should document:

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xi   The roles, responsibilities, and composition of the regional/district 'support teams' are further described in Chapter 6.

- the main EmONC indicators on availability, use and quality of care;

- the key staff for childbirth: obstetricians, midwives, anaesthetists;

- supplies: essential medicines for MNH that are not always available (e.g. magnesium sulphate) and equipment (e.g. vacuum extractor, newborn resuscitation equipment);

- data required for EmONC indicator measurements: number of births, number of obstetric complications;

- possible additional SRH/MNH data: postnatal consultations, family planning services, etc.;

- monitoring of maternal and newborn deaths: a valuable addition that came out of the national workshop in Madagascar.

As mentioned, the EmONC data collection tool should be integrated in the HMIS/DHIS2. Other information on the maternal health programme that is not specifically gathered by the EmONC data-collection tool should be collected by other HMIS modules and/or broader HIS data-collection tools.

2.3 Adopt a national approach

The monitoring of MNH services should be implemented in all EmONC facilities that form the national EmONC network. The process of determining this network is detailed in Chapter 3.

This monitoring should never be initiated and tested as a pilot in one or a few regions/ provinces. It should be carried out on a national scale from the outset. The localized approaches observed in certain countries, which are often associated with specific funding from one financial partner, generally do not manage to scale up and to achieve national coverage. A large confederation or territory (for example in the case of countries like Bangladesh, the Democratic Republic of the Congo, India, or Nigeria) can be an exception to this rule - in this case, the process could be implemented at the level which constitutes an autonomous political entity. However, in countries as large as Madagascar , Sudan, and Tchad, advocacy with the Ministry of Health and with development partners have established a national-scale process from the very beginning. In the eight countries that have implemented the EmONC network approach, the national scale of the process was seen as strengthening the leadership of the ministry of health and facilitating the coordination between development partners.

Once the operational capacity of the EmONC facilities is strengthened, the monitoring of sexual and reproductive health information should be extended to their entire catchment area in coordination with the health district(s) concerned.

2.4 Encourage staff decision-making in EmONC maternity facilities

Central to the approach suggested in this manual is the effective involvement of maternity facility staff in all phases of the process.

By pairing a facility driven process of regular data collection, analysis, and response to gaps with coaching by a regional/district support team, the suggested approach has triggered improvements in quality of care in the countries in which it has been implemented (cf. Chapter 6 for the case study of Togo). Through their regular visits in the health facilities, the support teams have improved the quality of data available in health facility registers and records. Quality improvement driven by local levels ("bottom-up" approach) is further pursued through analysis and discussion of the indicators between the health facility staff and these support teams (their specific role and composition are described in Chapter 6 and in Technical Sheet #6) .

As of 2016, ideas and evidence collected globally from the field of "implementation science", particularly from experiences and lessons learned from United States based public administrations and businesses, have been to a certain extent incorporated into the thinking behind the development of EmONC facilities described in this manual and have strengthened this "bottom-up" dynamic. These experiences validate the importance of certain mindsets, such as the right to make mistakes, and encourage evidence-based choices in, for example, continuous or in-service training.

In summary, staff in health facilities should take back ownership of data collection, data analysis and data usage to provide an organized response to improve the availability and quality of maternal and newborn care. This renewed ownership is facilitated by the proactive and regular assistance of a support team set up at the regional/district level. These regional/district teams should themselves be supported by a national team comprising the Ministry of Health and its technical and financial partners. Once this renewed ownership has taken effect across the various levels of the health system, this support should gradually be integrated into formative supervision or coaching (cf. Technical Sheet #7 for a description of the supervision, supportive supervision, support teams, and mentorship approaches) .

In this context, a cooperative approach at all levels of the health system is vital for the credibility, the sustainability of the EmONC monitoring process and for ensuring compliance

with it among health facility staff. As it is similar to the open, trusted process encouraged in the context of maternal death reviews, without having to manage the tragic circumstances in which these are carried out, it is advisable to establish a link with the maternal death surveillance and response programme. At a later stage of implementation, the monitoring can be complemented by an on-site support programme provided by mentors who should reinforce these two approaches – EmONC service monitoring & quality improvement and maternal and perinatal death surveillance & response – in order to further improve the quality of obstetric and newborn care and the organization of services.

3. Approach for implementing the design phase (detailed in Chapter 8) – the national workshop to analyse the situation and design the national network of referral maternity facilities

The national workshop for developing the network of EmONC facilities is generally held over four days and brings together national managers, maternal and reproductive health partners/stakeholders, regional directors and regional/district managers of the MNH programme. It is suggested to be structured in three parts:

- **The first part** consists of a presentation on the EmONC situation in the country (if possible, based on the results from the most recent EmONC Needs Assessment, or its shortened version) and a discussion of the results and the obstacles identified in developing a national network of EmONC facilities. It should emphasize the importance of result indicators, particularly those relating to availability of, access to, and quality of EmONC. This first part is also an opportunity to clarify key concepts such as the EmONC facility network, BEmONC facilities, and referral links between BEmONC and CEmONC facilities. These concepts are defined in Technical Sheets no. 1 and no. 2.

  This part of the workshop generally leads to an increased awareness from participants of the need to improve the functionality of the national EmONC network and of the country capacity to make it happen.

- **The second part** addresses the development of the EmONC facility network, looking at three elements:

  - Coverage of the network: How many health facilities are included in the network compared to the recommended standard of five EmONC facilities per 500,000

population, including at least one CEmONC facility? How are these distributed across the region? Which proportion of the population do they cover? How many are functioning and how are referral links like?

- Service utilization and capacity of the network: What progress has this network of maternity facilities made in terms of provision of childbirth and emergency obstetric care? Which staff carry out these duties?

- Capacity of the HMIS to produce regular information that is useful for managing the maternal and newborn health programme, and particularly its capacity to provide quick responses to the aforementioned questions.

This part of the workshop often leads to the need to better manage the national network of EmONC facilities and the need to make key SRH/MNH information available on a routine basis in order to achieve a functioning network of referral maternity facilities.

- **The third and final part of the workshop** involves participants reaching a consensus to identify objectives for the development of the national network of EmONC facilities, and then milestones for managing its implementation. One of the major difficulties in efficiently managing an EmONC facility network is producing regular data on the activities of EmONC facilities and setting up a response system to address the identified gaps relating to availability and quality of care. Countries with a high MMR that successfully managed to overcome this challenge decided to do the following:

1. Limit the number of EmONC facilities so that teams of skilled healthcare professionals can be assigned to them more easily for provision of care 24h/7d, and health facilities can be better equipped and have better input supplies – this approach also facilitates the monitoring of the availability and quality of care and the implementation of responses to address gaps in availability and quality of care;

2. Establish regular data collection and analysis of data that is reliable, relevant, readily available and usable – in conjunction with the HMIS and/or other existing systems for regular data collection on the health programme;

3. Encourage staff decision-making in maternity facilities to resolve local problems related to the organization of services and quality of care.

Why not ask an obstetrician to carry out this MNH monitoring?

Ideally, there would be an obstetrician on the regional/district support team to address the clinical, technical and analytical aspects of the monitoring and quality of care improvement of EmONC facilities. However, in practice, it is difficult to find an obstetrician available for this type of work in most high burden countries. Establishing an agreement with the national association of gynaecologists and obstetricians could be an option to ensure that an obstetrician supervises the most important CEmONC facilities (university and regional hospitals). However, doctors who can administer EmONC or experienced midwives would generally stand in for obstetricians. Evaluations (carried out by UNFPA in some countries, but not published) show that doctors and midwives are sometimes more effective than obstetricians at providing this type of support, which requires skills beyond clinical expertise, such as management and analysis skills. Thus, it is important to be pragmatic and keep all options open.

Why not monitoring other health facilities that attend to births?

The primary objective of the approach detailed in this manual is to measure progress and address shortcomings in health facilities that are designated to provide EmONC services (BEmONC and CEmONC services). This approach is not aimed at monitoring health facilities that have not the mission to manage obstetric and neonatal complications and are therefore not equipped with the necessary means (in terms of human resources, equipment, range of activities, distance, etc.).

In the initial stages, health facilities that are not included in the EmONC facility network (meaning health facilities that can manage a routine delivery in satisfactory conditions but cannot attend to a referred emergency) are not monitored. These facilities often only manage a few births per month. Furthermore, the cost/benefit ratio of such monitoring covering a large number of health facilities that rarely attend to births would be much too high. These health facilities can be followed with the 'traditional' monthly HMIS reports of the MoH.

However, once the monitoring has been established in the designated EmONC health facilities and is well managed (in terms of both data collection, data analysis and response), the Ministry of Health and its technical and financial partners may decide to monitor other health facilities at the peripheral level of the EmONC network (eg. maternities performing routine deliveries). Such improvement of the availability and quality of care in peripheral metrenities should then be led by the district officers and include the participation of the skilled birth attendants of the EmONC facilities. The financial cost and the cost of human resources associated with this decision should be carefully weighed.

CHAPTER 3

Identifying the national network of EmONC health facilities

FIGURE 8: PHASE 3 - IDENTIFICATION OF THE NETWORK OF EmONC HEALTH FACILITIES

Addressing the 'planning issues'   **Addressing the 'implementation issue'**

Situation Analysis (Baseline)

PLANNING of the national network of EmONC facilities

MONITORING and QUALITY IMPROVEMENT

- National Health Plan, SRMNCAH plans/strategies
- EmONC Need Assessments (including 'rapid' Need Assessments)
- Health Management Information System (HMIS)
- Surveys to complement EmONC Assessment: Demographic Health Survey (DHS), Service Availability and Readiness Assessment (SARA), Service Provision Assessment (SPA), etc

PHASE 1
POLICY DIALOGUE (CH 1)

PHASE 2
DESIGN (CH 2)

PHASE 3
IDENTIFICATION OF THE EmONC NETWORK (CH 3)

GIS/AccessMod

PHASE 5
DATA ANALYSIS (CH 5)

PHASE 4
DATA COLLECTION (CH 4)

PHASE 6
RESPONSE (CH 6)

Development and Implementation of the National EmONC Plan (as part of the National MNH Plan)

Regular review of the performance of the monitoring and quality improvement (CH 7)

1. Prioritization objectives

Over the course of one or two national programmatic cycles, the prioritization phase aims to help countries with a high MMR to identify and develop a network of EmONC facilities

in each region or province, in order to optimize access to good quality EmONC and broader SRH/MNH services. Owing to resource constraints in high-burden countries, this network of referral maternity facilities should meet (as a maximum) the international standard of "five <u>functioning </u>EmONC facilities per 500,000 population, including at least one CEmONC facility". In most countries, the population of districts is much below 500,000 population so that it is easier to review the EmONC network at the first subnational level (regional or provincial level). Such level makes it also easier to consider the referral links, particularly between BEmONC and CEmONC facilities.

The prioritization process results in a national network and map of designated EmONC facilities to:

- ensure that the location of the selected health facilities provides the best possible population coverage in terms of physical access;
- undertake better planning and distribution of resources (human resources, supplies, etc.), that are often limited, to designated EmONC facilities;
- identify links between BEmONC and CEmONC facilities and between BEmONC and peripheral facilities;
- facilitate monitoring and supervision of the network of referral maternity facilities;
- improve quality of care in the maternity facilities.

2. Principles and rationale for prioritizing health facilities in the EmONC network

The diagram included in the introduction of this manual (cf. Figure 9 for easy reference) highlights the scale of the problem posed by poor planning for the development of the national network of EmONC facilities, particularly BEmONC facilities

FIGURE 9: EmONC SITUATION IN COUNTRIES WITH A HIGH BURDEN OF MATERNAL AND NEWBORN MORTALITY
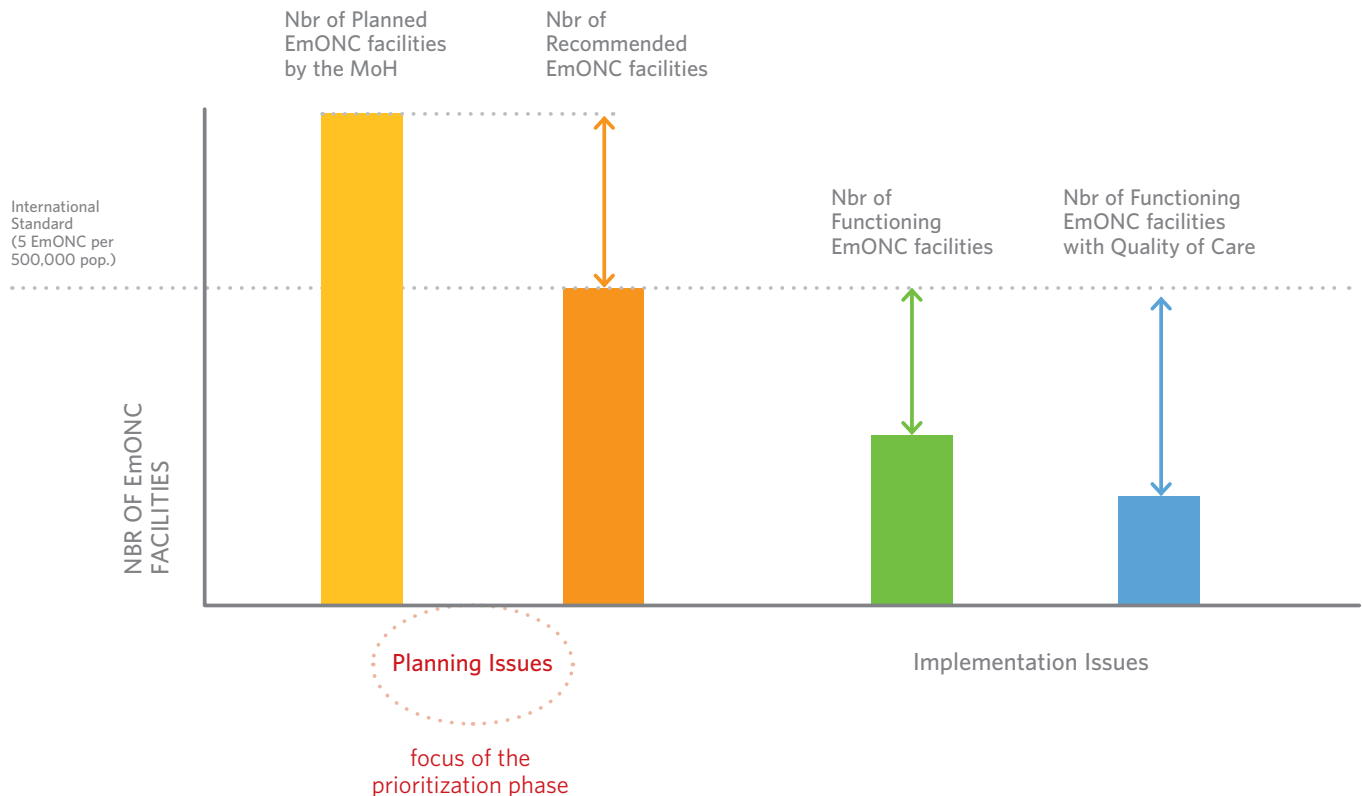
Source: Adapted from 2016 unpublished graph by Lynn Freedman (AMDD, Columbia University) and Patricia Bailey (FHI360) based on EmONC Needs Assessments of 15 countries.

As previously mentioned, in the majority of countries with a high MMR, the excessive number of maternity facilities chosen to become EmONC facilities (yellow bar) compared with the number of EmONC facilities recommended (orange bar) reflects a 'planning issue' which has been a significant driver for the low number of functioning EmONC facilities (green bar). The lack of regular monitoring and response mechanisms to improve the availability and quality of care (blue bar) reflect an 'implementation issue'.

These planning and implementation issues are encountered in many high burden countries. For example, among the 32 countries supported by the MHTF (accounting for about 70 percent of maternal deaths globally), in 2018, only Timor-Leste[9] had achieved the target of 100 percent of functioning EmONC facilities according to the international standard (5 EmONC facilities per 500,000 population with at least one CEmONC) and half of MHTF-supported countries are not yet able to document the EmONC availability indicator - cf. Figure 10.

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FIGURE 10: PROPORTION OF FUNCTIONING EMERGENCY OBSTETRIC AND NEWBORN CARE (EmONC) FACILITIES COMPARED TO THE STANDARD (5 EmONC PER 500 000 POPULATION) IN 32 COUNTRIES WITH A HIGH BURDEN OF MATERNAL MORTALITY - 2018[10]

EmONC Availability (100% = 5 EmONC health facilities per 500,00 population)
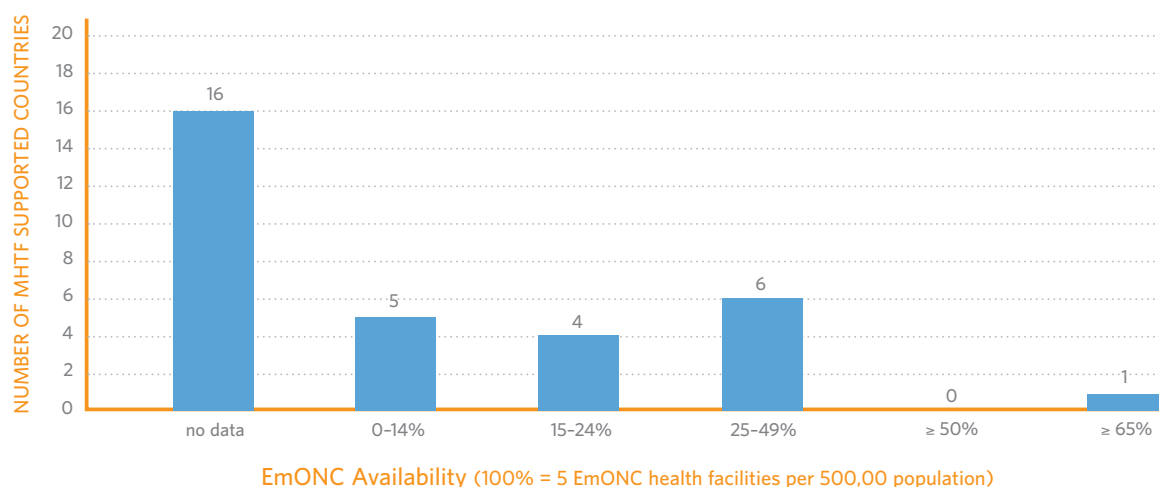
Among these 32 countries, only nine have designated, in light of their resources, a realistic number of health facilities to constitute the national network of EmONC health facilities. The lesson to be learned from these data is that having too many health facilities in a country hinders the creation of a network of functioning EmONC facilities. As mentioned previously, this is due to the scarce resources available being spread too thinly across many health facilities, especially as EmONC facilities aim to respond to emergency situations and have therefore high operational costs and require strong management and monitoring practices. There are numerous examples in countries with high burden of maternal mortality of poorly equipped buildings where a single nurse or auxiliary midwife does what she/he can with the few resources available.

Such anarchic development of health facilities always ultimately affects the quality of care provided. These issues of quality of care and cost effectiveness are also debated in developed countries.[11]

The prioritization phase of EmONC facilities aims to address the 'planning issues' (cf. Figure 9): identifying for the next one or two programmatic cycle(s) a national network of EmONC facilities of maximum 5 EmONC facilities per 500 000 inhabitants that optimises geographic access within a reasonable travel time (eg. 2 hours maximum). The success of the EmONC development process, which aims to set-up a network of EmoNC facilities able to provide quality MNH care including EmONC, rests on the success of this challenging task.

3. Approach for implementing the prioritization phase (detailed in Chapter 8)

3.1. Regional prioritization workshops and prioritization criteria

This EmONC prioritization approach was first implemented in Burundi using the software AccessMod (cf. Technical sheet #3) and a free Geographic Information System (GIS)[xii]. A similar approach has then been successfully replicated in nine other countries (Benin, Chad, Cote d'Ivoire, Guinea, Madagascar, Republic of the Congo, Senegal, Sudan, Togo).

The Ministry of Health should organize one or more regional prioritization workshops (grouping maximum 4 to 5 regions supported by a national team of GIS experts trained on AccessMod) to identify a <u>referral network</u> of EmONC facilities to become functional during the next programmatic cycle(s). At this stage of the process, the objective is to identify a limited number of referral maternity facilities while ensuring acceptable coverage of the population[xiii]. These facilities need to manage obstetric and newborn emergencies and offer quality, continuous and integrated SRH/MNH care and services that are respectful, patient centric, and adapted to the local culture. They must be accessible in both geographical and financial terms (private for profit health facilities should therefore be excluded from the national EmONC network, except in countries with affordable health insurance schemes).

The selection of EmONC facilities should be based on the following criteria: (1) obstetric activity of the health facility, (2) the population density and the catchment area of the health facility (estimated with the software AccessMod), (3) the capacity to refer to another health facility (the link between BEmONC and CEmONC facilities) within a reasonable travel time (eg. within 2 hours), (4) and the level of infrastructure and available skilled attendants at birth in line with the standards of an EmONC facility (cf. Technical Sheet #2 for the standard of BEmONC facility). In the selection process, the CEmONC facilities and the already functioning EmONC facilities should be included in the national EmONC network.

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xii   QGIS: https://www.qgis.org/en/site/

xiii   We consider an acceptable coverage to be more than 50 per cent of the population covered by the designated EmONC network within two hours' travel time (two hours corresponding to the estimated time between onset of postpartum hemorrhage and death). The aim should be to eventually reach at least 80 percent of the population covered by the designated EmONC network within two hours' travel time. Each country should set its own midterm objectives.

Each prioritization workshop should be documented in a technical report in which the proposed EmONC network for each region or province should be described with maps and indicators. Based on this report, the Ministry of Health should validate the national network of designated EmONC facilities and the related map and use it as a basis for planning at national and sub-national levels (eg. for the national health plan and for operational plans for maternal and newborn health). For accelerating results for improving maternal and newborn health, it is essential that technical and financing partners support the development and strengthening of the national EmONC network and of these strategic and operational plans.

Through the monitoring of the national network of EmONC facilities, progress can be followed on a continuous basis and a dynamic map of access to maternal and newborn health services (and broader SRH) in EmONC health facilities be created to further improve the national network of EmONC facilities and optimize its access and quality of care.

3.2 The value added of using AccessMod in the prioritization of the national EmONC network

The open source software AccessMod (described in technical Sheet #3) drastically changes the approach for planning EmONC services, by allowing to estimate the population that can physically access EmONC. It also facilitates the prioritization by further supporting the rationale of focusing efforts on a limited number of health facilities while keeping a good coverage of the population and by strengthening the objectivity of the selection of health facilities being part of the national EmONC network. In addition, it allows to visualize the EmONC network and related population coverage on maps using GIS, which makes the prioritization workshops very participatory.

Indeed, during these workshops, each region presents its proposed EmONC network to its peers with three maps: (1) a map displaying the proposed EmONC facilities, the maternities outside of the network, and the density of the population; (2) a map displaying the geographic access of the population within one, two, three, or four hours travel time or more of the closest proposed EmONC facility; (3) and a map displaying the catchment areas (generally within 2 hours travel time) of each proposed EmONC health facility - cf. Figure 11. Other examples of these maps are available in Chapter 8.

FIGURE 11: MAP OF THE CATCHMENT AREAS WITHIN 2 HOURS TRAVEL TIME OF DESIGNATED EmONC FACILITIES IN ONE OF THE 18 PROVINCES OF BURUNDI (NGOZI PROVINCE).
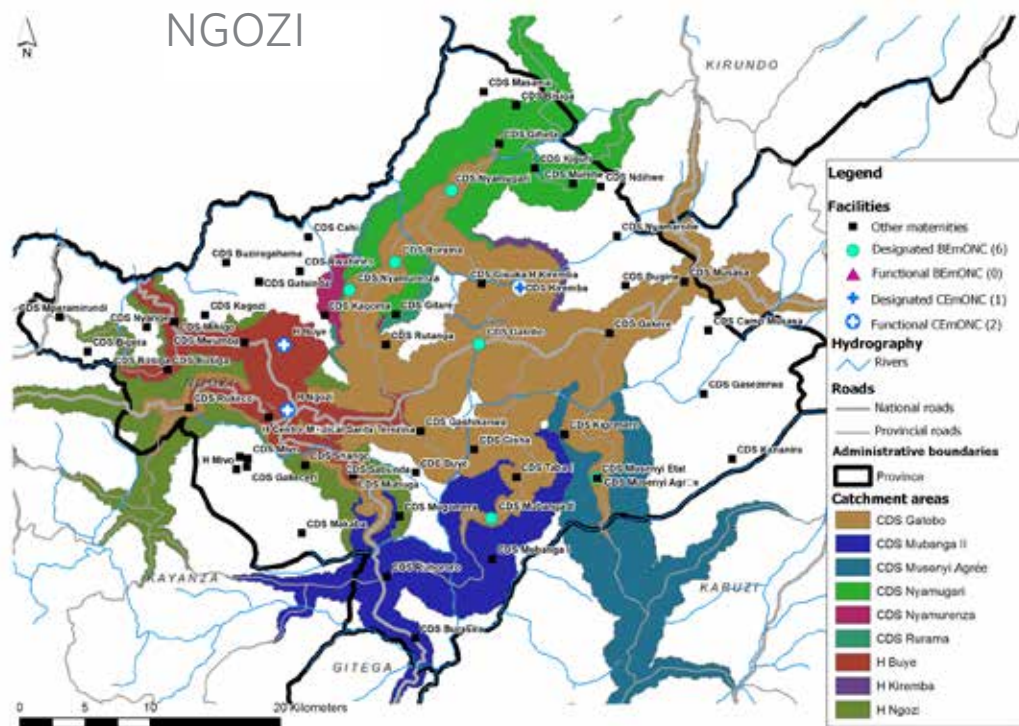
This map clearly shows that the catchment areas of the designated EmONC facilities and the administrative boundaries (at both district and provincial levels) do not coincide. This would also be the case for international boundaries. These findings have practical implications for the implementation of the maternal and newborn health programme in health districts that require context specific responses according to individual circumstances and that should be shared for consideration among all countries.

From the implementation of this prioritization approach in countries, new indicators have emerged which we consider having a strong value for driving implementation. Such indicators are introduced in a publication by the British Medical Journal (BMJ) Global Health[55] and they have been refined by the implementation of the prioritization approach described in this manual in collaboration with the Ministries of Health of Benin, Burundi, Guinea, Madagascar, Sénégal, Sudan, and Togo.

A first proposed new indicator reflects the quality of referral linkages within the EmONC networks:

- **Indicator REF:** proportion of good referral linkages between considered BEmONC health facilities and their closest CEmONC health facility (meaning with available and functioning transportation means, reasonable costs, time to mobilize means for the evacuation and to do the evacuation within two hours). This indicator allows to assess the quality of the referral in the EmONC network by analyzing the physical barriers but also the financial and organizational barriers. It provides important information on the functionality of the EmONC network (cf. Chapter 8). The target is to reach 100% of good referral linkages.

Another indicator helps to monitor the number of designated EmONC health facilities in the EmONC network:

- **Indicator RXEmONC** proportion of designated EmONC health facilities compared to the recommended number of 5 EmONC per 500,000 population - that we propose to consider as a maximum (and not a minimum). The objective is to be below 100%.

Finally, a third proposed new indicator, specifically focuses on the geographic access of the population to EmONC health facilities:

- **Indicator ACC1:** proportion of the population able to access (in theory) an EmONC health facility within a given travel time (according to the transportation means generally used by the population). This indicator can also be used at sub-national level (region/province/department).

In the scope of EmONC development, this indicator can itself be subdivided into three indicators, each reflecting an important aspect of the population covered by EmONC as well as the success of the EmONC prioritization:

- **Indicateur ACC1a:** proportion of the population able to access (in theory) a maternity health facility conducting routine deliveries (eg. more than 20 deliveries per month);

- **Indicateur ACC1b:** proportion of the population able to access (in theory) a designated EmONC facility;

- **Indicateur ACC1c:** proportion of the population able to access (in theory) a functioning EmONC facility.

The population covered by all maternities conducting routine deliveries (ACC1a) has proven to be extremely useful in the prioritization workshops done in countries as it ensures that a minimum package of SRH/MNH services is available and in theory accessible to a large

proportion of the population. The coverage of the population by the designated EmONC network (ACC1b), meaning a limited number of referral health facilities, is of course lower and reflects a theoretical coverage for EmONC coming from a planning exercise (but sets an operational objective). The most important indicator is the population covered by functioning EmONC facilities (ACC1c), which is still low in all the countries with high burden of maternal and newborn mortality.

Combined, these indicators allow to assess the quality of the prioritization as they generally reflect the required balance between focusing available resources on a limited number of EmONC facilities to make them all functioning in the selected programmatic cycle AND the proportion of pregnant women able to access (in theory) to these functioning EmONC facilities (indicator ACC1c). With these indicators, we partially answer some of the relevant questions raised by Gabrysch et al. on a number of EmONC indicators recommended by the United Nations and AMDD (Columbia University).[12] The technical sheet number 5 also provides some reflections and recommendations on these indicators. The reflection should then be further pushed towards measuring the coverage of the population by functioning EmONC health facilities providing quality care.

Overall in the countries that have implemented the approach, the use of AccessMod combined with a programmatic analysis of the health facilities allows to reduce the number of designated EmONC health facilities without much reducing the proportion of the population covered within 2 hours of travel time (cf. Table 2 and Figures 12 &13).

TABLE 2: COMPARISON OF NATIONAL EmONC NETWORK BEFORE AND AFTER PRIORITIZATION IN BURUNDI, SÉNÉGAL AND TOGO
(* within 2 hours of travel time, ** within 1 hour of travel time)

Country	International standard (5 EmONC/ 500,000 population)	National EmONC network before prioritization		National EmONC network after prioritization	
		number of designated EmONC health facilities	coverage of the population	number of designated EmONC health facilities	coverage of the population
Burundi	115	152	72%*	112	68%*
Sénégal	157	173	91%*	142	92%*
Togo	72	109	81%**	67 (under validation by the MoH)	81%**

FIGURE 12: DESIGNATED EmONC HEALTH FACILITIES AND COVERAGE OF THE POPULATION WITHIN 2 HOURS TRAVEL TIME TO THE CLOSEST DESIGNATED EMONC HEALTH FACILITY IN SENEGAL

REFERRAL HEALTH FACILITIES IN 2017
(before prioritization with GIS/AccessMod)

173 designated referral facilities covering
91% of the population within 2 hours travel time
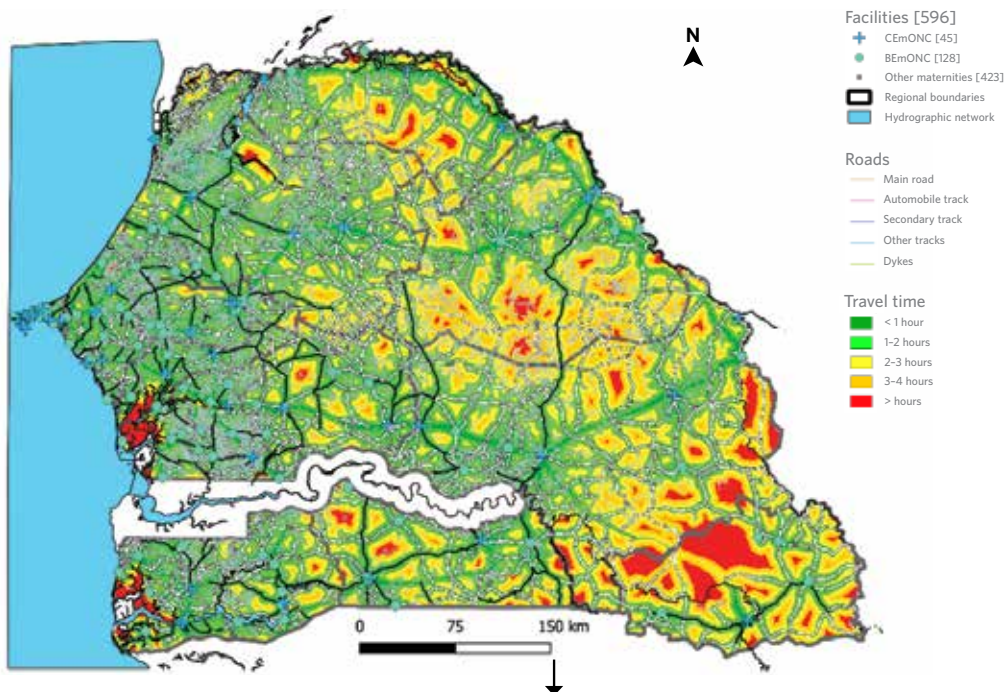
REFERRAL HEALTH FACILITIES IN 2018
(after prioritization with GIS/AccessMod)

142 designated referral facilities covering
92% of the population within 2 hours travel time
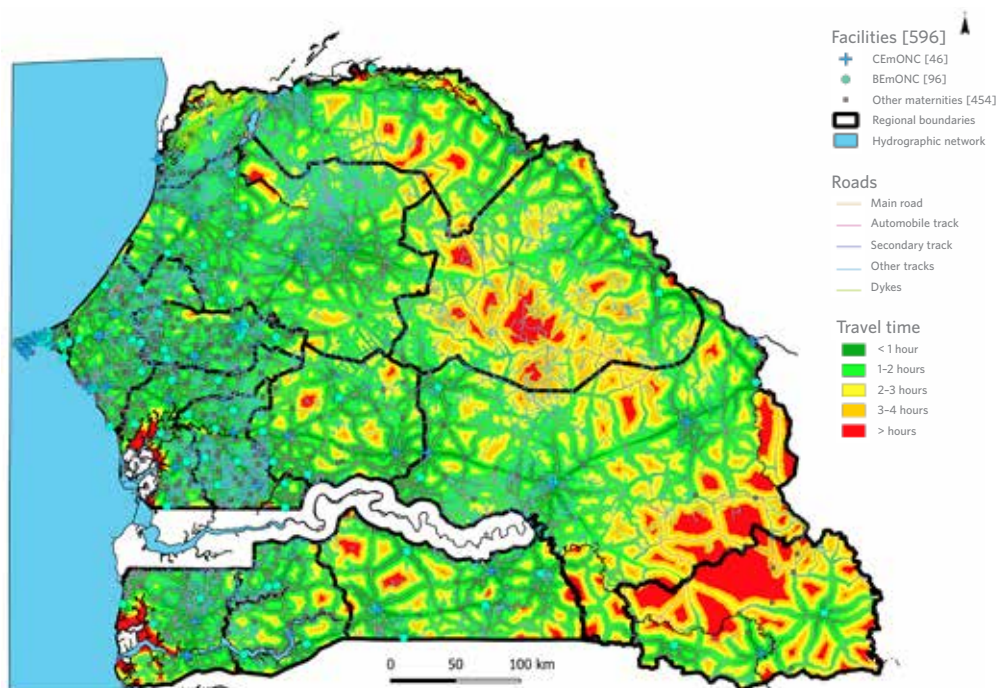
FIGURE 13: DESIGNATED EmONC HEALTH FACILITIES AND COVERAGE OF THE POPULATION WITHIN 1 HOUR TRAVEL TIME TO THE CLOSEST DESIGNATED EmONC HEALTH FACILITY IN TOGO

REFERRAL HEALTH FACILITIES IN 2017
(before prioritization with GIS/AccessMod)
109 designated referral facilities covering 81% of the population within 1 hour travel time

REFERRAL HEALTH FACILITIES IN 2018
(after prioritization with GIS/AccessMod)
67 designated referral facilities covering 81% of the population within 1 hour travel time

Facilities
- Designated CEmONC [20]
- Functional CEmONC [18]
- Designated BEmONC [65]
- Functional BEmONC [7]

Roads
- National roads
- Other roads
- Tracks/paths

Hydrography
- Rivers
- Lakes
- Regional boundaries

Travel time
- < 1 hour
- 1–2 hours
- 2–3 hours
- 3–4 hours
- > hours
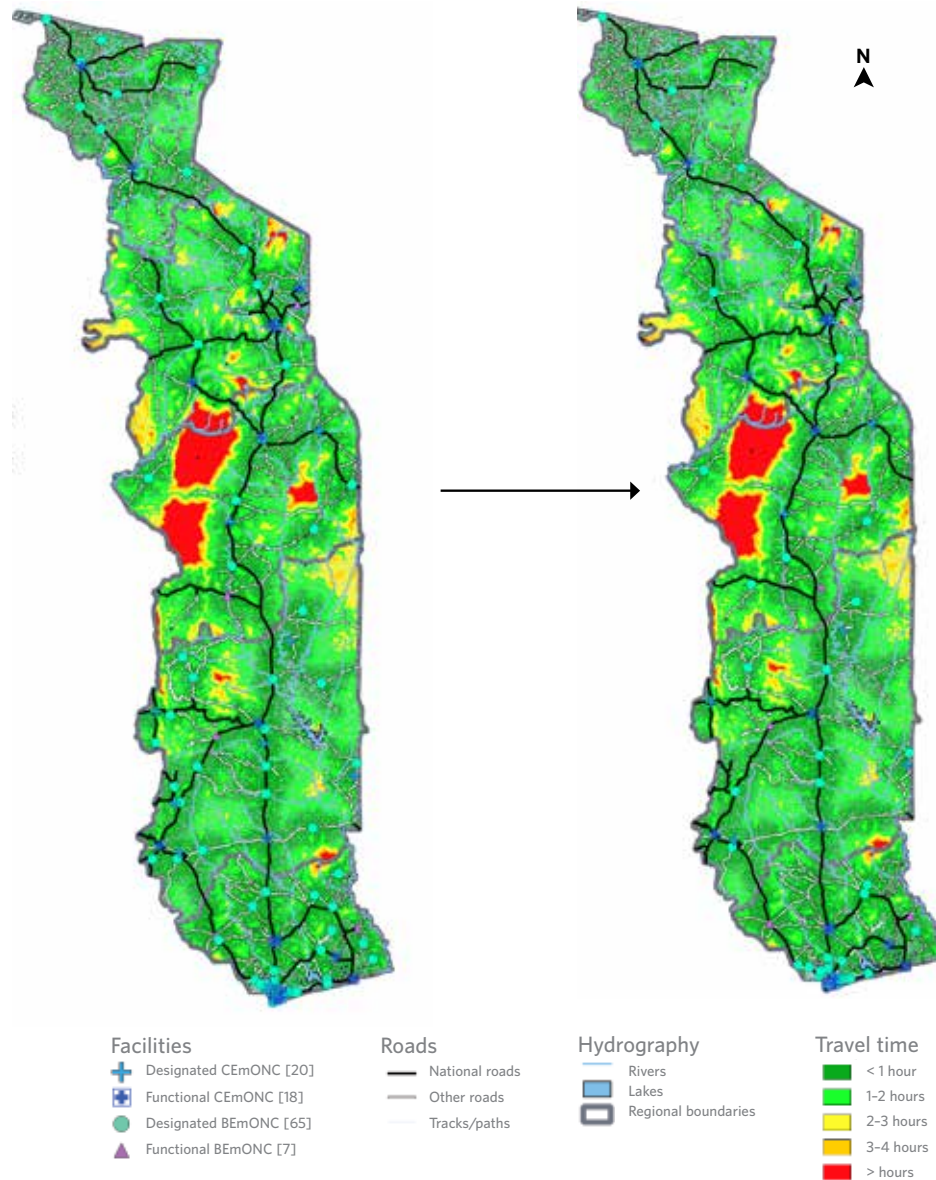
Following the EmONC prioritization, operational plans should be developed and implemented in order to ensure that the coverage of the population by functioning EmONC facilities (ACC1c) equals the coverage of the population by designated EmONC facilities (ACC1b). The reports of the prioritization of EmONC facilities in Burundi[13], Togo[14], and Senegal[15] provide further details on this approach for each regions of the country and at national scale. This approach has been replicated in Benin, Chad, Cote d'Ivoire, Guinea, Madagascar, and Sudan.

This approach also contributes to highlight key multi-sectoral determinants of maternal and newborn health, such as the road infrastructure. Scenarios for improving the coverage of the population by the EmONC network can be driven by three key strategies - which could be combined:

- add an EmONC facility in an area densely populated and not yet covered;

- improve the travel time of population within the catchment areas of EmONC facilities by improving the road network;

- improve access of population to means of transport, particularly to public transport.

The population coverage maps and scenarios produced with AccessMod/GIS are important advocacy and planning tools (cf. Technical Sheet #3) as they model the theoretical coverage of the population by the EmONC network, taking into account the travel barriers (eg. road network, rivers, topography) and local transportation means (eg. pregnant woman carried by walk, motorized vehicle, or a combination of them). Stakeholders can then measure the impact of different improvement scenarios on the population covered by the national EmONC network.

4. Challenges

For health system managers who see each health facility in the health system as a potential EmONC facility, the paradigm shift proposed in this manual may not be easy to adopt. This issue needs to be managed by the high level authorities of the MoH using key elements of this manual. The ownership of the prioritization approach by these authorities should be the focus of the advocacy phase (cf. Chapter 1). In our experience, this approach resonates with the MoH's authorities when they realize that the maternal health indicators are making limited progress and that the network of EmONC facilities is not developing as planned. They are then on the lookout for innovative solutions and are open to a change in strategy. The use of GIS and AccessMod helps this advocacy significantly, as it predicts the theoretical coverage of the population by the three networks of health facilities (all maternities, designated EmONC network, and functioning EmONC network). The suggestion of adopting a phased approach by focusing on a limited number of designated EmONC facilities to be made functional in the next programmatic cycle(s) and to keep other potential EmONC facilities for later programmatic cycle(s) has also been convincing for the ministry of health in several countries.

Experience also shows that an international expert capable of moderating the debates is an asset in these regional discussions, as national experts might be more likely to be criticized for being biased.

Another challenge for health system planners and managers is reconciling the map of EmONC facilities using GIS/AccessMod and catchment areas with administrative boundaries, given that these may not be aligned. The map of the network of EmONC facilities in Ngozy province in Burundi demonstrates this frequent pressing issue (Figure 11 in section 3 above).

Finally, as previously mentioned, the mapping of the national EmONC network is a robust tool for the Ministry of Health to advocate for intersectoral actions for improving access to quality EmONC services and improving maternal and newborn health. However, such essential actions are generally very difficult to effectively plan and implement.

Do all health facilities have the potential to become BEmONC facilities?

There is widespread confusion on this matter, which had a negative impact on the development of functional EmONC facilities. Not all health facilities with obstetric activity should become BEmONC facilities. BEmONC facilities are 24h/7d first line referral maternity facilities and centers of excellence. They attend to routine delivery but also handle basic obstetric and newborn and provide good-quality referrals to the CEmONC facilities. They require suitable infrastructure and facilities, and qualified human resources organized in teams, as well as a significant number of obstetric cases to maintain an adequate level of quality care. In many countries, considering each birthplace as a potential BEmONC facility has led to scarce resources being scattered around the country and has prevented genuine development of BEmONC facilities, and even CEmONC facilities. It has had the opposite of the desired effect: too few functioning EmONC health facilities. Deciding to carry out a prioritization work is therefore strategically very important for improving MNH by focusing efforts on making functioning a limited number of EmONC health facilities while keeping a good coverage of the population.

Do hard-to-reach areas need an EmONC facility?

This question arises almost systematically during the prioritization exercise and leads to long debates. As remote areas, by definition, pose problems for country planning, the answer is often found outside the health sector. The experience shows that it is extremely

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difficult to maintain a hospital (a CEmONC health facility) or a BEmONC health facility in a remote area which has poor road network. Only Non-Governmental Organizations (NGOs) or bilateral cooperations manage it, through resource intensive interventions that are often not sustainable.

We recommend effective advocacy towards the government to implement alternative solutions to ensure access to EmONC by populations living in had-to-reach areas. Although sometimes controversial, the most promising solution is setting up "maternity waiting homes" close to a BEmONC or preferably a CEmONC facility, to welcome women nearing the end of their pregnancy. To be accepted, these maternity waiting homes must be linked to the community and be respectful of the local culture and the needs and desires of the pregnant woman and her entire family. The use of GIS/AccessMod could help conceptualize the various options for improving access to care in hard-to-reach areas.

Do private health facilities have to be taken into account when prioritizing EmONC facilities?

In some countries, the private sector makes a significant contribution to the provision of maternal and newborn health care. In any case, the private not-for-profit health facilities should not be omitted from the prioritization phase. Awareness-raising and, in particular, establishing or reinforcing communications with the management of private health facilities and highlighting the importance of sharing data for quality improvement (and not for other purposes), should enable private maternity facilities to participate in the network.

CHAPTER 4

Data collection

FIGURE 14: PHASE 4 - DATA COLLECTION

Addressing the 'planning issues'

Addressing the 'implementation issue'

Situation Analysis (Baseline)

PLANNING of the national network of EmONC facilities

MONITORING and QUALITY IMPROVEMENT

- National Health Plan, SRMNCAH plans/strategies
- EmONC Need Assessments (including 'rapid' Need Assessments)
- Health Management Information System (HMIS)
- Surveys to complement EmONC Assessment: Demographic Health Survey (DHS), Service Availability and Readiness Assessment (SARA), Service Provision Assessment (SPA), etc

PHASE 1 POLICY DIALOGUE (CH 1)

PHASE 2 DESIGN (CH 2)

PHASE 3 IDENTIFICATION OF THE EmONC NETWORK (CH 3)

PHASE 4 DATA COLLECTION (CH 4)

PHASE 5 DATA ANALYSIS (CH 5)

PHASE 6 RESPONSE (CH 6)

dhis2

GIS/AccessMod

Development and Implementation of the National EmONC Plan (as part of the National MNH Plan)

Regular review of the performance of the monitoring and quality improvement (CH 7)

1. Data collection objectives

Once the national baseline on EmONC has been established (for example through an EmONC Needs Assessment or a rapid EmONC Assessment) and the health facilities have been selected to form the national network of EmONC facilities ("prioritization" phase), the Ministry of Health has all the required inputs to plan the development of the national network of EmONC facilities and its improvement. This network must be monitored to regularly collect the data (generally on a quarterly basis) that the MNH programme

stakeholders consider as essential. This monitoring, based on the national data-collection tool developed during the "design" phase (see Chapter 2), aims to measure the availability, use and quality of MNH services in these facilities and assess the capacity of the EmONC health facilities to fulfil their duties and meet the needs of the population in their catchment area. The originality of the approach proposed in this manual lies in establishing a proactive data-collection process, whereby a regional/district support team supports the service providers of the designated EmONC health facilities to collect and analyze the data (at least during the first programmatic cycle(s) following the set-up of the MNH monitoring).

2. Data collection principles and tools

2.1. Support teams

The main objective of the monitoring process is to help managers and staff from the maternity facility take ownership of MNH and broader SRH data. To ensure that this process is effective and sustainable, it is important that this proactive approach to data includes formative technical support, similar to coaching. The support teams aim to provide such technical support to enable health-care providers to take ownership of the entire data collection, analysis and response process in the long term.

These support teams should take shape as the Ministry of Health and its partners develop and take ownership of the MNH monitoring process. The teams should be built around the reproductive health focal points from the Ministry in regions/provinces. Wherever possible, a health focal point from the concerned district should also be assigned to these support teams. This initial group of two to three people, with different profiles and expertise, should be joined by an EmONC technical expert, for example an obstetrician, especially when visiting CEmONC facilities, or an experienced midwife when visiting BEmONC facilities. The support team should not be identical to the supervision team (technical sheet no.7 provides the difference between supervision, implementation support teams, and mentorship) and should include members outside of the Ministry hierarchical system.

Health facility staff must always regard the regional/district support team as more experienced. Depending on the country context, the support team can vary between three and five people. In Burundi, the support teams comprise three clinical service providers (midwives, doctors and surgeons) trained as EmONC trainers and supervisors/coaches.

The regional/district support team aims to be temporary and to support the initial implementation of the "bottom-up" monitoring approach in EmONC facilities. It is first responsible for collecting the monitoring sheet data, by involving the maternity facility

staff. This data collection is based on a quarterly review of health facility registers, stock sheets and a sample of patients' medical files. It also involves discussions with staff from the health facility and observation of their working environment. This proactive approach to data and the support teams aim to help <u>gradually</u> improve the quality and analysis of data collected (see Chapter 5) and to support the service providers in developing solutions to address problems in availability and quality of care (see Chapter 6). The desired effect of this"bottom-up" approach in the long term is to contribute to making health facility staff more autonomous, and to improve the organization of services and ultimately the quality of care by strengthening the use of data at facility level.

The regional/district support teams should themselves be supported by a national support team, also responsible for driving and monitoring the entire process. The national support team – comprising health managers from the maternal health department, HMIS managers, and advisers from technical and financial partners and professional organizations (obstetricians and midwives) – is tasked with coordinating the regional/district support teams , providing specific technical support if necessary, and helping to organize a national workshop and regional workshops on maternal maternal and newborn health (where the consolidated results from the MNH monitoring should be discussed).

In addition to these technical support teams, the development of the national network of EmONC facilities requires active support, within the health system, at the political level (for example from ministers, Chiefs of State, agency leaders, regional health managers) and at the administrative level (for example from managers of administrative services, human and financial resources and logistics). The technical teams have a key role in providing key information to these decision makers on EmONC availability and quality and should call upon them to remove obstacles and address gaps.

The experiences from countries having implemented this proactive approach to data collection, assisted by the support teams, show that it allows comprehensive MNH data (high degree of completeness) to be rapidly collected from all health facilities in the network and leads to short-term improvements in the quality of the data in health facility registers.

2.2. National data collection tool – monitoring sheet

As mentioned previously, the monitoring sheet (Technical Sheet no. 4) is a national tool to be developed by managers from the Ministry of Health and its partners (during the national workshop described in Chapter 2 - 'design' phase). The information collected by this tool should fit onto <u>a single page</u>. The Ministry's senior management should approve the tool, which should be used by the regional/district support teams in the EmONC facilities, and

be integrated in the HMIS. As seen in Madagascar and Togo, this approach helps reinforce the role of the Ministry as regulator and coordinator of the development of the national network of EmONC facilities.

3. Approach for implementing the data collection phase (further detailed in Chapter 8)

The management of data collection at sub-national level should be entrusted to the regional/ district support teams through a formal decision of the Ministry of Health (particularly by the department responsible for maternal health) made in consultation with the regional directors. These teams should consult the relevant health facilities when organizing the data-collection schedule. The proposed schedules and plans for visiting EmONC facilities should then be sent to the Ministry's central level and to the national support team. This central level is responsible for financing and coordinating the implementation of the national data collection process: from monitoring the implementation of data-collection (keeping to schedule, budget provision) to, if necessary, providing technical support for implementing data collection.

In order to "break in" the first monitoring activities, quarterly collection data is advisable. This frequency enables better support of the health facility staff and accelerates improvements of the quality of the data collected. Following this trial period, most countries opt to collect data every six months, whereby data from the previous two quarters are collected together. However, regardless of how frequently data are collected, a monitoring sheet must be completed for each quarter. The frequency of data collection should be a national decision taken in consultation with the regions.

The central level is also responsible for checking the quality of data submitted by the regions. It must pay particular attention to EmONC facilities that are changing their status from non-functioning to functioning. This check should be principally carried out using the monitoring sheets, or through occasional field visits.

Once the data quality has been checked, the central level must consolidate the data in order to analyse them (see Chapter 5) and to take corrective measures to address the problems deemed to be a national issue (see Chapter 6).

At the end of the data collection in a health facility, all items of the EmONC monitoring sheet should be filled-in. For the response, a second document should be filled-in to identify the mains issues and the proposed corrective actions (cf. Chapter 6).

4. Challenges

One of the main challenges facing many countries with a high burden of maternal mortality is the multiplication of data-collection mechanisms, which often run in parallel to the national health management information system. The indicators for maternal and newborn health programme collected on the monitoring sheet should therefore be fully integrated into the national health information system, and particularly in the DHIS 2 (if applicable in the country). This can be discussed during the national and sub-national workshops in maternal and newborn health.

In addition, it is often difficult to maintain regular data collection in the long term. To support this process in the long term and to reinforce ownership of the monitoring process among health facility staff, it is crucial that representatives of staff from the network of EmONC facilities take part in data analysis workshops (see Chapter 5). The Ministry should also swiftly organize the response phase (see Chapter 6) to introduce quality improvement cycles into health facilities and to provide a concrete objective to the regular data collection and analysis.

Lastly, the Ministry's central level and the regional departments should ensure that a good technical level is maintained within the regional/district support teams and should limit staff turnover, in order to retain the experience gained within these teams (see Technical Sheet no. 6).

CHAPTER 5

Data analysis

FIGURE 15: PHASE 5 - DATA ANALYSIS

Addressing the 'planning issues'   Addressing the 'implementation issue'

Situation Analysis (Baseline)

PLANNING of the national network of EmONC facilities

MONITORING and QUALITY IMPROVEMENT

- National Health Plan, SRMNCAH plans/strategies

- EmONC Need Assessments (including 'rapid' Need Assessments)

- Health Management Information System (HMIS)

- Surveys to complement EmONC Assessment: Demographic Health Survey (DHS), Service Availability and Readiness Assessment (SARA), Service Provision Assessment (SPA), etc

PHASE 1 POLICY DIALOGUE (CH 1)

PHASE 2 DESIGN (CH 2)

PHASE 3 IDENTIFICATION OF THE EmONC NETWORK (CH 3)

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PHASE 5 DATA ANALYSIS (CH 5)

PHASE 6 RESPONSE (CH 6)

dhis2

GIS/AccessMod

Development and Implementation of the National EmONC Plan (as part of the National MNH Plan)

Regular review of the performance of the monitoring and quality improvement (CH 7)

1. Data analysis objectives

Countries with a high burden of maternal and newborn mortality often do not have a national health information system able to provide recent and quality data to support their MNH programme. By relieving programme staff from data collection and analysis duties and instead entrusting them to data specialists, their management has become in many countries increasingly administrative and less and less useful to the programme. The process outlined below aims to give MNH programme staff a sense of ownership and responsibility for their own analysis of routine data.

The data analysis process proposed below aims to be simple to remain manageable and to involve health service providers (its main beneficiaries). Therefore, as mentioned in the previous chapter, the amount of data to be analysed should be limited (<u>a single page of collected data – 'monitoring sheet'</u>).

Furthermore, data analysis by service providers and MNH programme managers should not consist of statistic-reporting of MNH activities to be sent to the higher levels of the health system. It should primarily enable local teams to identify the obstacles and gaps in availability and quality of maternal and newborn care, particularly in EmONC facilities, and to provide solutions to address them.

In other words, the suggested approach does not aim to carry out thorough statistical analyses on a long list of data. Rather, it aims to enable stakeholders at the operational level to take ownership of basic analytic tools, to use them to analyse data and think about and implement solutions to gaps identified.

The data to be analysed varies at each level of the health system but the regional and national levels should also use simple tools, as the analysis should be brief at each level to ensure that the health information system in place remains responsive. Representatives from the regions/districts and support teams should help set out the main data-analysis tools during a national technical workshop. The support teams should encourage health service providers to take part in the data analysis, which should also be facilitated by data experts.

2. Data analysis principles and implementation approach (further detailed in Chapter 8)

Data analysis should take place first at the health facility level, then at the regional/district level and finally at the national level. The analysis should be based on the monitoring sheet – in accordance with the national model – that should therefore be available at all levels in paper and/or electronic versions (for example integrated in the DHIS2).

2.1 At the health facility level:

The management team of the EmONC facility should analyse the data immediately (on the day of the visit) following its collection, in collaboration with the regional/district support team. The management team should include all managers from the health facility and qualified staff from the maternity unit.

The presence or absence of signal functions, the management of complications, the way that referrals are made and staffing problems should be systematically analysed, as well as

other key elements of the monitoring sheet, such as the availability of essential medicines and the minimum equipment needed to provide EmONC. The group of people doing the analysis should compare the results with the previous situation (ideally displayed on a health facility dashboard) to assess progress or regression.

At the end of the analysis working session led by the support team, the facility staff should suggest measures to address a limited number (one to three) of problems identified (cf. Chapter 6).

2.2 At the regional/district level

The data analysis at the regional/district level consists of three major steps:

- **The first step is the consolidation and quality control of data:**
  The regional/district support team should consolidate and check the data (completeness) of all the monitoring sheets at the regional level and enter this data into a software program (ideally online). This task should be carried out in collaboration with statisticians.

- **The second step consists of the development of indicators and dashboards:**
  Once the data of the monitoring sheets has been validated, the regional/district support team should develop regional level indicators and dashboards.

  For each health facility in the network, the most important data for the regional level should be displayed on a dashboard and analysed (cf. technical sheet no. 5). The national team could assist the regional/district support team and the regional department of the Ministry of Health with all of these tasks.

- **The third step is the organization of a regional MNH workshop (each semester):**
  At this stage of the process, it is important to organize a regional workshop on maternal and newborn health (either annually or twice a year). This should bring together managers from the EmONC health facilities, regional managers, NGOs and civil society representatives to discuss progress and results using the data and indicators collected and analyzed. This workshop should also include best practices from the implementation of the response phase to address gaps (cf. Chapter 6).

2.3 At the national level

The data analysis at the national level also consists of three major steps:

- **The first step is the consolidation of the electronic version of the monitoring sheets from the regions** in addition to their consolidated database and regional indicators. As for the sub-national levels, the first task of the national support team is to carry out quality control on the monitoring sheet data.

- **The second step is to analyze regional data to obtain national indicators and dashboards** of the MNH programme in EmONC facilities, disaggregated by region. This enables comparisons to be made between regions. The national indicators should be analysed after each round of monitoring and at the end of the year. A specific analysis tool developed by UNFPA can be used by the national support team (cf. Chapter 6). Some indicators could vary from one part of a country to another, depending on the programme priorities. Other indicators and dashboards are more standard, such as the met need for Emergency Obstetric Care (cf. Figure 16), which has been regularly monitored in Togo since 2015. The graph shows the number of obstetric complications managed by the network's functioning and non-functioning EmONC facilities by region, compared with the number of expected obstetric complications.

- **Finally, a national workshop on maternal and newborn health should be organized every year** to analyse the progress made in the regions and to make decisions to improve the MNH programme, particularly the availability and quality of EmONC. This workshop should complement the decisions taken at facility and region/district levels to address the problems identified. This national workshop should also embrace other components of the MNH programme, especially midwifery and Maternal and Perinatal Death Surveillance and Response (MPDSR). Further details are provided in Chapter 6.

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FIGURE 16: MET NEED FOR EMOC – TOGO 2016

Number of women with direct obstetric complications – national EmONC network per region - Togo (Q1-Q4 2016)

Number of direct obstetric complications treated in functioning EmONC health faciltiies
Number of direct obstetric complications treated in non-functioning EmONC health faciltiies
Expected number of direct obstetric complications in the region (15% of expected number of births)
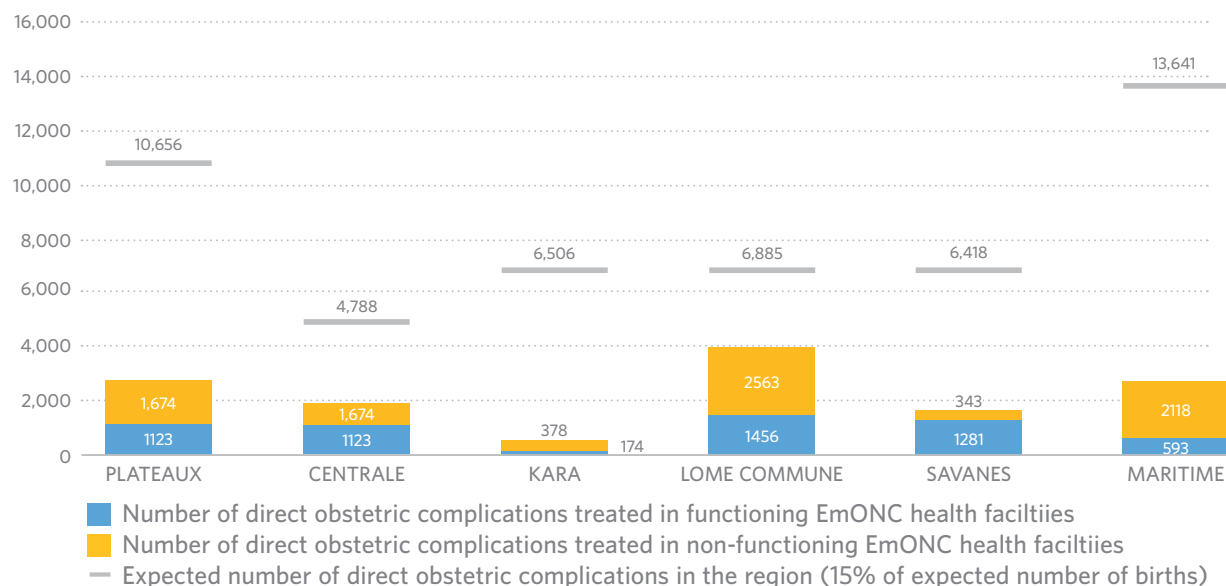
3. Challenges

Data analysis at the health facility and regional/district levels may require an important paradigm shift in countries with centralized health systems and limited autonomy at the sub-national level. Such change may need important advocacy efforts at all levels of the health system to clarify the gains, illustrated in this manual, from increased autonomy and appropriation of data and decisions regarding quality of care at the sub-national level ("bottom-up" approach). Furthermore, the required data quality check at all levels of the health system may require specific capacity strengthening.

CHAPTER 6

Response and Quality Improvement

FIGURE 17: PHASE 6 - RESPONSE FOR QUALITY IMPROVEMENT

1. Objectives

The response phase aims to identify and implement – at all levels of the health system (health facilities, districts, regions and at the national level) – realistic solutions to "implementation problems" to improve the availability and quality of MNH care, especially EmONC.

In the long term, these solutions should help increase the number of designated EmONC health facilities that are functioning and that provide quality health. Within one or two programmatic cycles, these solutions should help countries to increase the proportion of

the population covered by functioning EmONC facilities. At this stage of the process, the importance of the initial prioritization of the network is critical. Even more so than for the data-analysis phase, health facility teams require sufficient resources as part of the EmONC operational plans to support them identify priority issues and formulate and implement solutions to address them. This support should lead to virtuous quality improvement (QI) cycles in terms of the organization of services and the quality of care in order to increase the number of designated EmONC health facilities functioning 24h/7d with quality of care (blue bar in Figure 18).

FIGURE 18: EmONC SITUATION IN COUNTRIES WITH A HIGH BURDEN OF MATERNAL AND NEWBORN MORTALITY
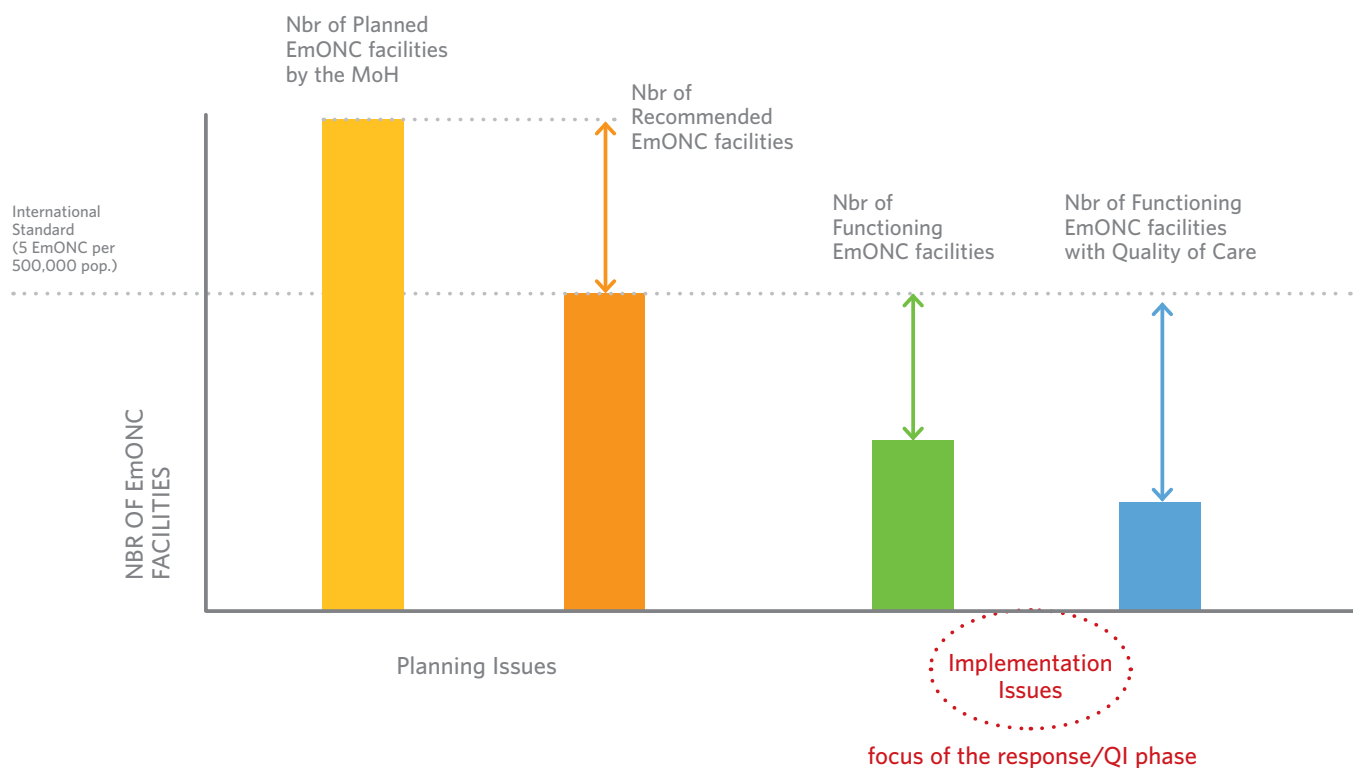
Source: Adapted from 2016 unpublished graph by Lynn Freedman, (AMDD, Columbia University) and Patricia Bailey (FHI360) based on EmONC Needs Assessments of 15 countries.

The quality improvement responses should strengthen both the provision and the experience of care (cf. Figure 19), in line with the WHO standards for improving quality of maternal and newborn care in health facilities.

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FIGURE 19: WORLD HEALTH ORGANIZATION (WHO) FRAMEWORK FOR THE QUALITY
OF MATERNAL AND NEWBORN HEALTH CARE
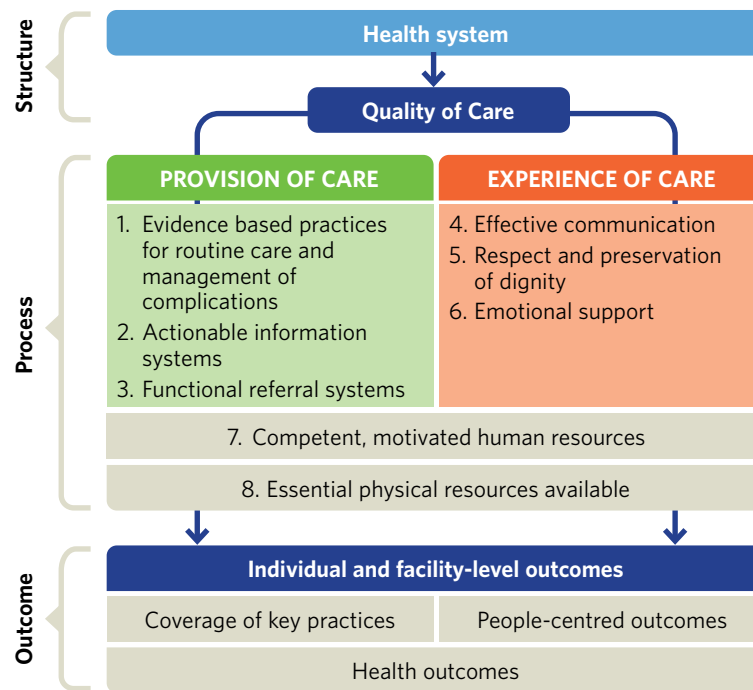
Source: World Health Organization. Standards for improving quality of maternal and newborn care in health facilities. WHO. 2016

The quality improvement response needs to be developed and implemented at the various levels of the health system, beginning with health facility staff within the network of EmONC facilities. It rests on the fundamental principle that the successful development of health services is dependent upon health facility staff and their capacity for innovation and to become agents of change to improve the availability and quality of care ("bottom-up" approach). As already mentioned, these staff should be supported by regional/district support teams, which should be responsible for facilitating and assisting with the development and implementation of responses, as part of continued efforts to improve the quality of EmONC. The regional/district support teams should, in turn, be supported by a national support team. As described in more detail in the section on 'implementation science' (cf. technical sheet no. 6), experience shows that an 'implementation support team' is crucial to successfully implementing an innovative approach or to introducing changes to a system. Such a team leads to more efficient ownership and faster implementation of innovations. For example, Fixsen et al[32]. estimate that, where implementation teams are in place and functioning well, full and effective use of innovations happens at 60-80% of intended coverage within three years, compared to 5-15% after 17 years without such support teams in place (cf. Figure 20).

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FIGURE 20: COMPARISON OF EFFICIENCY ADDED BY A SUPPORT TEAM FOR THE IMPLEMENTATION OF AN INNOVATION
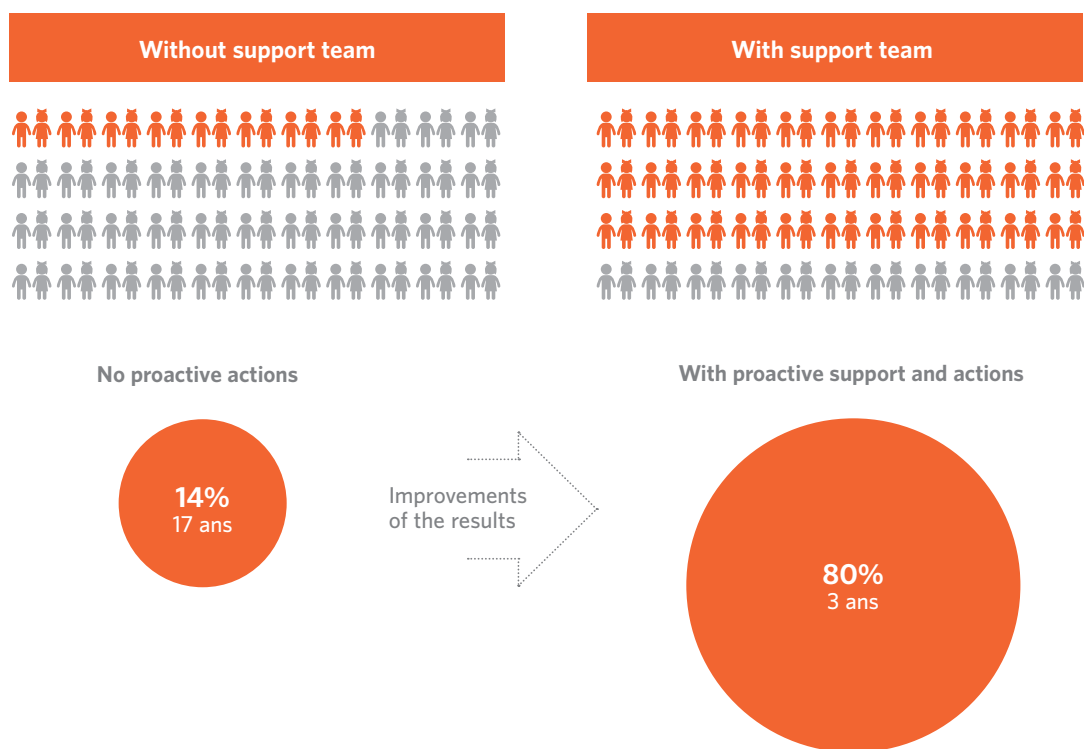
Sources: Fixsen, Blasé, Timers, & Wolf, 2001; Balas & Boren, 2000; Green & Seifert, 2005

As described in Chapter 5, the support team should have at least three people with a variety of backgrounds and professional experience (including expertise in programme management and implementation, with effective implementation principles, improvement cycles and organizational change management) and to ensure that the health facilities receive sustained support, despite potential staffing changes in the support teams. The implementation of the response phase and the work of the support teams are improved if health-care protocols and standards are well defined and used as a reference. Qualitative improvement (QI) processes are also facilitated if national standards are set on the roles of the BEmONC and CEmONC facilities within the health system (describing their mission, duties, means, human resources, infrastructure, organizational structure, reporting method - cf. technical sheet no. 1).

Such support on implementation should complement other technical supports to improve the clinical and managerial skills of the health facility team and its capacity to innovate and address gaps, such as supportive supervision and on-site mentorship, already implemented in many countries (cf. technical sheet nº.7).

2. Quality improvement principles and tools

2.1. Methodological approach to developing and implementing the response – PDSA cycle (Plan, Do, Study, Act)

The PDSA cycle[16] is proposed to help develop and implement solutions to address the availability and quality of services. This methodological approach to problem resolution and continuous improvement is illustrated by the Deming Cycle (see Figure 21). It is based on implementing a culture of innovation that allows "room for error" and enables solutions to be tested for improving the availability and quality of EmONC facilities.

FIGURE 21: PDSA CYCLE (DEMING CYCLE)
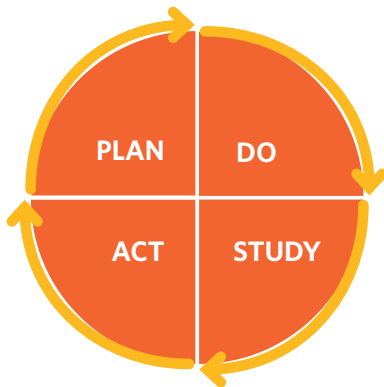
The PDSA cycle has four steps, each leading on to the next:

- The first step, "PLAN", involves planning the actions that will be implemented. In general, this step is carried out in three stages during each monitoring period (e.g. every six months):

    1. Identify and set out the problems (one to a maximum of three) to which there is most likely a solution (for example, using key questions: Who is affected? What are they affected by? In which service(s)? When? Under what circumstances? With what impact(s)? Why?).

    2. Look for the causes behind each problem identified (for example, using a Pareto chart, an Ishikawa diagram or the "five whys" method – cf. technical sheet no. 6).

    3. Identify and set out responses to the problems identified. These responses should endeavour to be "SMART", i.e.: (i) address a specific identified gap/

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problem (Specific); (ii) have measurable results (Measurable); (iii) be directly linked to the action of the individual/team in charge of implementing the response (Achievable); (iv) be feasible using the resources available (Realistic); (v) have an implementation period defined, with an end date and possibly intermediate milestones (Timely). Responses should be defined based on the data analysed, on one or more conceptual referral models (e.g. national EmONC standards) and on the lessons learned from previous quality improvement experiences. In particular, it is important to review the factors that have affected the success or failure of actions previously implemented in the specific health facility or region/district.

- The second step, "DO", involves implementing the responses identified.

- This is followed by "STUDY", which involves analysing the progress of the implementation of the responses, the results observed and the relevance and feasibility of responses aiming to solve the problems identified. Performance indicators can be used to analyse the effectiveness of the actions undertaken. Adjustments should be made (reverting to the "PLAN" stage, if necessary) if these actions are found to be ineffective, unrealistic or not aligned with the expected outcomes.

- The last step, "ACT", completes the approach to ensure that the actions implemented are sustainable. It consists of institutionalizing these actions, especially by developing or updating standard operating procedures, processes or best practices.

2.2. Roles of the various levels of the health system in the response/quality improvement phase

At the health facility level:

The response phase should be primarily developed by the maternity team. Depending on the problems identified (one to three), other managers from the health facility should also be involved. Local solutions (in general, relating to organizational issues) to a given problem should be prioritized. The health facility team should be supported by the regional/ district support team for the progress review and the development of responses. This support should cover the review of the implementation of actions set out during the previous monitoring cycle and the relevance, feasibility and results expected from the newly proposed solutions. The support team is also responsible for sharing new evidence

and innovations in MNH with the health facility team, as well as experiences (good and bad) relating to the responses implemented in other health facilities. The regional/district team and the health facility team should also discuss responses that could be considered the responsibility of the region/district.

At the regional/district level

The regional/district support team is responsible for consolidating and analysing the solutions proposed by the health facilities and helping them in their implementation. It should, for example, encourage technical and financial support from the Ministry of Health to be mobilized (at the national/regional levels) and/or from the technical and financial partners present in the region. While these support teams include staff from the MoH, they should build a trusted relationship with health facility staff by focusing on sharing experiences and disregarding hierarchical linkages.

The support team should also consolidate and document the experiences (good and bad), evidences and innovations in MNH and help disseminate these to the health facilities. Finally, it should identify solutions to a limited number (one to three) of problems regarding the availability and quality of EmONC that were highlighted in the analysis of regional data. The regional response aims to support, to the best of its ability, the solutions proposed by the health facilities. These responses should be discussed at regional MNH workshops.

At the national level:

The national support team is responsible for consolidating and analysing the solutions proposed by the regions, experiences (good and bad), evidence and innovations in MNH and for helping disseminate these to the regions. It should also organize an annual national MNH workshop where the progress made in the national network of EmONC facilities should be discussed and it should develop an annual report on EmONC. Finally, the national support team should in turn identify recurrent problems (one to three) throughout the regions and solve those issues requiring national attention, with possible implications for national MNH policies, strategies and protocols. The planning and results of national initiatives should be discussed during the national workshop.

The regional and national workshops are also good opportunities to identify which teams are performing well, thereby creating healthy competition between health facilities and regions/districts.

CASE STUDY

TOGO, IMPROVING THE AVAILABILITY AND QUALITY OF CARE IN THE NATIONAL EmONC NETWORK

Since 2012, Togo has implemented evidence-based interventions to improve the availability and quality of emergency obstetric and newborn care services. In light of the results and recommendations of the emergency obstetric and newborn care needs assessment (2012), Togo decided to review its maternal health policy and the development of its network of EmONC health facilities to strategically deploy skilled human resources and supplies, and ensure the effective availability and quality of EmONC in all six of its regions.

In 2013, with UNFPA support, the Ministry of Health prioritized a reduced number of facilities to provide EmONC services as a first step towards building a functioning facility network. Using internationally agreed criteria and in-depth analysis of health facilities in the country, 109 health facilities were designated to be referral (EmONC) health facilities (71 as BEmONC facilities and 38 as CEmONC health facilities).

In 2014, Togo launched the quarterly monitoring of reproductive, maternal and newborn health services in this designated national EmONC network, and, based on routine data collected and analyzed, initiated trainings and provided equipment and supplies to EmONC health facilities for improving the management of pre-eclampsia or eclampsia, prolonged or obstructed labour, basic neonatal resuscitation, and immediate postpartum family planning. In 2015, Togo also became one of the first countries in sub-Saharan Africa to define the mission, role and operating model of a BEmONC facility within the health system. This national framework of reference aims to guide health providers as well as national and subnational stakeholders to address gaps in the availability and quality of services.

Finally, in 2019, the Ministry of Health decided to further prioritize the number of designated EmONC health facilities in order to focus resources on making health facility functioning with quality of care 24h/7d. The national EmONC network reduced from 109 to 67 designated EmONC health facilities while keeping the same coverage of the population within 1 hour of travel time (81%).

Number of functioning emonc health facilities (24h/7d) from 2013 to 2016 (out of 109 designated EmONC health facilities)

- 29
- 17
- 15
- 15
- Q1 2013
- Q1 2016
- Number of functioning CEmONC health facilities
- Number of functioning BEmONC health facilities
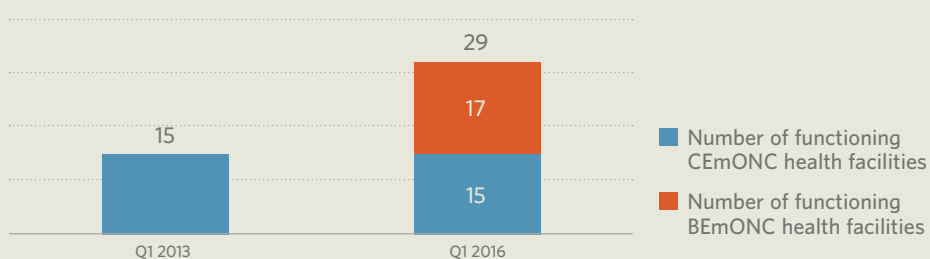
Proportion of EmONC facilities with Magnesium Sulfate

0% — 88%
2014 — 2016
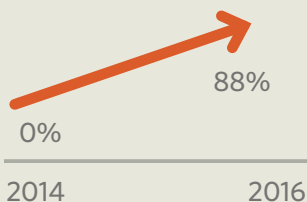
Proportion of EmONC facilities with IUDs

0% — 51%
2014 — 2016
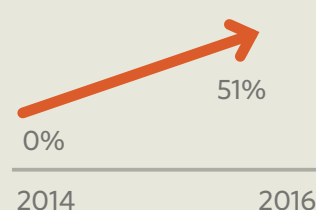
Proportion of EmONC facilities performing vacuum extraction

0 - 5% — 47%
2014 — 2016
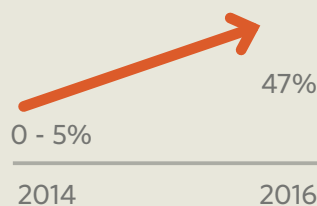
2.3. Sponsorship of health facilities

As the response phase and its bottom-up approach are often new in countries with a high burden of maternal mortality, their initial implementation is often difficult, partly due to the absence of specific structures and budget lines for such support. A sponsorship system could therefore initially help the implementation of the response phase by engaging the technical and financial partners in supporting <u>each of the designated EmONC facilities</u>. These sponsors, especially those within the H6+ Partnership (UNAIDS, UNFPA, UNICEF, UN Women, the World Bank Group, WHO as well as other important financial and technical partners) could help assist the implementation of the solutions proposed by health facility teams to improve the availability and quality of MNH. They would provide temporary technical/financial support in addition to the domestic resources. The Ministry of Health should provide each sponsor with all the information available on the activities, objectives and results of the maternity facilities that it supports.

3. Challenges

Similar to the previous phases, quality improvement at the health facility and regional/district levels may require an important paradigm shift in countries with centralized health systems to ensure the required autonomy and ownership for quality improvement at the sub-national level ("bottom-up" approach). The implementation of solutions to address gaps requires funding at health facility level and an open mind/"no blame" culture to favor innovations.

CHAPTER 7

Periodic performance review of the EmONC development process

FIGURE 22: PERFORMANCE REVIEW OF THE EmONC DEVELOPMENT PROCESS
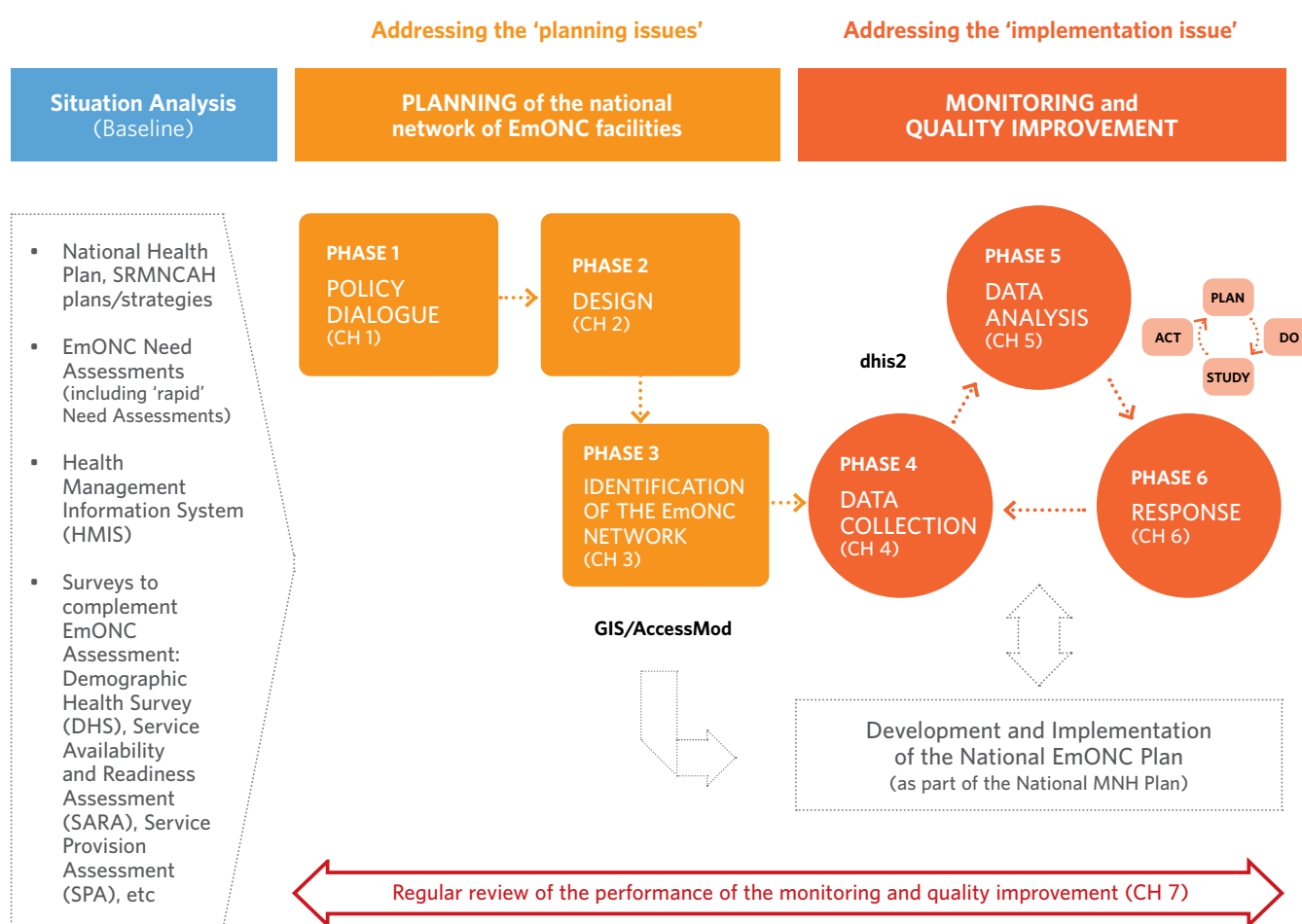
The process of developing a national network of EmONC facilities should be reviewed periodically to make it more effective and sustainable in the long term. These reviews should assess all phases of the process, especially the collection, analysis and response phases: their main steps are summarized in Figure 23 below.

FIGURE 23: EmONC FACILITY NETWORK MONITORING AND QUALITY IMPROVEMENT
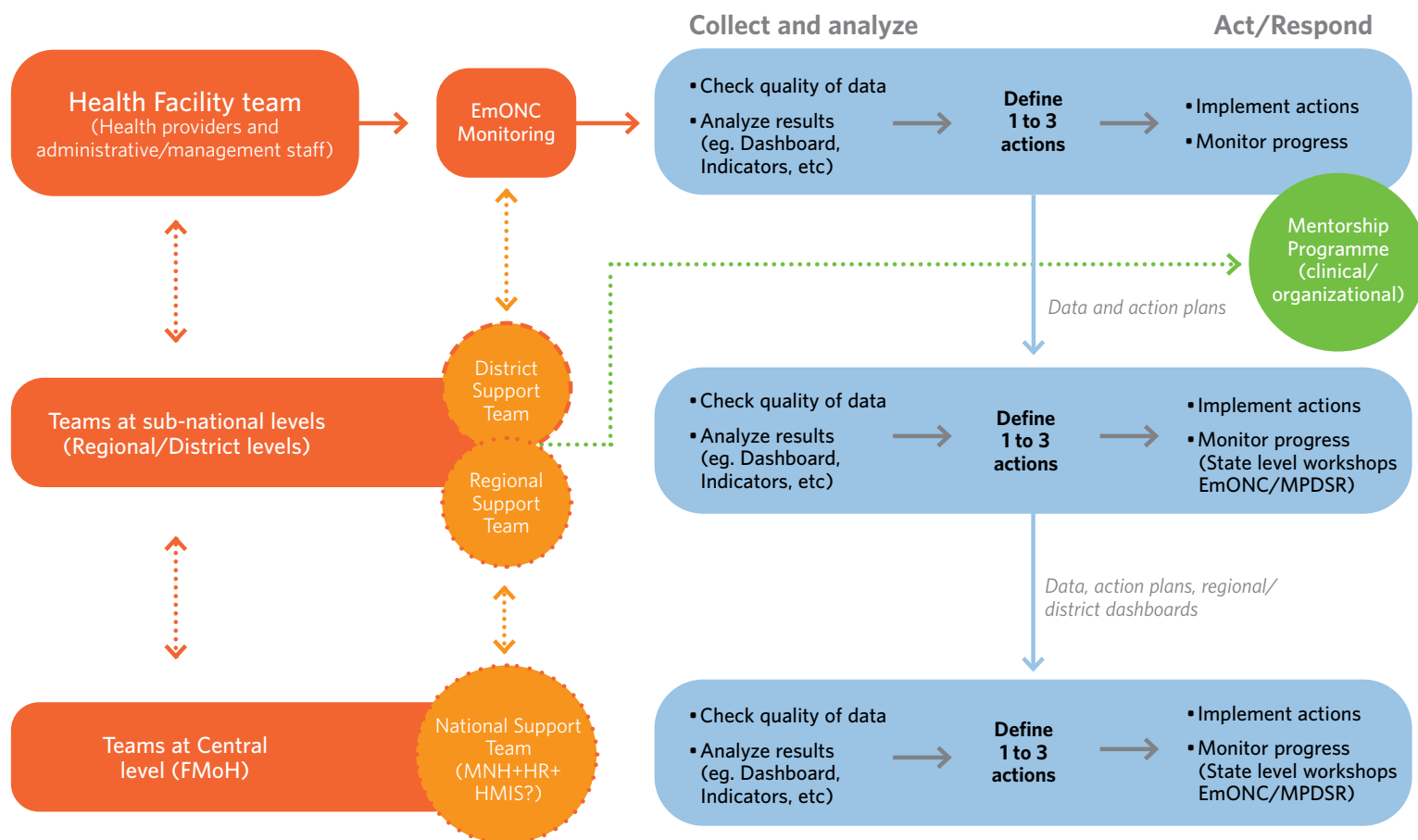
The national and regional/district support teams – if possible with technical partners – should monitor and evaluate the development of the national network of EmONC facilities. The processes developed and implemented at the sub-national level should be reviewed by the national support team monitoring and evaluation framework with process and result indicators should be drawn up and the indicators monitored regularly (e.g. every six months) by the regional departments and the central department responsible for the MNH programme. Examples of possible indicators to monitor the development of EmONC facilities are available in Table 3 below.

TABLE 3: **EXAMPLES OF INDICATORS TO MONITOR THE PROCESS FOR DEVELOPING A NATIONAL NETWORK OF EmONC FACILITIES**

INDICATORS	RECOMMENDED TARGETS
1. General indicators for the development of a national network of EmONC facilities	
1.1. There is an operational support team at the:	
- National level	Yes
- Regional level (proportion of regions with at least three people in an operational support team)	100%
1.2. Workshops on maternal and newborn health are organized at the:	
- National level (annual workshop)	Yes
- Regional level (proportion of regions where workshops are organized every six months)	100%
1.3. There is an up-to-date GIS mapping of the EmONC facility network (geolocation, referral links, population coverage, sponsorship)	Yes
1.4. An annual national report on the development of the EmONC facility network is developed and published (including EmONC indicators, the number of midwives deployed in EmONC facilities according to national standards and the proportion of BEmONC facilities that have an operational referral link (green) with a CEmONC facility)	Yes
1.5. There is a national EmONC standard (date of last update)	Yes (year)
1.6. Quantitative annual targets relating to key EmONC indicators are specified in the national EmONC plan	Yes
2. Data-collection indicators in the national network of EmONC facility (for a specified quarter and for the year)	
2.1. Proportion of designated EmONC facilities supported by the support team (according to the data-collection schedule)	100%
2.2. Proportion of designated EmONC facilities with a completed monitoring sheet (data collected)	100%
2.3. Proportion of designated EmONC facilities for which the monitoring sheet is sent to the national support team	100%
3. Data-analysis indicators (for a specified six-month period and for the year)	
3.1. Proportion of regions with EmONC indicators for the last six months	100%

3.2. Proportion of regions that have organized a data-analysis workshop with managers from the designated EmONC facilities	100%
3.3. Proportion of designated EmONC facilities having participated in a regional data-analysis workshop	100%
4. Response/Quality Improvement indicators	
4.1. Proportion of designated EmONC facilities supported by a technical and financial partner.	To be defined by the Ministry of Health at sub-national level
4.2. Proportion of designated EmONC facilities for which responses to quality gaps are developed	> 80%
4.3. Proportion of responses defined and implemented (according to the established schedule) at the: - Health facility level (results for each health facility, with the deviation from the regional average) - Regional/district level (results for each region, with the deviation from the national average) - National level	> 75%

Moreover, in addition to qualitative and quantitative indicators, the national and regional/district support teams should use observation grids to conduct a more detailed qualitative analysis of the EmONC development and monitoring processes and results. The conclusions of these analyses (good practice, failures, weaknesses) and the monitoring indicators should be shared during the MNH national and regional workshops.

Finally, these analysis could be completed by household surveys focusing on a sample of women having delivered in the network of EmONC facilities and/or living in their catchment areas. These surveys should be conducted by independent investigators who should analyze physical and financial access to health facilities, perceived quality of care, including attitude and respect, from entry in the health facility to delivery and follow-up during the post-partum period (including when back home).

Following the example of Morocco,[17] all of these analyses and indicators should be summarized in an annual national <u>report</u> on the development of the national EmONC facility network.

PART TWO

Implementation steps and tools for developing a national network of referral maternity facilities (EmONC facilities)

CHAPTER 8

Implementation steps for the six phases

This chapter provides a step-by-step guide to the process of developing a national network of EmONC health facilities, specifying the recommended tools for each step and the roles and responsibilities of the various stakeholders in the health system.

1. Implementation steps for the advocacy phase

There are three steps in the advocacy phase of developing a national network of referral maternity facilities. Generally, these are carried out over the course of a month, with the possibility of remote technical support from international experts on the approach proposed in this manual (for example, UNFPA Technical Division, UNFPA regional office, Columbia University/AMDD, University of Geneva):

FIGURE 24: IMPLEMENTATION STEPS FOR PHASE 1 - POLICY DIALOGUE/ADVOCACY

Phase I: Policy Dialogue

	1 Analyse the situation and map key stakeholders in maternal and newborn health (MNH)	**2** Targeted communication on EmONC development with the Ministry of Health and partners	**3** Convene the national technical committee for EmONC development
Main activities	• Carry out analysis of the MHN situation and in particular the Emergency Obstetric and Newborn Care (EmONC) network (key indicators on coverage and quality of EmONC) • Identify: – the national stakeholders and technical and financial partners involved and/or interested in maternal health, as well as the existing coordinating mechanisms and funds for sexual and reproductive health e.g. H6 partnership, the Global Financing Facility - GFF) - global, national and regional initiatives -e.g. Ending Preventable Maternal Mortality (EPMM)/Every Newborn Action Plan (ENAP) – the main financial flows for MNH • Carry out analysis of the health-care information system (HIS), particularly maternal health indicators, systems in use (e.g. District Health Information System 2 -(DHIS 2)) and geographic information system (GIS) expertise	• Present analysis of the situation regarding MNH, and in particular the EmONC network • Show the importance of EmONC facilities in reducing maternal and newborn mortality and the value added by the proposed approach for developing a realistic EmONC network in light of available resources (including the use of GIS and concepts from the field of implementation science) • Present the concept of basic EmONC (BEmONC) health facility and the importance for EmONC health facilities to serve as platforms for integration of SRH services • Decide whether to set up or strengthen (if needed) a national technical committee for EmONC development (integrated with existing technical committees and formed of technical managers from the Ministry of Health and partner organizations)	• Define the key principles for developing the EmONC network, which include: - national scope - prioritizing a national network in accordance with international recommendations (MAXIMUM five EmONC per 500,000 population) - implementing EmONC monitoring and quality improvement - making staff in health facilities and districts/regions aware of their responsibilities as key stakeholders in improving EmONC • Define the process to start developing EmONC facilities: - terms of reference for a national technical workshop to establish the foundations for EmONC development - terms of reference for the EmONC development committee (composition, roles and responsibilities)
Tools	• Results from the (rapid) EmONC Assessment • Results from other surveys (e.g. Demographic and Health Surveys - DHS), Service Availability and Readiness Assessment - SARA, etc. • HMIS data • Key MNH indicators to consider for analysing the situation	• National EmONC network model (if available) • Concept of a BEmONC referral facility (see Technical Sheet no. 2 below) • Process, expected results and cost estimate for EmONC development (including monitoring)	• Terms of reference for a national EmONC technical workshop and the EmONC development committee
Entities responsible	• Ministry of Health • UNFPA (and/or H6 partners)	• UNFPA (and/or H6), with possible technical support on GIS from the University of Geneva and Columbia University/Averting Maternal Death and Disability Program (AMDD) for the BEmONC concept and the EmONC approach	• Ministry of Health in collaboration with technical and financial partners in MNH (e.g. H6, United States Agency for International Development (USAID), French Development Agency (AFD), Jhpiego, Belgian Technical Cooperation, (ENABEL), etc)

2. Implementation steps for the design phase

Following the advocacy phase, once the Ministry of Health has decided to strengthen the network of EmONC facilities, it should organize a national workshop to convene the directors and technical managers from the national and regional levels, professional organizations, key NGOs and technical and financial partners. This workshop should be led by the national technical committee for EmONC development and has three main outputs: (1) the process for defining the national network of EmONC facilities and for implementing the monitoring and quality improvement approach, (2) the national monitoring sheet, and (3) the set-up of the national support team. This team should include statisticians and health information specialists, a GIS specialist with technical skills in AccessMod, managers from the human resources for health and the maternal health departments of the ministry of health, obstetricians and midwives (representatives from professional associations), teachers from midwifery school and, if possible, civil society organizations. As the approach is unprecedented and innovative, it is strongly recommended to seek direct technical support from international experts for this phase (e.g. an expert in sexual and reproductive health, an expert in data management and analysis, an expert in GIS/AccessMod and another in programme implementation and quality improvement processes). In our experience, this national workshop usually comprises three steps and takes place over four days:

FIGURE 25: IMPLEMENTATION STEPS FOR PHASE 2 - DESIGN

Phase II: Design – national technical workshop (4 days)

	1 Present the EmONC situation analysis and the EmONC development approach	**2** Develop the national data collection tool (monitoring sheet)	**3** Define the national EmONC standards, identify prioritization and planning criteria and plan for the regional prioritization workshops
Steps			
Main activities	▪ Present the analysis of the national and regional situation regarding MNH, and in particular the EmONC network ▪ Show the importance of EmONC facilities in reducing maternal and newborn mortality, present the concept of national network of EmONC health facilities, and of EmONC health facilities (particularly BEmONC health facility) ▪ Present HMIS (with a focus on MNH data) and its tools (e.g. DHIS 2) ▪ Present the approach for developing a national EmONC network (including the use of GIS and concepts from the field of implementation science) and the key development principles (national process, EmONC monitoring, making staff in health facilities and districts/regions aware of their responsibilities)	▪ Develop the national monitoring sheet (one page maximum) based on the generic data collection sheet (see Technical Sheet no. 4) ▪ Test the national monitoring sheet in at least one BEmONC facility and one CEmONC facility – sheet completed by different teams over three hours ▪ Finalize and approve the monitoring sheet on the basis of the trial results	▪ Define the national standards for EmONC referral facilities (mission, duties, resources, infrastructure for, CEmONC and BEmONC facilities) – with the possibility for the Ministry of Health to finalize national standards after the workshop ▪ Identify the national prioritization for the designation of the EmONC health facilities, which should include (see Chapter 3 and section 3 below): - populations served (catchment areas) - number of births - travel time and the quality of the BEmONC-CEmONC referral link (see Technical Sheet no. 2) - (secondary criteria) number and qualified staff in place - (secondary criteria) shortfall in signal functions - (secondary criteria) quality of management at health facility - (secondary criteria) existing infrastructure ▪ Plan regional prioritization workshops and possible surveys to supplement the situation analysis (e.g. rapid EmONC assessment) ▪ Set-up of the national support team for EmONC development
Tools	▪ Key MNH indicators to consider for analysing the situation ▪ Concept of a BEmONC referral facility (see Data Sheet no. 1) ▪ Concept of an EmONC network and referral links (see Data Sheet no. 2)	▪ Generic EmONC monitoring sheet (developed by UNFPA based on countries' experiences) ▪ Process, expected results and cost estimate for the EmONC monitoring	▪ Database of obstetric activity for each health facility and list of EmONC facilities ▪ National EmONC model/standards (if available) ▪ Concept of a BEmONC referral facility (see Technical Sheet no. 1) ▪ Concept of an EmONC network and referral links (see Technical Sheet no. 2)
Entities responsible	▪ Ministry of Health for situation analysis ▪ UNFPA (and/or H6 partner) for the importance of EmONC facilities in reducing maternal and newborn mortality ▪ International experts for the EmONC concept and the approach for developing an EmONC network	▪ Participants from the design workshop ▪ Ministry of Health to approve the national monitoring sheet	▪ Ministry of Health to define standards, to identify national prioritization criteria, and for planning the regional workshops ▪ International expert to present the generic prioritization criteria

3. Implementation steps for the prioritization phase

The prioritization process that serves to identify EmONC health facilities is generally under the authority of the Director-General or the Minister of Health, who delegates its implementation to a director at the national level (usually the director responsible for Family Health). For this prioritization exercise to be possible, and useful, it must be based on objective criteria as described below (and defined during the national technical workshop - Phase 2).

3.1. Main criteria governing the health facility prioritization exercise

Bearing in mind the principles of service functionality 24h/7d and quality of care, the choice of EmONC facilities is, first and foremost, based on their location in a significant population catchment area – and in addition for a BEmONC facility, its ability to refer to a CEmONC facility. Workshop participants should select the health facilities according to **two main criteria:**

• Number of actual and potential births:

Maintaining good quality of care in an EmONC health facility depends on the number of cases that the team of health professionals in place regularly has to deal with. This is especially true in terms of maintaining skills in managing emergency obstetric and newborn complications. In most of the countries that have implemented the approach, the Ministry of Health has set a minimum of 30 births per month as a criterion for selecting referral maternity facilities. This figure has been included in the national reference document for BEmONC facilities. Some experts in Togo believe that this minimum is too low and plan to raise it to 50 births per month. With this higher figure, the team at the health facility would have the opportunity to attend to around 22 obstetric complications per quarter (15% of 150 births per quarter).

This parameter, expressed as a monthly average for an EmONC health facility, should be decided at the national level (in the absence of an international standard) during the national EmONC workshop (cf. Phase 2) on the basis of the number of births over the past year(s), and the resources available. This requires reliable information by the HMIS or from a survey.

Once this national parameter defined, the actual and potential number of births in each health facility should be analyzed, considering the population catchment area[xiv] around the health

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xiv   A health facility's catchment area covers the population that should, in theory, have physical access to the health facility, based on its location within a journey time that is below a given limit (e.g. two hours' travel).

facility. AccessMod is very useful in estimating and conceptualizing the catchment area (within a defined travel time) of the health facilities being considered (cf. technical sheet #3).

• Time taken for referral from a BEmONC facility to a CEmONC health facility:

BEmONC facilities are designed for managing basic emergency situations. They rely on CEmONC facilities for surgical interventions (c-sections, hysterectomies, etc.), blood transfusions, complex medical emergencies (polypathologies) and care of premature and low birth weight babies. There is ongoing debate over whether BEmONC facilities should care for babies with a low birth weight: according to discussions in the Every Newborn Action Plan (ENAP) group, it should be part of their duties and signal functions for small and sick newborns will be defined from 2020 by the international community , with some to be performed in selected CEmONC facilities (tertiary level). A global survey was already conducted in 2019 among professionals working in maternal and newborn health to categorise 18 clinical care interventions that could act as potential signal functions for small and sick newborns[57].

The quality of the referral linkages between BEmONC and CEmONC facilities is crucial to ensuring that BEmONC facilities function efficiently as the first referral level for obstetric and newborn emergencies. By ensuring continuity of care in the health system, this referral link, when functioning and efficient is an important element of the trust of the population towards the BEmONC facility. For the majority of obstetric emergencies to receive acceptable care, a BEmONC facility must be located within a maximum of four hours from its referral CEmONC facility (and preferably within 2 hours). The administrative link between a BEmONC facility and a referral CEmONC facility should therefore not be considered as the main criteria for managing referrals. In case of emergency, only the shortest referral time must be considered. A given BEmONC health facility should therefore be linked to a CEmONC facility in another geographical and administrative area, if it is the closest in terms of travel time.

The following criteria, regarded as secondary as they are more easily adapted to the context, can also be considered in the prioritization phase:

• The number and quality of the staff that are present in the considered health facilities: particularly those qualified in obstetric and newborn care: prioritizing health facilities with the less shortfalls in staff in number and quality. The need for a team of competent staff (particularly midwives trained to ICM/WHO standards) in EmONC facilities , insufficient number for ensuring availability of care 24h/7d , is one of the main factors limiting the

development of EmONC facilities in most countries.[18] This constraint alone may be enough or the Ministry of Health to define the number of EmONC facilities it can effectively develop.

• Shortfalls in signal functions: prioritizing health facilities with less gaps in signal functions. The more shortfalls there are, the bigger the efforts needed to upgrade a designated EmONC facility to a functioning one. For the designated BEmONC facilities, this shortfall is often due to a lack of qualified staff and to the limitations of the human resources policies in place. It can therefore quickly be modified through a policy to deploy in priority qualified staff (especially midwives) to the EmONC (and especially the BEmONC) health facilities, provided that their initial training meets WHO/ICM standards.

• Quality of the management at the health facility: prioritizing health facilities with quality managerial practices. Good management of the maternity facility unit and of the health facility is crucial to providing quality EmONC. It helps to ensure public policies and protocols are implemented well, resources are used rationally and services and care are organized efficiently. Poor management is highly detrimental to the smooth running of an EmONC facility.

• The infrastructure level: prioritizing health facilities with good infrastructure. An EmONC health facility requires sufficient space and rooms. There should also be a lab, a sterilization unit, a utility room and communication means. A BEmONC health facility should also have the means to refer to the closest CEmONC facility. The technical sheet 1 provides a detailed description of the requirements for a BEmONC facility.

3.2 Organizing the prioritization workshops

The director of the Ministry of Health responsible for the organization of the regional prioritization workshops should be supported by the national support team formed during the national workshop on EmONC (cf. Phase 2).

The following data should be collated in preparation for the regional prioritization workshops:

a) Data regarding obstetric and newborn activities and human resources in maternity units. This should be drawn from the most recent data available (e.g. EmONC Needs Assessment, rapid EmONC Assessment, health facility monitoring activities, HMIS);

b) Demographic data (ideally with high-resolution spatial mapping), such as the number

of women of childbearing age and the number of births expected for the year in question. The data set WorldPop[xv] has often been used as it provides spatialized population count at 100 m resolution. However, we recommend to rather use the very recent Facebook/ CiESIN[xvi] (*High Resolution Settlement Layer*) 2019 data set that takes into account the building footprints to downscale population census data over them, and is therefore more appropriate for the accessibility analyses done with AccessMod;

c) Geospatial data: latitude and longitude of health facilities (if possible, with their unique national identifier), administrative boundaries, road network, river network, topography and land cover. The availability and quality of these data are critical as they can impact the modelling in AccessMod. Specific attention should be given to the road network, which is often poorly documented in countries (tertiary road network, quality of the road network, speed of travel). It is important to have the quality of these data evaluated by experts in demography and in GIS.

In advance of the prioritization workshops, a group of three to four GIS experts should be trained on AccessMod. Their mission during the regional workshops is to develop maps based on the selection of the EmONC facilities by the regional groups. They also need to prepare the data and check their quality in advance of the workshops, including the current status of the conditions of the main roads (and if possible of the secondary roads).

These regional workshops should be organized (one or several, depending on the country size) to bring together up to four to five regions/provinces for four days. The aim of these workshops is to involve the relevant sub-national stakeholders (8 to 12 participants per region/province according to the context) in a thorough and participatory process to identify and map the designated EmONC facilities of each region/province. By including the stakeholders at local level, this approach ensures the development of the map of designated EmONC facilities using reliable information, legitimizes the prioritization process and ensures that the stakeholders responsible for its development take ownership of it. The success of a regional prioritization workshop depends on the active participation from the sub-national stakeholders, who can inform discussions with their knowledge of the areas and can engage in dialogue with the central level of the Ministry of Health and its partners based on the national prioritization criteria set out in the national workshop. Participants from the regions/provinces should include the Regional/Provincial Director and managers of the maternal health programme in the region/province, the managers of the HMIS and human resources for health, the head of the maternity ward of the main hospital, the midwives that are part of the regional/district teams. These exchanges, based on objective information, between managers at the national, regional and district/health

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xv   http://www.worldpop.org.uk
xvi   https://ciesin.columbia.edu/data/hrsl

facility levels enable realistic decisions on the national network of designated EmONC facilities to be made and reached by consensus.

In Benin and Guinea, mayor of cities have participated to the prioritization workshops. We recommend such an approach which allows to build ownership of local authorities for the EmONC network.

From past experience of conducting these regional prioritization workshops, it is beneficial to invite a Regional Director or an obstetrician who has already undertaken the prioritization exercise in another regional workshop.

In summary, during the sub-national prioritization workshops, the following three steps should be covered (cf. Figure 27):

Step 1: Raising awareness among participants on the notions of an EmONC network and on prioritizing health facilities (using GIS/AccessMod)

During the workshops, participants should discuss the concept of EmONC (including the respective missions of a CEmONC and a BEmONC facility), of an EmONC network, and the prioritization approach, using the results of the EmONC Needs Assessment, and the concepts detailed in Chapter 2. They should also familiarize themselves with the basic principles of GIS and AccessMod. It is important to assign one day for this step, and to ensure that representatives from the central and peripheral levels of the Ministry of Health contribute to the presentations.

Step 2: Selecting EmONC health facilities and analysing BEmONC-CEmONC referral links

Participants should be organized into working groups per region/province, and each group should:

- Establish the EmONC needs of the region based on the international standards (used as a MAXIMUM)

  This should be done using the demographic data for the first subnational level (region/province) and the second subnational level (district).

  The international standard that stipulates five EmONC facilities per 500,000 population (rounded down) should be used to determine the theoretical maximum recommended number of EmONC facilities for each geographical entity. For example, in Togo, the region (the first administrative and health system level) size varied between 650,000 and 1.9 million inhabitants, which proved an adequate basis for the calculation of the need in EmONC facilities. The other countries that

have implemented the approach also worked with the first level of the health system - Haiti using the health department level, Madagascar, Burundi, Senegal, Guinea, Benin, Côte d'Ivoire using the regional level, and Sudan using the State level. In other contexts, the adequate population size for the calculation of the EmONC need may correspond to the one of the second level of the health system (e.g. district level).

- <u>Establish an initial list of potential EmONC health facilities</u> based on the (national) criteria shared on the first day of the prioritization workshop (and defined during the national workshop on EmONC - cf. phase 2)

  Software such as AccessMod (see Technical Sheet no. 3) can model individual catchment areas of EmONC facilities and estimate the proportion of the population able to access them in a defined travel time (e.g. 2 hours travel time). Using a GIS tool allows to visualize the proposed EmONC health facilities on (Figure 26A) a map of the density of the population, (Figure 26B) a map of the geographic accessibility (within 1, 2, 3 and > 4h travel time to the nearest EmONC facility), and (Figure 26C) a map with the catchment areas (at 1 hour or 2 hours of travel time) of each designated EmONC facility.

  Each region/province should have three maps. After Burundi, Guinea was the second country to implement the proposed approach in 2018, as illustrated by the maps of the N'Zérékoré region below.

FIGURE 26A: MAP OF THE DENSITY OF THE POPULATION AND LOCATION OF THE MATERNITIES (DESIGNATED BEMONC AND CEmONC FACILITIES AND OTHER MATERNITIES) – N'ZÉRÉKORÉ REGION, GUINEA.
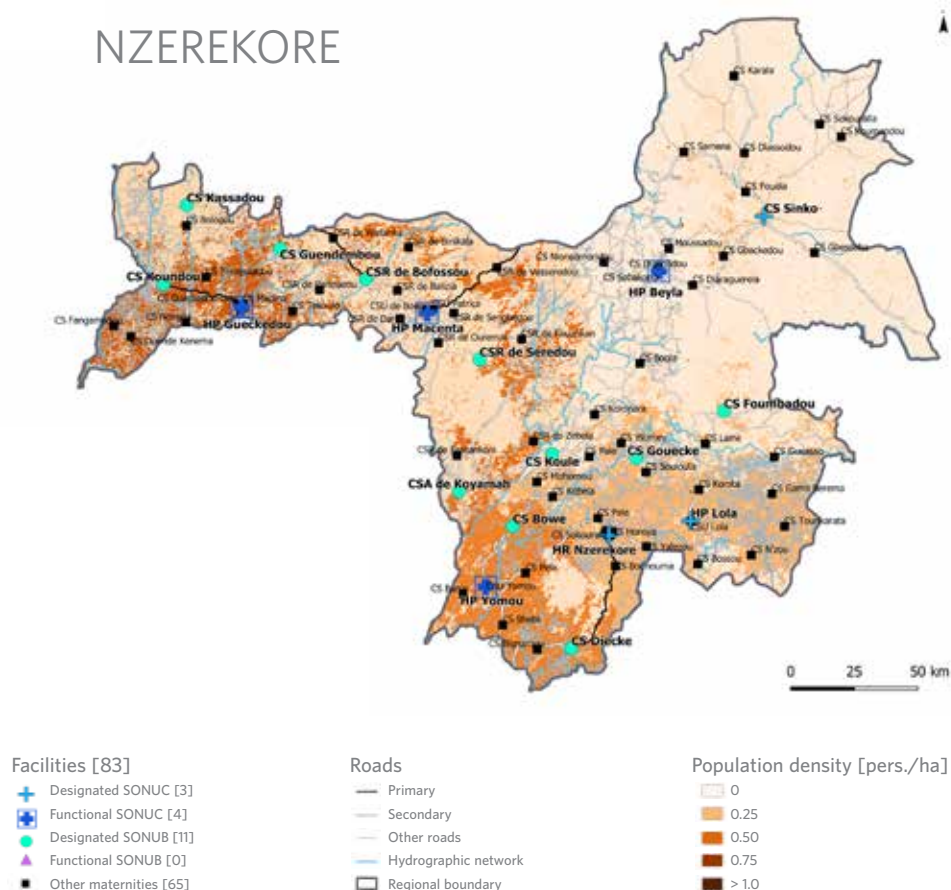
As shown on the population map, the region of Nzérékoré is densely populated in the south and west parts. These areas concentrates most of the EmONC health facilities designated by the regional team. Other maternities (non EmONC) cover the remaining areas - with however less maternities in the north east part of the region.

The region has several national roads that serve well the areas densely populated.

FIGURE 26B: MAP OF THE GEOGRAPHIC ACCESSIBILITY (WITHIN 1, 2, 3 AND >4H TRAVEL TIME TO THE NEAREST EmONC FACILITY) OF BEmONC AND CEmONC FACILITIES DESIGNATED BY THE REGIONAL WORKING GROUP - N'ZÉRÉKORÉ REGION, GUINEA
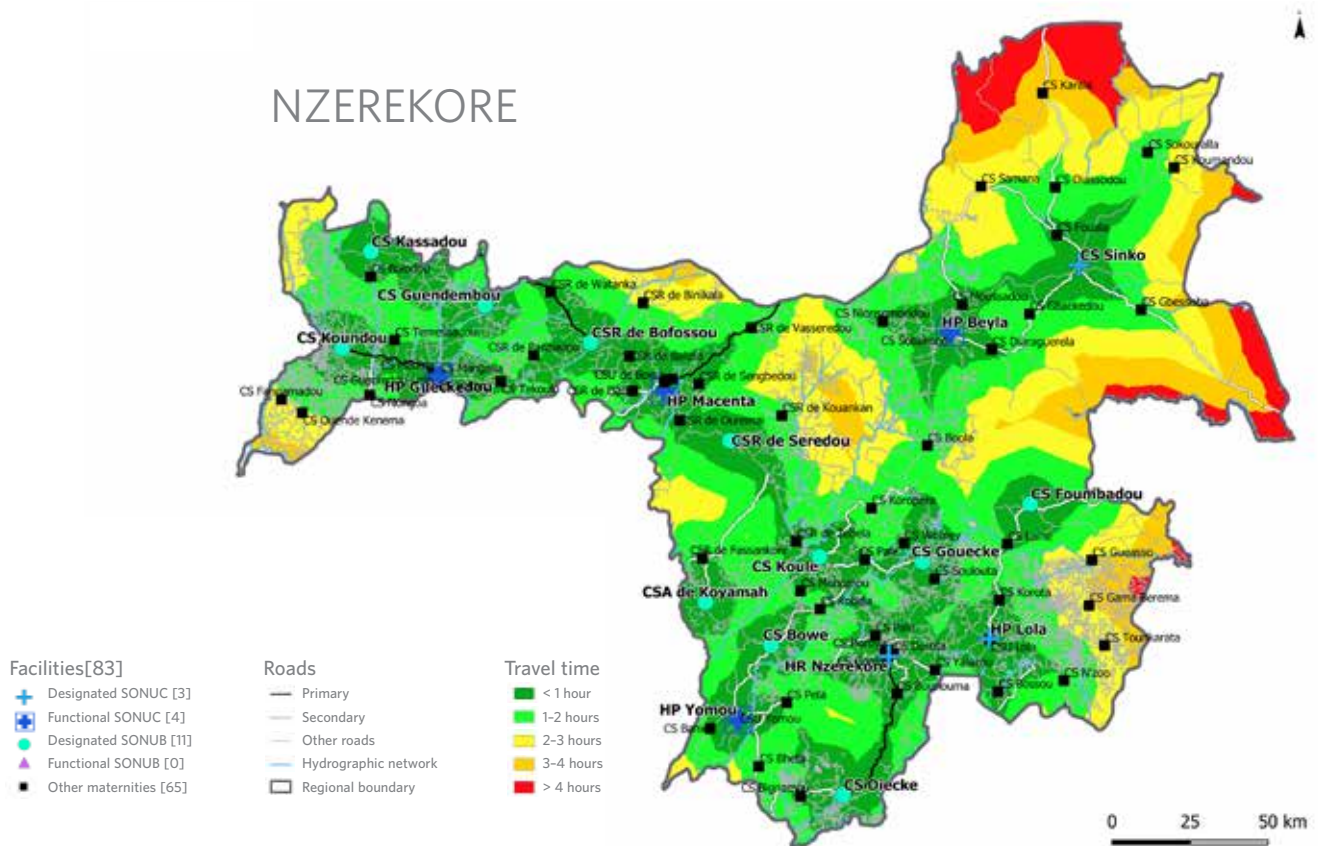
As shown by the accessibility map, the majority of the population of the region live within 2 hours of travel time from the closest designated EmONC health facility. Populations living at more than 2 hours from the closest designated EmONC health facility are located in the east and north-east parts of the region. These areas are also the less populated. This map also highlights the impact of the limited road network in the north-east part of the region.

FIGURE 26C: MAP OF THE INDIVIDUAL CATCHMENT AREAS OF EACH EmONC FACILITY PROPOSED BY THE WORKING GROUP - N'ZÉRÉKORÉ REGION, GUINEA.

The catchment areas of the maternities included in the EmONC network (the designated EmONC health facilities) cover most of the region. Most of the catchment areas of the designated EmONC health facilities complement each others, with the BEmONC health facilities either supporting the CEmONC health facilities or expanding the population covered by the EmONC network.

Each region is also able to estimate the gap in midwives in the designated EmONC network and the proportion of functioning BEmONC-CEmONC designated EmONC (with a referral within 2 hours without major financial barriers).

As shown by Figure 26D, national maps can be developed based on the regional maps. In most countries that have implemented the proposed EmONC prioritization, the national EmONC network covers a good proportion of the population within 2 hours of travel time with less designated EmONC health facilities. It is also the case in Guinea.

FIGURE 26D: MAP OF THE GEOGRAPHIC ACCESSIBILITY (WITHIN 1, 2, 3 AND >4H TRAVEL TIME TO THE NEAREST EmONC FACILITY) OF BEmONC AND CEmONC FACILITIES DESIGNATED BY THE REGIONAL WORKING GROUPS - GUINEA

MAP OF THE NATIONAL EmONC NETWORK (2018)
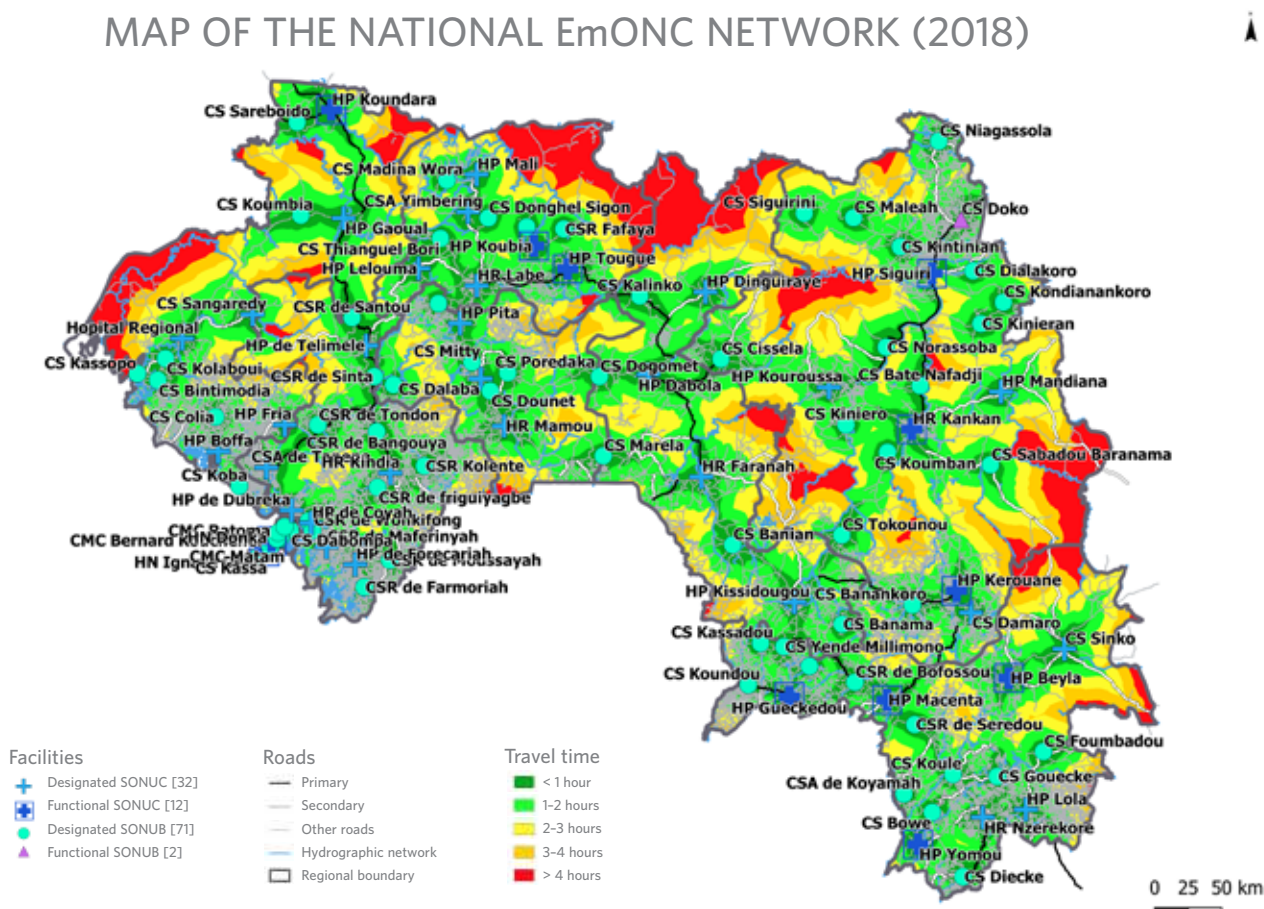
At the national level, all the 446 maternities of the country cover an estimated 91% of the population within 2 hours of travel time. And, as illustrated by Figure 26D, at the end of the prioritization workshops, the regional teams have proposed a national network of 117 designated EmONC health facilities covering 82% of the population of the country within 2 hours of travel time. The revised network can therefore lead to efficiency and economic gains by focusing efforts on ensuring 117 designated EmONC health facilities to function with quality of care and covering most of the population instead of 446 designated EmONC health facilities in 2012 and 229 designated EmONC health facilities in 2015 (the MoH already prioritized a reduced number of EmONC facilities with UNFPA support but without using GIS/AccessMod). This focus is critical as only an estimated 32% of the population is currently covered by functioning EmONC facilities within 2 hours of travel time. The objective for Guinea is therefore to increase, in the current programmatic cycle,

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the proportion of the population covered by a functioning EmONC facility within 2 hours of travel time from 32% to 82%.

- Analyse the referral links between BEmONC and CEmONC facilities

Each working group should analyse the referral links by:

- Linking a selected BEmONC facility to a CEmONC facility, taking into consideration population travel habits. In this respect, it is important to be pragmatic and accept that a BEmONC facility may refer patients to a CEmONC facility in another region/ province if the referral links are easier or if they are chosen by the majority of the population;

- Reviewing referral conditions between each BEmONC and its CEmONC facility based on information from an analysis framework (see Technical Sheet no. 2). A colour-coding should be used to show the quality of the link (green = satisfactory, orange = with some difficulties that require improvement through the health system, red = with major difficulties that require multi sectoral intervention).

By analysing the logistic conditions of the referrals , the workshop participants can identify the potential interventions needed to ensure prompt referral between each BEmONC facility and its CEmONC facility. Regardless of the mode of transport used or the best route to take, the goal is to ensure the fastest possible referral for accessing appropriate medical intervention – ideally within two hours and, at most, within four hours.

- Analyse the need in human resources for health (particularly midwives) and strengths and weaknesses

For each designated EmONC facility, the regional/provincial team needs to document the number of midwives and nurses effectively working in the health facility (being part of the shifts) and to estimate the gap in midwives in the short/medium term based on the national standard defined during the national workshop on EmONC. The team also needs to document the strengths and weaknesses of each facility in terms of infrastructure (including lab), equipment (including lab and blood bank), human resources, management practices and if the health facility is supported by financial/ technical partners.

The regional network of EmONC facilities proposed by each working group should be discussed in a plenary session. Following this presentation, the working groups should revise their network in light of the comments received and confirm or change their designated EmONC network using the maps produced during the workshop. It is the responsibility of the Director of the Family Health Department to settle any

debates and to refer certain decisions to the higher authority of the central level of the Ministry of Health (as a last resort).

<u>Step 3: Developing a workshop report and validating designated EmONC health facilities</u>

The department responsible for leading the workshop or the consultant responsible for monitoring the process should produce a consolidated report on the regional/provincial prioritization workshops. This report includes an analysis of each region/province based on the maps and indicators produced by AccessMod, particularly the proportion of the population covered by all the maternities of the region, by the designated EmONC network, and by the functioning EmONC network. The report also includes a national analysis of these indicators. The prioritization technical of the EmONC network in Burundi, Guinea, Senegal, and Togo illustrate well the importance of these indicators for defining the EmONC network. This report may suggest some changes to the EmONC network proposed by the regional/provincial working groups as this deep analysis post workshop may take into consideration certains elements neglected during the workshops, such as critical structural issues or long referral times.

Based on this report, the Ministry of Health should validate the national EmONC network and make it official by at least one decree or memorandum. The national network should then be factored into strategic plans, operational plans of the Ministry of Health and its partners, and in the plans regarding the deployment of human resources and equipment. The national EmONC network should serve as reference to all actors involved in maternal and newborn health to plan and implement adequate resources to make all the health facilities of this EmONC network functioning with quality of care in the considered programmatic cycle.

4. Implementation steps for the data collection phase

Once the Ministry of Health has validated the national network of designated EmONC health facilities, it should organize regular data collection (generally on a quarterly basis and then every six months once stakeholders are used to the approach) of the indicators defined in the national monitoring sheet (see Technical Sheet no. 4) drawn up during the national workshop on EmONC (cf. Phase 2). This will allow a close monitoring of the implementation of the EmONC operational plan. The national support team should also mobilize and train the regional support teams and develop, with the consultant team, terms of reference for the regional support teams and an EmONC monitoring user guide, with a definition of each item of the EmONC monitoring sheet. Implementing the data-collection phase should comprise three steps summarized in Figure 28.

FIGURE 27: IMPLEMENTATION STEPS FOR PHASE 3 - PRIORITIZATION/IDENTIFICATION OF THE EmONC NETWORK

	Phase III: Prioritization – regional prioritization workshops (4 days for each workshop)		
Steps	**1** Raise awareness among participants on the notions of an EmONC network and on prioritizing health facilities	**2** Select EmONC health facilities and analyse BEmONC-CEmONC referral links	**3** Develop workshop technical report and validate designated EmONC health facilities
Main activities	• Present analysis of the national and regional situation regarding MNH, and in particular the EmONC network • Show the importance of EmONC facilities in reducing maternal and newborn mortality, present the concept of an EmONC referral facility (particularly BEmONC) • Present the approach for developing an EmONC network (including the use of GIS and concepts from the field of implementation science) and the key EmONC network development principles (national process, introduction of EmONC monitoring, making staff in health facilities and districts/regions aware of their responsibilities ("bottom-up" approach to quality improvement) • Present the concept of prioritization and national prioritization criteria in detail	• Establish the regions' EmONC requirements based on international standards • Establish an initial list of potential EmONC health facilities for the region (with a number nearing international standards) based on national criteria and the following process: 1. List the health facilities attending more than 20 deliveries per month (limit determined at the national level) and preferably select the health facilities with more than 30 deliveries per month for the EmONC network 2. Analyse these potential EmONC facilities against the defined national criteria (based on the order of priority established) • Analyse links between BEmONC and CEmONC facilities • Analyse the health facilities from this initial list using the analysis framework for strengths and weaknesses in EmONC • Present and discuss this selection of EmONC facilities in a plenary session (including the number of health facilities according to international standards) and finalize the selected EmONC health facilities based on the feedback and discussions	• Produce a workshop technical report to share with the central level of the Ministry of Health and technical and financial partners • Validate the national map of designated EmONC health facilities (approved at the central level of the Ministry of Health) • Present the national map of designated (and functioning) EmONC health facilities to national MNH stakeholders and technical and financial partners
Tools	• Key MNH indicators to consider for analysing the situation • Concept of a BEmONC referral facility (see Technical Sheet no. 1) • Concept of an EmONC network and referral links (see Data Sheet no. 2)	• Demographic data for the first subregional level (region/province) and the second subnational level (district) to establish MAX EmONC requirements • Recent database (e.g. EmONC (rapid) Assessment) of obstetric and newborn activity per health facility (with geographical coordinates and, a unique national identification number), spatial demographic database, administrative boundaries, topographical and infrastructure data to establish the list of EmONC facilities • AccessMod tool and GIS	• National and regional maps of EmONC health facilities • Analysis and propositions of the regional working groups
Entities responsible	• Ministry of Health for situation analysis • UNFPA (and/or H6 partner) for the importance of EmONC facilities in reducing maternal and newborn mortality • National or international (preferably) experts for the EmONC concept, the approach for developing an EmONC network and the concept of prioritization	• Regional participants in the workshop for designing the regional map of health facilities • National or international experts in public health and EmONC to lead the workshop • GIS and AccessMod experts for developing the maps of the EmONC network	• National or international expert in public health and EmONC to develop the technical EmONC report (in collaboration with technical staff of the MoH) • Ministry of Health to validate the national network of EmONC health facilities

FIGURE 28: IMPLEMENTATION STEPS FOR PHASE 4 - DATA COLLECTION

Phase IV: Data collection

	1 Organize regular data collection of MNH indicators in the EmONC network	**2** Train EmONC support teams (for the first EmONC monitoring)	**3** Implement data collection in the EmONC network
Steps			

Main activities	• Define the budget for data collection
	
	• Mobilize the national and regional/district support teams to assist with the collection, analysis and response process (and develop their terms of reference)
	
	• Define the national and regional schedules for data collection and the collection routes (in coordination with the visit of the supervision/supportive supervision regional/district teams)
		• Train the national support team to:
		
		  - support the approach for developing an EmONC network, including on the EmONC referral facility concept
		
		  - use the data collection tool (monitoring sheet)
		
		  - coordinate and monitor the entire EmONC monitoring process, including: monitoring of data collection implementation in regions/districts (e.g. keeping to schedule, budget provision, etc.) and providing technical support to regional/district support teams for implementing data collection, analysis, and responses/quality improvement ("PDSA")
		
		  - consolidate regional data (verifying the completeness and quality of data submitted by regions: missing data, wrong type of data)
		
		• Train (by the national support team) the regional/district support teams to:
		
		  - support the approach for developing an EmONC network and the EmONC referral facility concept
		
		  - use the data collection tool (monitoring sheet)
		
		  - consolidate health facility data (verifying the completeness and quality of data: missing data, wrong type of data)
			(*For regional/district support teams*)
			• Visit health facilities in the EmONC network (every quarter at the beginning of the data collection, then every 6 months) and complete the monitoring sheet based on:
			
			  - registers (family planning, antenatal consultation, maternity facilities, antiretrovirals, post-partum, etc.)
			
			  - sample of medical files
			
			  - stock sheets (e.g. from pharmacy)
			
			  - staff interviews
			
			  - observation of the working environment
			
			• Consolidate data at regional/provincial levels
			(*For the national support team*)
			• Consolidate data at national level.
			• Coordinate and monitor the indicators from the data collection phase:
			
			  - proportion of referral health facilities supported by a regional/district support team (according to the data collection schedule)
			
			  - proportion of referral health facilities that have a completed monitoring sheet
			
			  - proportion of referral health facilities that have submitted the monitoring sheet to the national support team
			
			• Provide on request technical support to the regional/district teams for implementing data collection

Tools	• National map of EmONC health facilities • National schedule and routes for the regional/district teams to supervise the health facilities • Terms of Reference of the national and regional/district support teams	• Key MNH indicators to consider for analysing the situation • Concept of a BEmONC referral facility (see Technical Sheet no. 1) • Concept of an EmONC network and referral links (see Technical Sheet no. 2) • Monitoring sheet (see Technical Sheet no. 4) • User guide to the monitoring sheet and staff interview sheet	• Monitoring sheet (see Technical Sheet no. 4) • User guide to the monitoring sheet and staff interview sheet
Entities responsible	• Ministry of Health (central and regional level)	• National or international expert in public health to set up and train the national and support team • National support team to train the regional/district support teams	• National and regional/district support teams • Health facility staff

5. Implementation steps for the analysis phase

Once the data has been collected using the national monitoring sheet, it should be analysed at all levels of the health system, starting with the health facility staff (in collaboration with the regional/district support teams), then at the regional/district level and finally at the national level. The indicators produced and analysed at each level (see Technical Sheet no. 5) should be displayed on a dashboard to facilitate analysis and decision-making, with the aim being to improve availability and quality of care, and EmONC in particular. Implementing the analysis phase should comprise three steps summarized in Figure 29.

FIGURE 29: IMPLEMENTATION STEPS FOR PHASE 5 - DATA ANALYSIS

Phase V: Analysis		
1 Analyse data at the EmONC health facility level (on site just after the data collection)	**2** Consolidate and analyse data at the regional/district level (regional/district dashboards)	**3** Consolidate and analyse data at the national level (national dashboards)

Steps

Main activities

• Verify the quality of the data collected: completeness of monitoring sheet, validity of data collected (adhering to format, correct type of data) and analysis of data consistency (see Technical Sheet no. 5)
 	
• Analyse data (comparing them to those of the previous quarter), particularly:
 	
  - the presence or absence of signal functions
 	
  - management of complications
 	
  - human resources
 	
  - supplies – drug tracers and minimum equipment;
 	
  - referral and counter-referral
	• Consolidate monitoring sheets, if possible using database software (e.g. DHIS 2)
	
	• Verify the quality of the data collected: completeness of monitoring sheet, validity of data collected (adhering to format, correct type of data) and analysis of data consistency (see Technical Sheet no. 5)
	
	• Analyse data (comparing them to those of the previous quarter) and produce EmONC indicators (see Technical Sheet no. 5)
	
	• Develop regional analysis dashboards (see Technical Sheet no. 5)
		• Consolidate regional data, if possible using database software (e.g. DHIS 2)
		
		• Verify the quality of the data collected: completeness of data, validity of data collected (adhering to format, correct type of data) and analysis of data consistency (see Technical Sheet no. 5)
		
		• Analyse data (comparing them to those of the previous quarter) and produce EmONC indicators (see Technical Sheet no. 5)
		
		• Develop national analysis dashboard (see Technical Sheet no. 5)

Tools

• Monitoring sheet (see Technical Sheet no. 4) and EmONC monitoring user guide.	• Monitoring sheet (see Technical Sheet no. 4) and EmONC monitoring user guide. • EmONC monitoring database (digital version of sheets) • Data analysis tool (eg. DHIS2 or UNFPA's EmONC analysis tool) • EmONC indicators from health facilities (see Technical Sheet no. 5)	• Monitoring sheet (see Technical Sheet no. 4) and EmONC monitoring user guide. • EmONC monitoring database (digital version of sheets) • Data analysis tool (eg. DHIS2 or UNFPA's EmONC analysis tool) • EmONC indicators from health facilities and regions and regional dashboards (see Technical Sheet no. 5)

Entities responsible

• Regional/district support teams • Health facility staff	• Regional/district support teams • National support team	• National support team • Technical and financial partners

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6. Implementation steps for the response and quality improvement phase

Lastly, as with the data-collection and data-analysis phases, the response phase is built around the various levels of the health system, starting with the health facility staff. Implementing the response phase should comprise three steps summarized in Figure 30.

FIGURE 30: IMPLEMENTATION STEPS FOR PHASE 6 - RESPONSE FOR QUALITY IMPROVEMENT

	Response/Quality Improvement (QI)		
Steps	**1** Develop and implement responses/QI at the EmONC health facility level (on site just after the data collection)	**2** Develop and implement responses/QI at the regional/district level	**3** Develop and implement responses/QI at the national level
Main activities	• Review progress on the implementation of actions determined during the previous monitoring cycle • Review the key analysis elements • Implement the "Plan, Do, Study, Act (PDSA) cycle": - Plan: Identify and set out responses (one to a maximum of three) to the problems identified (having researched the root causes - cf. Technical sheet no. 6) - Do: implement the responses identified - Study: continuously analyse the progress of response implementation and make possible adjustments (reverting to the Plan step, if needed) - Act: institutionalize good practices	• Consolidate and analyse health facility responses/actions and help to implement them • Consolidate experiences, actualities and innovations in MNH and inform health facilities • Review progress on the implementation of actions determined at the regional/district level during the previous monitoring cycle • Review key analysis elements at the regional/district level • Implement the PDSA cycle: - Plan: Identify and set out responses (one to a maximum of three) to the problems identified (having researched the root causes - cf. Technical sheet no. 6) - Do: implement the responses identified - Study: continuously analyse the progress of response implementation and make possible adjustments (reverting to the Plan step, if needed) - Act: institutionalize good practices • Organize bi-annual MNH regional workshops	• Consolidate and analyse region/district responses/actions and help implement them • Consolidate experiences, actualities and innovations in MNH and inform regions/districts • Review progress on the implementation of actions determined at the national level during the previous monitoring cycle • Review key analysis elements at the national level • Implement the PDSA cycle: - Plan: Identify and set out responses (one to a maximum of three) to the problems identified (having researched the root causes - cf. Technical sheet no. 6) - Do: implement the responses identified - Study: continuously analyse the progress of response implementation and make possible adjustments (reverting to the Plan step, if needed) - Act: institutionalize good practices • Organize annual MNH national workshop
Tools	• Monitoring sheet (see Technical Sheet no. 4) • Key RMNH/EmONC indicators • Response/action plan from the previous cycle and implementation status	• Monitoring sheet (see Technical Sheet no. 4) • Key RMNH/EmONC indicators • Response/action plan from health facilities • Response/action plan from the previous cycle and implementation status at the regional/district level	• Monitoring sheet (see Technical Sheet no. 4) • Key RMNH/EmONC indicators • Response/action plan from regions/districts • Response/action plan from the previous cycle and implementation status at the national level
Entities responsible	• Regional/district support teams • Health facility staff	• Regional/district support teams • National support team • Technical and financial partners	• National support team • Technical and financial partners

CHAPTER 9

Technical Sheets and Implementation Tools

1. Technical Sheet no. 1: Concept of B-EmONC referral health facility – duties, structure, and resources

1.1. Definition of a Basic EmONC health facility

An EmONC facility is intended to address obstetric complications, which in most cases are neither foreseeable nor avoidable, but a large majority can be effectively treated. A number of health facilities must therefore be ready to manage these obstetric emergencies, and existing hospitals with an operating theatre are appropriate candidates. With adequate infrastructure and human resources, these hospitals should be ready to manage all obstetric and newborn complications -meaning to provide CEmONC.

However, as these hospitals are limited in number and costly to ensure their functioning 24h/7d, international organizations have suggested using selected peripheral health facilities or hospitals without surgical capacity to manage basic obstetric and newborn emergencies (BEmONC) and to ensure referrals to CEMONC facilities. These health facilities have the advantage of being more accessible (physically) to the population.

As detailed in the introduction of this manual, the capacity of a health facility to provide BEmONC is monitored by seven signal functions. BEmONC facilities are first line referral facilities that should:

- ensure a positive experience of care for all pregnant women and their accompanying family members - respectful and people- centered care;

- safely attend to mothers and newborns for births without complications;

- safely attend to mothers and newborns experiencing basic non-surgical complications and stabilizing complications that require surgical intervention or others requiring referral to a CEmONC health facility;

- Coordinate antenatal and postnatal care.

As illustrated in figure 31, the Ministry of Health should provide a comprehensive package of sexual and reproductive health[56] with the duties of BEmONC facilities, such as:

- contraception and family planning services, including postpartum and postabortion family planning;

- immunization (BCG, tetanus, etc.);

- elimination of mother to child transmission of HIV (eMTCT) services;

- treatment for cases of gender-based violence;

- maternal and newborn death notification and reviews;

- visual screening and cryotherapy for secondary prevention of cervical cancer.

FIGURE 31: THE DUTIES OF BASIC EmONC (BEmONC) HEALTH FACILITIES
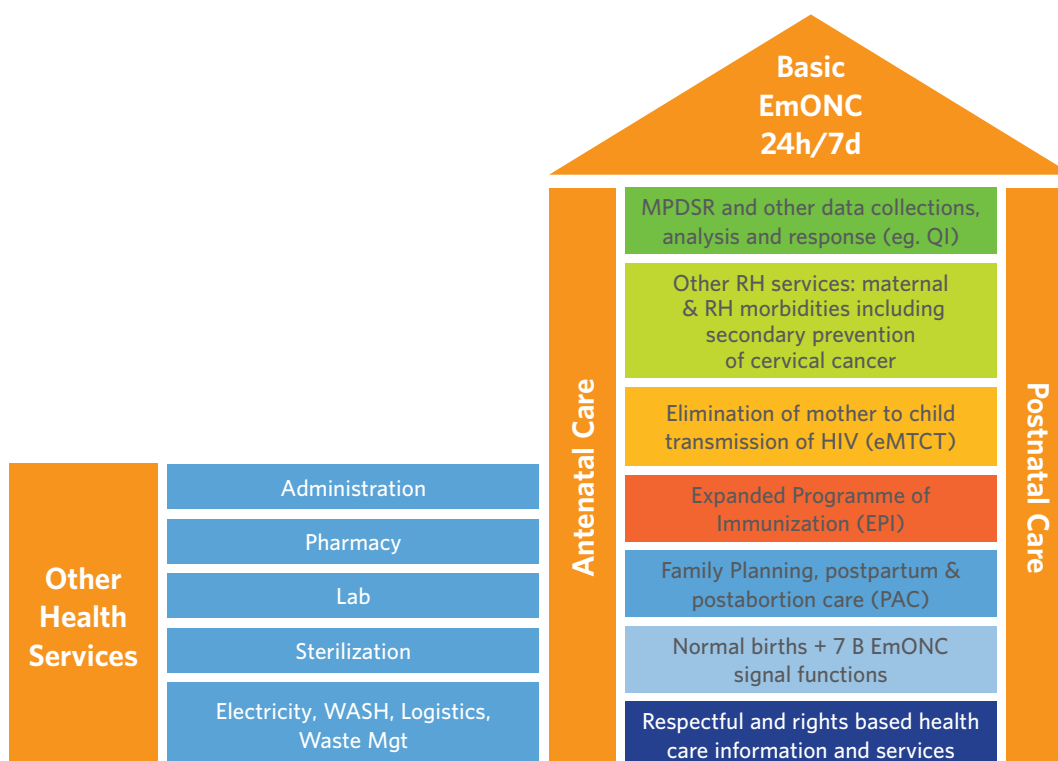
Each BEmONC facility should have the necessary technical attributes and health-care staff to fulfil its duties. We recommend that these referral maternity facilities are staffed by midwives who are trained to WHO/ICM standards, and who are present in sufficient numbers to guarantee continued services 24h/7[xvii]. We also recommend that experienced midwives with demonstrated leadership competencies manage these maternity facilities.

xvii   https://www.internationalmidwives.org/our-work/policy-and-practice/essential-competencies-for-midwifery-practice.html

Furthermore, we suggest setting out accreditation criteria for establishing BEmONC facilities linked to midwifery schools able to provide practical training for student midwives. These maternity facilities should receive additional equipment and technical support to help them carry out this education mission.

1.2 Organization of a BEmONC health facility

The ability of a health facility to provide quality obstetric and newborn services depends on a team of health professionals making optimal use of its assets (premises, equipment, supplies, standards, protocols) and a budget for capital and operational costs.

The team must have the ability to set a common goal (e.g. no maternal and newborn deaths in a given maternity facility) and tasks to accomplish 24h/7d (e.g. safe births, other sexual and reproductive health services, technical support outside the maternity facility). It requires effective leadership, including good leadership skills of the head of the maternity facility, description of staff roles and responsibilities, good interpersonal communication, staff meetings, maintaining patient files, respecting protocols. It also requires that all those involved endeavour to find ways of improving the quality of care, for example continuous training within the health facility (e.g. mentorship programme) or in the CEmONC that is linked to the BEmONC (see Technical Sheet no. 2), maternal and perinatal death reviews, analysis of obstetric activity and process and result indicators. In addition, a BEmONC facility requires (supportive) supervision from the health district and/or health regional team of the MoH.

As a matter of course, a BEmONC maternity ward is linked to the other services provided by the health facility. BEmONC requires access to a laboratory in order to obtain the basic analyses set out in national protocols (based on WHO protocols), a sterilization service and a pharmacy. It also uses the same utilities (water, electricity) and logistics (hygiene facilities and waste management) as the broader health facility, and usually reports to the management and the director of the health facility.

As illustrated by figure 32, a BEmONC facility should maintain privileged links with its closest (in travel time) CEmONC facility to enable patient referrals to the CEmONC, and in return, to receive quality counter-referrals (see Technical Sheet no. 2). It should also receive on-site or remote technical support and benefit from an on-the-job training programme provided by the obstetricians and midwives from the linked CEmONC facility. The qualified staff from the BEmONC facility should also be enlisted by the health district to provide technical support to peripheral health facilities in order to improve their knowledge and practices in sexual and reproductive health. The staff from the BEmONC facility should

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also reach out to community networks (e.g. community health workers, community and religious leaders) or as part of advanced health strategies (e.g. family contraception/family planning, community death reviews, postpartum consultations, screening for obstetric fistula or other obstetric morbidities, campaigns for encouraging childbirth in a formal health-care setting, etc.).

FIGURE 32: THE BEmONC HEALTH FACILITY AND ITS ENVIRONMENT

Ministry of Health

National/Regional/ District levels

Norms, protocols

Infrastructure

Human resources
(eg. min 3 midwives for 24h/7d and MAX 30 del./midwife/month*)

Equipments

Supplies

(Supportive) Supervision

Support Teams/ Mentors

HMIS & MPDSR

Support & Collaboration

Support & Collaboration

Training & Coaching

DESIGNATED CEmONC HEALTH FACILITY
Routine RMNH care + CEmONC

HEALTH FACILITIES
Routine RMNH care only

DESIGNATED BEmONC HEALTH FACILITY
(midwifery led)
Routine RMNH care + BEmONC

BEmONC Health facility – catchment area

Community Health Workers (CHWs)

Communities

Communities

Communities

* national standard defined in several countries with a high burden of maternal and newborn mortality and morbidity that should be adapted to the national context.

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Finally, the BEmONC facility should set out and know its catchment area (see Technical Sheet no. 3) so that, along with the health district, it can ensure that all pregnant women have access to its services within 2 hours travel time, have at least been identified, and have a birth plan that factors in the means for a medical evacuation, in the event of an obstetric or newborn complication.

1.3 Definition of a national reference document for BEmONC facilities

It is difficult to suggest an international standard for BEmONC facilities that could be adapted to all contexts, beyond the framework proposed in this technical sheet. As such, we recommend that countries develop a national BEmONC reference document.

This document should specify the duties, technical attributes, organization and clinical referral arrangements between peripheral health facilities (non EmONC) and BEmONC facilities or CEmONC facilities and between BEmONC and CEmONC facilities, as well as the process for monitoring the obstetric and newborn activity.

It should also set out the number and competencies of staff required in a BEmONC facility to guarantee 24h/7d services. The human resources appointed should be determined by the obstetric activity and other tasks assigned to a country's BEmONC facilities. It is critical to know the number of midwives per BEmONC facility for determining the human resource requirements within the EmONC network. Given the absence of recommendations on this question at the international level, except the FIGO Statement (cf. footnote ix) on staffing requirements for delivery care, countries should set their own national standard based on the following questions:

- considering the other duties assigned to a midwife in a BEmONC facility, what is the maximum number of births per month that she/he should attend to?

- what is the minimum number of midwives required at a BEmONC facility to provide 24/7 obstetric and newborn care?

We also recommend that countries create a standard infrastructure plan for BEmONC facilities at the national level, adapted to the duties of a BEmONC facility, in order to optimize the effectiveness of the working environment for the staff. In Haiti, an architect from the United Nations Office for Project Services (UNOPS) was appointed by the Ministry of Health to draw up such a floor plan over the course of a year. The process involved consultations with the Department of Family Health, the Department of Health Service Organization, professional organizations (of obstetricians and midwives), managers from health departments, UNFPA, WHO and UNICEF, to reach a consensus on cost and functionality (see Figure 33).

FIGURE 33: STANDARD FLOOR PLAN OF A BASIC EMERGENCY OBSTETRIC AND NEWBORN CARE (BEmONC) FACILITY, MINISTRY OF HEALTH, HAITI

Area: 227 square meters

Key components:
- 2 consultation rooms
- 1 reception room
- 1 delivery room (at least 2 beds)
- 1 observation room (at least 4 beds) + shower
- 1 post-partum room (at least 8 beds) + shower
- 1 resting room for midwives
- 1 waiting area
- 1 laundry space
- 1 source of power (generator)
- 1 source of water
- Toilets for staff
- Toilets for patients
- 1 incinerator
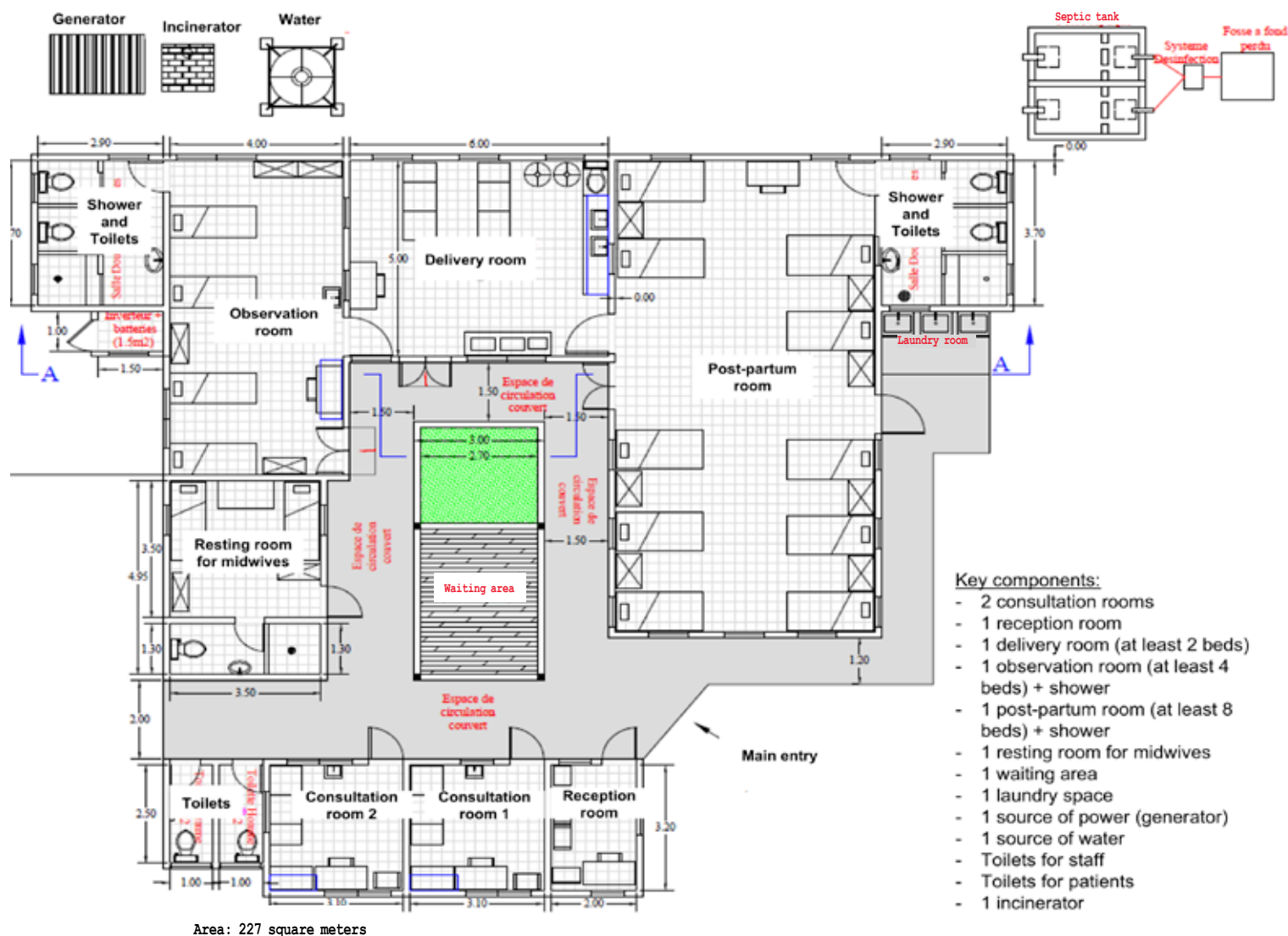
Such national standard for the infrastructure of a BEmONC facility is very useful for laying out the vision of a BEmONC facility and integrating the national standard of a BEmONC facility in the health system (irrespective of the denomination of the health facility in the hierarchy of the health system), for assisting with resource and infrastructure planning as well as organizing the evaluations and audits of the EmONC network. In Haiti, the Ministry of Health bases its authorizations for renovation and construction of EmONC facilities on this model; which should of course be adapted to local circumstances, particularly taking into account the physical space available in urban areas.

2. Technical Sheet no. 2: Collaboration links within the EmONC network

2.1. Structure of the EmONC network

As previously mentioned in this document, the EmONC facilities should be organized into a network with a standard pyramid structure. The aim of the network should be to provide the majority of pregnant women and newborns with the defined national quality of care standards (which should align to WHO quality of care standards for MNH[19]). This requires to ensure good referrals for obstetric and newborn emergencies and technical support for staff.

The time factor to reaching care (second delay) is key with regards to ensuring the management of obstetric emergencies at the appropriate level within the network.[20] Referral time depends on road conditions, access to transportation means, and the number of EmONC facilities that cover a population area. This number in turn depends on the human and financial resources required and available to set up an EmONC facility (see Technical Sheet no.1 on resources to be allocated to a BEmONC facility).

It is necessary to find a suitable balance among these various parameters in order to achieve SDG 3.1 national target of MMR reduction . And, as detailed in the prioritization phase in Chapter 4, this exercise is a determining factor in ensuring the efficiency of the EmONC network. Each country should develop a system in which the levels of the various health facilities are clearly defined: peripheral facilities performing a limited number of normal deliveries or rarely, BEmONC facilities (first referral level - and part of primary healthcare) performing normal deliveries and managing basic obstetric and newborn complications, and CEmONC facilities (second referral level) performing normal deliveries and managing basic and complex complications, including the ones requiring surgery. The development of this system is illustrated in Figure 34.

FIGURE 34: SET-UP OF A NETWORK OF EMERGENCY OBSTETRIC AND NEWBORN CARE (EmONC) REFERRAL FACILITIES

From a non structured EmONC network...
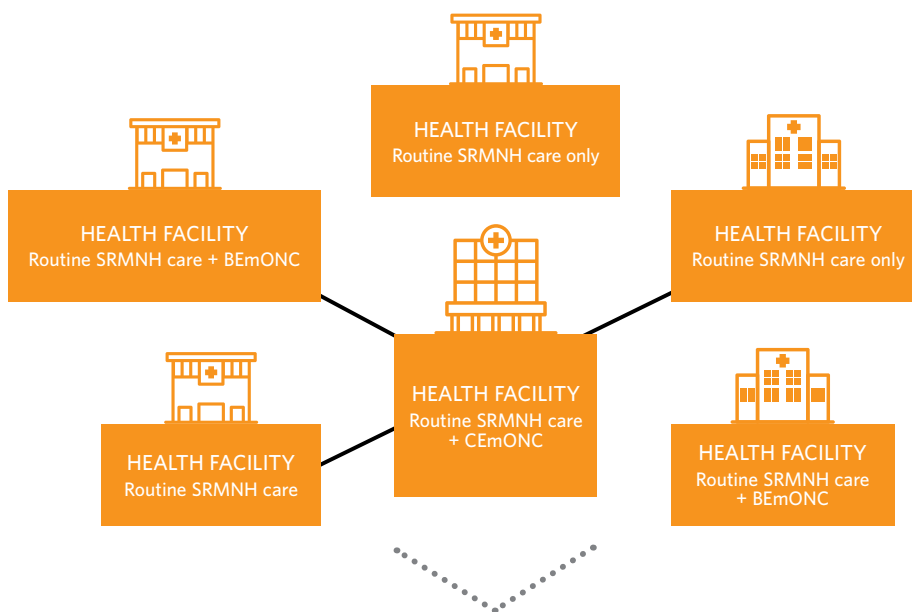
To a network of designated EmONC Health Facilities
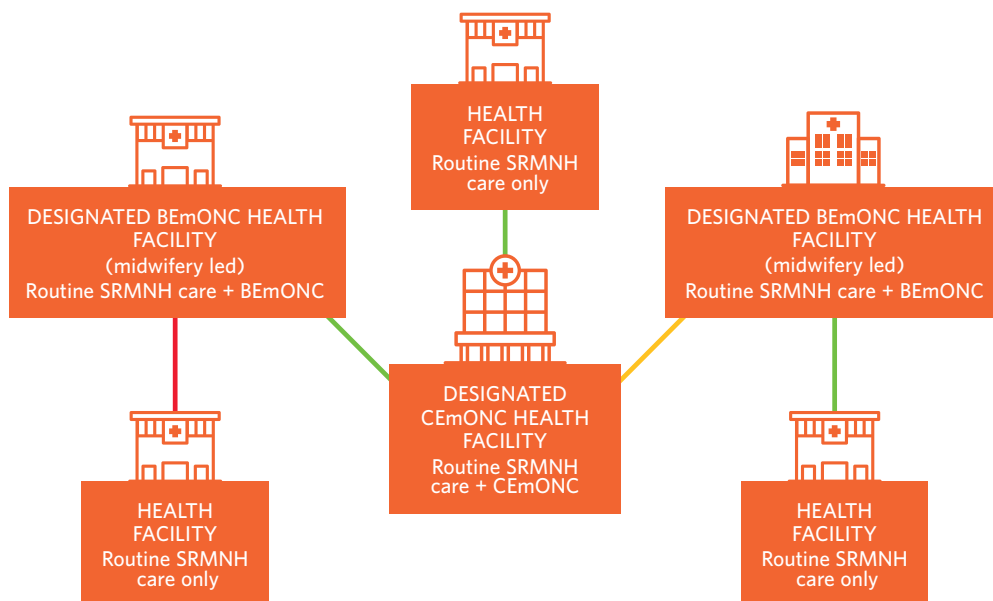
LEGEND

Referral links with no major obstacles and within 2 h

Referral links with obstacles requiring improvement through health system and between 2-4h

Referral links with obstacles requiring multi sectoral interventions and more than 4h

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2.2. Clinical referrals from BEmONC to CEmONC health facilities

Once the EmONC network has been identified, it is recommended to specify the CEmONC facility to which the BEmONC facility should refer most obstetric emergencies. The referral link should be specified based on the following:

- BEmONC facility to CEmONC facility evacuation time during dry/rainy season

- mode of transport commonly used

- main obstacles for effective evacuation (time and quality, financial barriers)

- recommendations for possible improvements.

We recommend using a simple colour-coding system to indicate the quality of each referral link, as shown on Table 4:

- green – referrals are generally unproblematic and done in less than 2 hours[xviii];

- orange – difficulties with referral link related to problems that can be easily solved, generally by the health sector itself, and/or a reference between 2 and 4 hours;

- red – major problems with referral link generally related to the state of travel routes or with river crossings, which are difficult to resolve in the medium term and which often involve other sectors than the health sector, and/or a reference above 4 hours.

This colour-coding can be used to establish a baseline for the functioning of the referral linkages within the EmONC network. Too many red lines indicate that the network is barely functioning. This approach also allows to easily monitor the progress of the referral linkages of the EmONC network (links between BEmONC and CEmONC health facilities) by tracking the proportion of green referral links. This proportion should increase and should be monitored, at least on a yearly basis by the regions/provinces.

The information can also be used to analyse and monitor the obstacles encountered to improve the referrals. In many countries, it is often the financial cost of medical evacuations that constitutes an orange or even red link. Such a situation calls for a national level response to handle the financial barriers of these referrals.

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xviii   In some countries, the road network and transportation means allow to perform the analysis within 1 hour travel of time. In capitals, a travel time of 20 minutes could be considered.

TABLE 4: EXTRACT FROM THE WORKING DOCUMENT OF A REGIONAL WORKING GROUP IN GUINEA DURING AN EmONC PRIORITIZATION WORKSHOP IN 2018.

CEmONC Health Facility	BEMONC Health Facility	Travel time during dry season	Travel time during rainy season	Principal mode of transport	Estimated out-of-pocket expenses	Obstacles	Recommendations
CEmONC 1	BEmONC 1	4 hrs	6 hrs	Ambulance, bush taxi	50,000 CFA	Roads in bad state, distance (87 km), socio-cultural problems, high financial costs	Grants for the poor, community voucher system, involvement of affluent people or those willing to help
CEmONC 2	BEmONC 2	2 hrs	2.5 hrs	Taxi	30,000 CFA	Poorly managed ambulance service and high financial costs for transporting women for treatment	Better management of ambulance service, health insurance scheme, community voucher system
	BEmONC 3	3 hrs	4 hrs	Taxi	30,000 CFA	Roads in bad state and high financial costs for transporting women for treatment	Health insurance scheme, community voucher system

The quality of the referral link between the BEmONC and CEmONC facility can also be assessed by the quality of the counter-referral link from the CEmONC to the BEmONC facility.

2.3. Clinical referrals from peripheral health facilities to BEmONC/CEmONC facilities

In most countries, the knowledge on the quality of referral links between peripheral health facilities and their respective BEmONC/CEmONC referral facility is limited. The same tool used for identifying and monitoring the BEmONC/CEmONC facility links should be used to identify and monitor these links. In addition, the AccessMod software can be used to define the catchment area of each BEmONC/CEmONC facility within a given travel time. This should enable the health district and the EmONC facility to more accurately estimate its catchment area's population, by separating it from administrative limits. In general, it is much more realistic to consider journey time rather than distance to define a catchment area, since travel constraints (e.g. existence and state of roads, physical barriers such as rivers, relief) can greatly affect the time it takes to travel a certain distance and access health facilities.

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Once the BEmONC/CEmONC facility's catchment area is identified, it is then possible to estimate the population beyond this area, and also the number of inhabitants in the area within a 2-hour journey time that do not use the BEmONC/CEmONC facility. This information should help identify actions for improving coverage of EmONC facilities (including awareness-raising among populations and community leaders, birth plans identifying means for medical evacuation, maternity waiting homes, improving relations between health facility staff and the population).

2.4 Technical support within the EmONC network

The most qualified staff in the network should provide ongoing training and technical advice to the less qualified (or less specialized) staff. We recommend organizing staff rotations between each CEmONC facility and its BEmONC partners. For example, a midwife from a BEmONC facility who completes a rotation at a CEmONC facility will get to know a different working environment, improve her practices and also form valuable professional links. On returning to her BEmONC facility, she/he should then have more confidence to call the CEmONC health facility to seek advice remotely or to organize a referral (and, at a later stage, receive a counter-referral). In return, a midwife from a CEmONC facility will benefit from working in a partner BEmONC facility, where she/he can experience the realities (and constraints) of its working environment and also share with her/his BEmONC colleagues the techniques and approaches used in her/his CEmONC facility.

Similarly, the midwives staffed in (B)EmONC health facilities should provide technical support and coaching in sexual, reproductive, maternal, and newborn health to the staff based in peripheral maternities (non EmONC).

3. Technical Sheet no. 3: Geographic Information System (GIS) and modelling of access to care (using AccessMod software)

3.1. Geography and GIS in public health

Geography is an important aspect that affects all duties within public health: 1) Defining public policies aimed at resolving health problems identified and prioritized at local and national levels; 2) Ensuring that all populations have access to adequate care, including health promotion and disease prevention services; 3) Evaluating and monitoring the health of at-risk communities and populations to identify health problems and priorities.

Geography also provides a neutral "platform" for integrating, displaying and analysing data from different sources. Decision-making based on geography is therefore a more systemic approach to resolving public health problems.

GIS are computer systems designed to collect, organize, manage, display and analyse geographically localized data. They have numerous[21,22] applications in the field of public health in general, and specifically in maternal health, such as: thematic maps showing the geographical distribution of indicators, location of health facilities, spatial analyses combined with data from the health sector and other areas (e.g. land planning, environment, infrastructure), models for epidemiological risks, models for access to health care.

In order to benefit from geography and GIS, the HIS of countries should integrate as effectively as possible spatial (geography) and temporal (time) dimensions[21,22,23]. This integration can be implemented through various actions,[22,23] one of which is establishing a unique, official, centralized, standardized, comprehensive and updated register of health facilities and other key geographical features in the country.[24] A register such as this should also contain a unique identification code and the geographical location (latitude and longitude) of each health facility,[24,25] in order to be usable in a GIS and to facilitate good data management.

The development of a national network of referral maternity facilities can tremendously benefit from the use of GIS and access modelling tools, such as AccessMod. These tools are also of added value throughout the various implementation phases of the approach proposed in this manual. The benefits of using them in these various phases are described below along with practical recommendations for using it in this specific approach.

3.2. Geographic access modelling: AccessMod tool

Geographic access (or physical access) can be defined as how easily a population can physically access the health services that it needs. Although physical barriers can be very significant in certain regions, it is important to remember that there are other factors that can also restrict (or facilitate) access to health care, especially the existence (or absence) of financial and cultural barriers.

It is important to have a realistic model of geographic access to a network of health facilities in order to understand the extent to which the population is covered and to highlight the areas and parts of the population that are inadequately served. An access model is also needed for modelling the journey time between locations, particularly for referrals between facilities in the event of birth complications, for example.

A key concept in access modelling is the catchment area around a health facility. In theory, the population living in this area has physical access to the facility. Many studies and analyses use either a circular catchment area (e.g. with a radius of five kilometres) or an area corresponding to the administrative boundaries of a health district that the facility is supposed to cover with its services. These approaches can lead to errors or to significant under- or over-estimations regarding the extent of the population that actually has physical access to the facility within a given period of time. As illustrated in the figure 35 below, the shape and size of a catchment area are defined by using parameters related to factors restricting travel (e.g. mountainous areas, forests, rivers, impassable areas), facilitating it (e.g. road network), and means of transport (e.g. by foot and/or motorized vehicle) using a maximum journey time (e.g. two hours)[26]. They can vary greatly from a circular catchment area defined.

It is therefore preferable to use the approach based on journey time, rather than distance, to obtain a realistic estimate as to what percentage of the population, in theory, has physical access to the network of EmONC facilities.

FIGURE 35: DIFFERENT MODELS OF CATCHMENT AREAS AROUND A HEALTH FACILITY (BLACK DOT)
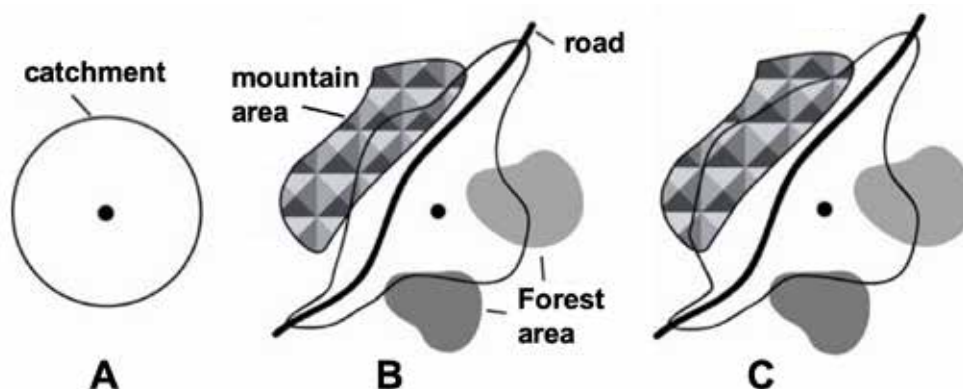
LEGEND

A) Circle indicating a given distance, B) Consideration of aspects restricting patient travel (roads, forests, obstacles, mountains, etc.) indicating a more realistic area within a given maximum journey time, C) Additional consideration of the direction of travel (towards of or from a health facility) by which the speed of travel when walking or bicycling can change depending on the slope of the terrain.

AccessMod[xix] (version 5) can generate a realistic model of physical access to healthcare by taking into account population distribution, availability of services and travel constraints. It is a free, open-source software that has been initially developed by WHO in 2005, and is currently maintained by the GeoHealth group - Institute of Global Health of the University of Geneva[xx], in collaboration with the Health GeoLab Collaborative.[xxi] Packaged in a virtual machine, Accessmod can operate on various platforms (Windows, Linux, Mac) and be used in conjunction with any GIS application (e.g. QGIS, ESRI ArcGIS, etc.).

AccessMod comprises five key functions that enable it to obtain the following results:

- Accessibility analysis: models physical access to health facilities, i.e. the possibility that a target population can reach the nearest health facility within a given time (taking into consideration travel scenarios that may combine walking, cycling or motorized vehicles, at user-defined travel speeds, and also physical aspects that may restrict travel, such as rivers, forests, mountains, roads, hard-to-access areas, etc.).

- Geographic coverage analysis: models access while also taking into account the availability of services (or the health facility's capacity to provide care, for example, in terms of number of beds, number of qualified staff, etc.). The result pinpoints the location of the population that can both get to the closest health facility within a

given maximum time (e.g. two hours) and can also be treated in that facility based on its capacity.

- Zonal statistics: provides the percentage of the population that has access to the network of health facilities within a given maximum journey time. These percentages can also be obtained for any administrative sub-unit.

- Referral analysis: calculates journey time and distance between different types of health facilities (e.g. between BEmONC and CEmONC facilities).

- Scaling-up scenarios: Identifies the optimum locations for new health facilities in order to maximize the population coverage of the scaled-up network, based on a user-defined prioritization model.

FIGURE 36: VARIOUS RESULTS OF MODELLING PHYSICAL ACCESS, OBTAINED USING ACCESSMOD: A) BURKINA FASO B) REGION IN TOGO C) MALAWI[27,28,29]

Travel time to
nearest EmONC facility

- < 1 hour
- 1–2 hours
- 2–3 hours
- 3–4 hours
- > 4 hours

Legend

- BEmOC, including CEmOC (Ministry of Health)
- District boundaries (Census 2008)
- Water bodies
- Less than 1 hour travel time
- More than 1 hour travel time
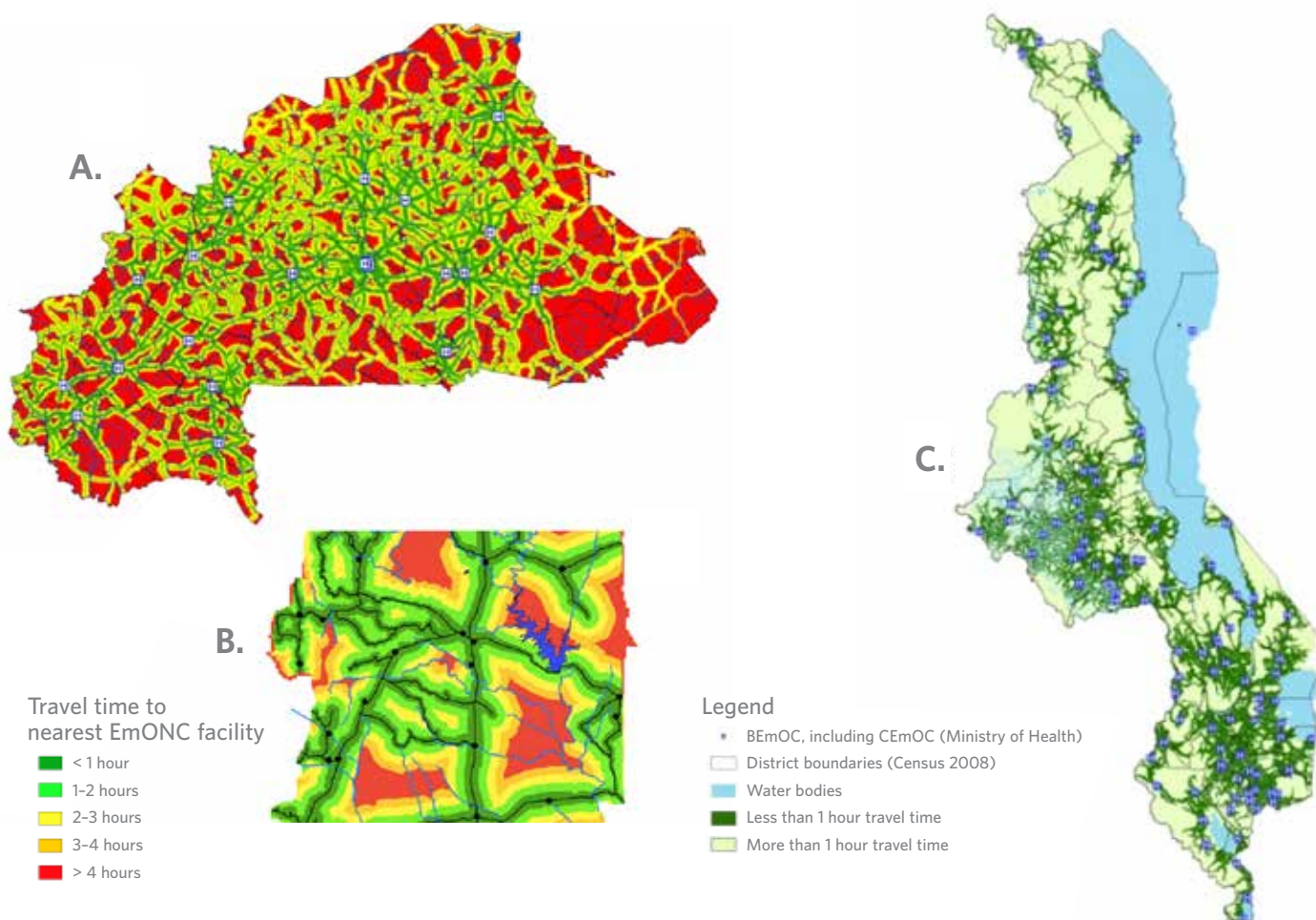
It is important to note that AccessMod needs certain geospatial data sets for the modelling exercise. These are summarized in Figure 37.

FIGURE 37: GEOSPATIAL DATA ENTERED INTO ACCESSMOD TO MODEL PHYSICAL ACCESS, GEOGRAPHIC COVERAGE, AND REFERRAL.
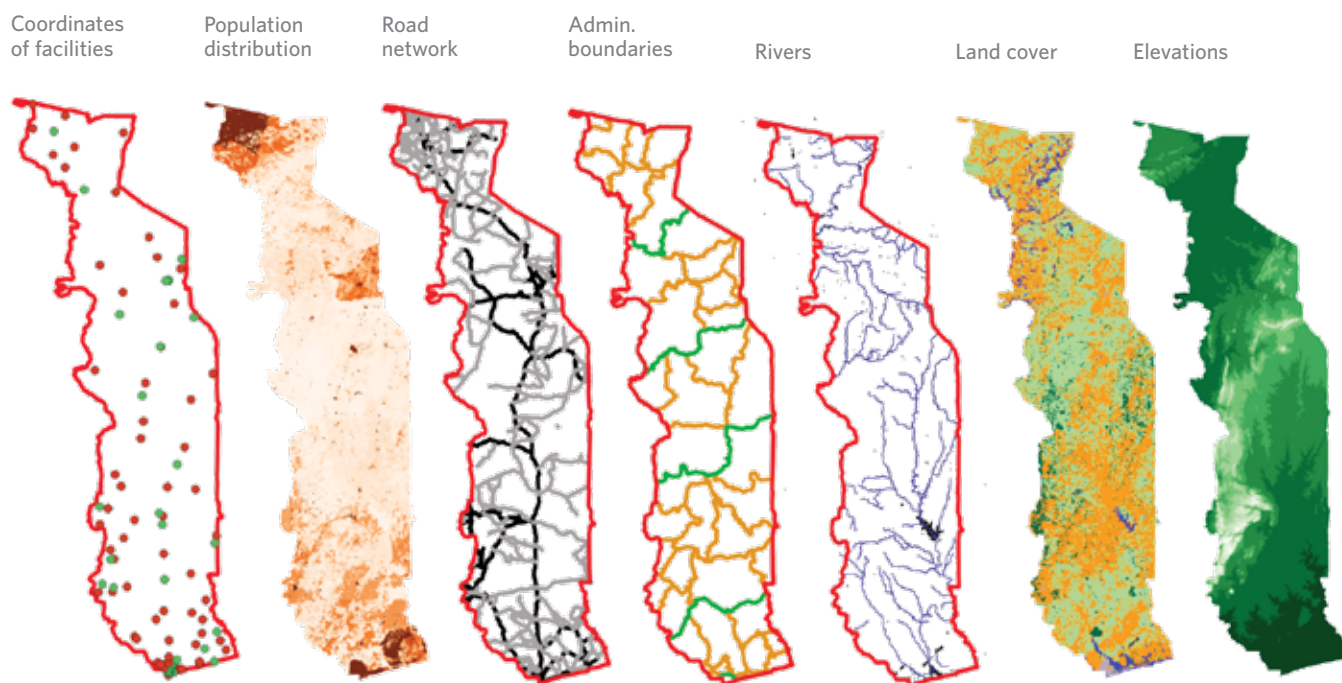
AccessMod has already been used in about 20 countries and is generating increasing interest, particularly in Africa and Asia. Not only are the advantages of using it linked to improvements in access to health services, but also to improvements in the quality of geographic data sets and the ability of stakeholders to use GIS and conduct analysis beyond the basic thematic map. Using AccessMod also contributes to implementing SDGs 3.7 and 3.8, and the service coverage indicators that form part of a global reference list of 100 core health indicators set out by WHO.[30]

3.3 GIS and AccessMod – applications to support the development of the national network of EmONC facilities

Key data and information requirements for using GIS and AccessMod

The support process for developing a national network of EmONC facilities should be based on recent and good-quality data and information. This is particularly important for ensuring that GIS and AccessMod are used effectively.

Even if part of this data and information is collected during the advocacy phase (see Chapter 1), it is important to ensure that the geographical and temporal dimensions are correctly captured in each field survey carried out before the start of the process, particularly in EmONC (rapid) Needs Assessments. There is a guide available on this subject.[31]

In order to carry out a realistic analysis of access, EmONC Needs Assessments should also gather information on whether each health-care centre included in the assessment has the following:

- a working, on-site means of telecommunication (landline or mobile phone);

- a working motorized vehicle for use in the event of a referral.

Using GIS and AccessMod in the advocacy phase

During the advocacy phase (see Chapter 1), the use of GIS can bolster advocacy, principally by producing thematic maps that illustrate the current EmONC situation (for example, geographical location of EmONC facilities, ratio of number of EmONC facilities to population and to administrative unit or population distribution). This phase is an opportunity to showcase the efforts being made on the national HMIS front, but also to highlight the potential shortcomings (Is the health/EmONC facility register complete? Is the location of these facilities comprehensive? Are these facilities codified in a unique, logical way?). Raising awareness on the importance of geographical considerations for developing the national network of EmONC facilities, and particularly on physical access and population coverage, will supplement the advocacy phase. This can be achieved by showcasing examples from other countries (e.g. Burundi, Benin, Guinea, Madagascar, Senegal, Sudan, Togo) that are further along in the process and how these countries have benefited from GIS during the prioritization, planning and optimization phases of their EmONC network.

A GIS expert is not essential for this phase, provided that the presenter can understand the basic concepts of the geographical approaches and can make an informed presentation using examples from other countries.

<u>Using GIS and AccessMod in the design phase</u>

The design phase (see Chapter 2) typically involves a larger number of partners in a national workshop, in which the implementation steps on how to improve the EmONC network are reached by consensus and outlined.

For this workshop, it is particularly useful to involve a GIS expert (with knowledge of AccessMod) to do the following:

- ▪ Present GIS concepts and advocate for the importance of the geographical aspect and physical access in planning an EmONC network.

- ▪ Present several examples in other countries, including the benefits they have seen and the challenges they have encountered.

- ▪ Evaluate the state of progress of the national HMIS, the GIS skills at the Ministry of Health and among its partners, and the availability of and access to the geospatial data required to model access. The main aim is to identify several people in the country who are proficient in GIS, keen to learn new tools, and who can be fully involved in the modelling process for the subsequent phases of the process.

- ▪ Arrange bilateral meetings, if necessary, with the data providers (e.g. land registry, planning, geomatics office, universities).

If the geographical coordinates of the functional and potential EmONC facilities are available before the design phase workshop, as well as the geospatial data for the country (particularly the road network), it is advisable to carry out preliminary analyses on access (using AccessMod) that can then be presented during the workshop. Experience has shown that participants are then more engaged in discussing the country's access issues, and can better understand the rationale for incorporating the geographical aspect into the subsequent prioritization phase. However, it is also very important to emphasize that these results regarding access are very much preliminary. Further consultations with national experts in maternal health and in national geospatial data are absolutely necessary in order to refine the values for the travel scenario parameters.

Using GIS and AccessMod for the prioritization phase and EmONC map

One of the main inputs of the prioritization phase (see Chapter 3) is to develop a map of health facilities (eg. the potential EmONC facilities), so that these can then be prioritized according to certain criteria. One of the two principal criteria – the number of potential births in a health-care facility – is highly dependent on the catchment area around the health facility. As previously indicated, it is extremely important to identify a realistic catchment area, which is why the use of GIS/AccessMod tools is particularly valuable and informative during this phase.

In addition to criteria related to the population in the catchment area, it is possible to model referral times between health facilities using the AccessMod tool when there is no empirical information on the actual referral times between facilities, or when this information exists but is incomplete. Of course, it will always be preferable to have actual referral times rather than modelled referral times, because the former take into account travel constraints that are often highly localized, and sometimes even seasonal (i.e. varying between the wet and dry season).

Access modelling should be obtained using the best geospatial data available and, ideally, following a preliminary consultation with local experts (e.g. regional/provincial health-care professionals) regarding typical travel scenarios (mode of transport, speed of transport depending on route type, land use and cover). It is therefore advisable to hold a separate workshop dedicated to preparing GIS data and access modelling data before the prioritization workshop. If this is not possible, the alternative is to ask a national or international consultant working with the AccessMod tool to supply these results. The advantage of holding an AccessMod workshop in the country is that it provides an opportunity to train several national technical experts on the tool, who will then be able to offer support during the prioritization workshops.

It is important to have GIS/AccessMod experts present during these workshops to swiftly produce maps, alternative scenarios and map projections while the workshops are ongoing. This helps better inform participant discussions and the scenarios under consideration.

GIS and the Health Management Information System (HMIS)

The implementation phases comprise data collection, analysis and response (see Chapters 4, 5, 6,). During these distinct phases, GIS is a useful resource for the thematic maps that serve to represent data from the EmONC monitoring. These maps enable comparisons to be made between health facilities and between administrative units, while also highlighting trends over time when data sets from successive monitorings are available.

This data can be used to regularly update analyses on access to health care. This could be particularly informative when the number of EmONC facilities changes, or when a scaling-up process is being considered. Certain aspects that impact travel may also change over time: for example, the road network, means of transport, and population distribution. Thus, the effects of these changes on the statistics related to access and population coverage could also be modelled.

It is also during these implementation phases that the link between the national HMIS, the geospatial data available for analysis, and EmONC data should be secured and optimized. Not only is it important to ensure that the most up-to-date geospatial data is used for analysis, but also that the key data from each EmONC monitoring can be stored in the HMIS in a standardized format.

4. Technical Sheet no. 4: Monitoring sheet of RMNH services in EmONC health facilities – recommended model

The following monitoring sheet can serve as a model for countries to monitor key RMNH services in designated EmONC facilities. This model should be adapted according to the context in a national EmONC workshop. It has been developed based on the national monitoring sheet of Haiti, Togo, Madagascar, Guinea, Benin. The monitoring sheet consists of maximum 1 page and the items 1.1 to 1.9, 2.1, 4, 7, 8.1-8.9, 11.1 to 12.2 cannot be changed. Once validated by the MoH, each item of the national EmONC monitoring sheet needs to be well defined. The national supportive team needs to elaborate a document describing the sheet and disseminate it among the regional/district teams and providers at facility level. Definitions needs to be used by the supportive teams to collect quality data on all items. A focal point at national level should be available, especially during monitoring periods, to answer any questions related to items definitions.

FIGURE 38: GENERIC MONITORING SHEET OF REPRODUCTIVE, MATERNAL AND NEWBORN HEALTH SERVICES IN EmONC FACILITIES

Ministry of Health
Quarterly monitoring of maternal and newborn health service in EMONC facilities

Name of the health facility:			ID of health facility:		Population (catchment area):		

Region :	District :		Date of data collection:	Type: BEmONC / CEmONC	Quarter collected:	Year collected:

1	Have the following signal functions been performed in the considered quarter?	Yes	No *	2	Availability of other MNH services	Yes	No *
1.1	Administer parenteral antibiotics			2.1	Maternity open 24h/24h and 7d/7d		
1.2	Administer uterotonic drugs (oxytocin)			2.2	Systematic use of partograph		
1.3	Administer parenteral anticonvulsants (magnesium sulfate)			2.3	AMTSL		
1.4	Manually remove the placenta			2.4	Service for EMTCT/Syphilis/HIV (based on national protocols)		
1.5	Remove retained products			2.5	National package for clinical management of GBV		
1.6	Perform assisted vaginal delivery (vacuum extraction)			2.6	Vaccination BCG, Polio 0 for newborn		
1.7	Perform basic neonatal resuscitation (with bag and mask)			2.7	Service for sick newborn		
1.8	Perform C-section			2.8	Nbr of newborns with post-natal visit within 48h		
1.9	Perform blood transfusion			2.9	Nbr of neonatal resuscitation with bag and mask		

* If no, please provide one or more reasons among the following reasons (1 to 7):
1. Problem of availability of human resources : insufficiency (or total absence) of skilled birth attendant;
2. Problem of education : health provider not trained to execute the function;
3. Problem of equipment / material / medicines: not available, or not usable;
4. Problem of protocols/procedures: the national protocols or the type of health facility does not allow to execute the function;
5. Problem of management: lack of supervision, cold chain, other;
6. No cases: no cases during the quarter requiring to execute the function;
7. *Others (to specify at the back of the sheet)*

3	Availability of EmONC essential medicines in the considered quarter (check Yes or No in the related box)								
	Oxytocin		*Misoprostol*		*Magnesium Sulfate*		*Metronidazole IV*		*C section Kit*	

4	Availability of key human resources for EmONC *(specify the number or Not Available – 'NA')*	*Obstetrician*		*Surgeon*		*Anaesthetist*		*Medical doctor*		*Midwife*		*Nurse*	

5	At the visit, the health facility has *(please circle)*	Water Yes No	Electricity Yes No	Laboratory adapted to needs Yes No	Functioning ambulance Yes No

6	Other Reproductive Health services	Number of cases	Other Reproductive Health services		Number of cases
6.1	Number of women who gave birth leaving the health facility with a contraception method		6.3	Number of Implants	
6.2	Number of Intrauterine Devices (IUDs)		6.4	Number of women receiving post-abortion care	

7	Number of births in the health facility in the quarter	Total	Vaginal		C section	Referred
			without vacuum extractor	with vacuum extractor		

8	Direct obstetric complications	Number patient Managed / Referred		Number of death	Number of death notified	Number of death reviewed
8.1	Haemorrhage (ante partum)					
8.2	Haemorrhage (post partum)					
8.3	Ruptured uterus					
8.4	Severe pre-eclampsia or eclampsia					
8.5	Post-partum sepsis					
8.6	Prolonged labor or Obstructed labor					
8.7	Complications of abortion					
8.8	Other direct obstetric complications					
9	Number of indirect obstetric complications					
10	Maternal deaths from unknown causes					
11	Neonatal complications	Number patient Managed / Referred		Number of death	Number of death notified	Number of death reviewed
11.1	Asphyxia					
11.2	Respiratory distress					
11.3	Low birth weight (≤ 2500g)					
12.1	Early neonatal deaths (≥24H et ≥2500g)					
12.2	Very early neonatal deaths (≤24H and ≥2500g)					
13.1	Provide technical support to staff in peripheral health facilities (yes / no)		13.2	Community sensitization in SRMNH (yes / no)		

Done by: …………………………………………… Approved by: …………………………………………….   Validation date: ………………………

5. Technical Sheet no. 5: Data analysis of the EmONC network and national and regional analysis dashboards

5.1 Quality control of RMNH data from the EmONC network

As detailed in Chapter 8, the first step of the analysis phase at all levels of the health system consists of verifying the quality of the data collected on the monitoring sheet. We recommend carrying out the following checks at each level of the health system – verifying the monitoring sheets at the health facility level and the EmONC database at the district/ regional/provincial and national level:

1) <u>Verifying the completeness of data</u>: are all elements of the monitoring sheet completed?

2) <u>Verifying the validity of data</u>: is each element of the monitoring sheet adhered to in terms of format, type of data and value <u>in accordance with its definition</u>?

3) <u>Verifying data consistency with the concept of EmONC referral facilities</u> (see Technical Sheet no. 1) – we recommend the following checks in particular:

    a) consistency between the health facility's obstetric duties and the minimum number of births set out in the national EmONC reference document (for example, Togo's BEmONC reference document indicates that a BEmONC facility should attend to at least 30 births per month). If a health facility is under-performing in its obstetric duties, its status as an EmONC referral facility should be reconsidered, with a focus on analysing its potential catchment area;

    b) consistency between the signal functions indicated as performed during the last three months and the corresponding obstetric and newborn cases. For example, if a signal function is indicated as performed (e.g. "yes" for the function "vacuum delivery") but the corresponding obstetric cases (e.g. number of assisted vaginal deliveries using a vacuum at the health facility during the quarter) is zero, the signal function should not be considered as performed. Additional examples of cross-checks are available in Table 5.

    c) consistency between the signal functions indicated as performed during the last three months and the corresponding supplies. For example, if a signal function is indicated as performed (e.g. "yes" for the function "parenteral administration of anticonvulsants") but the corresponding supply (e.g. magnesium sulphate) is not available, the signal function should not be considered as performed. Additional examples of cross-checks are available in Table 5;

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d) consistency between the concept of a 24/7 EmONC referral facility and the minimum number of qualified staff to attend to pregnancy, childbirth and the immediate postpartum period (team including midwife, doctor, nurse), as set out in the national EmONC reference document for 24/7 care.

These analyses can be carried out using statistical software, DHIS 2 or the EmONC network analysis tool developed by the UNFPA Technical Division (automated Excel spreadsheet developed alongside this manual and available on the UNFPA website).

TABLE 5: EXAMPLES OF CONSISTENCY CHECKS FOR THE EMONC SIGNAL FUNCTIONS

Signal functions	Consistency checks (to be included in analysis tool – eg. DHIS2)		
	Number of cases	Availability of essential medicines	Availability of equipment
Administer parenteral antibiotics		- Ampicillin - Metronidazole - Gentamicin	
Administer uterotonic drugs		- Oxytocin	
Administer parenteral anticonvulsants	- Number of cases of (pre) eclampsia/ eclampsia managed >0	- Magnesium Sulfate	
Remove retained products			- Manual Vacuum Aspiration (MVA) kit
Perform assisted vaginal delivery	- Number of deliveries done with vacuum extractor >0		- Vacuum extractor
Perform basic neonatal resuscitation (with bag and mask)	- Number of basic neonatal resuscitation performed >0		- Bag and mask
Perform Caesarean section	- Number of C-sections performed >0		

5.2 Key RMNH indicators for analysing and monitoring the development of the EmONC network

The analysis indicators to be used at the national and regional/district levels should be established during the national design workshop (see Chapter 2) and based on the data specified in the monitoring sheet. We recommend using the following key RMNH indicators at the national and regional/district levels for the baseline analysis situation, and for monitoring the EmONC network development:

TABLE 6: SUGGESTED RMNH INDICATORS IN EmONC HEALTH FACILITIES

KEY INDICATORS	RECOMMENDED TARGETS
1. Number of functioning CEmONC health facilities in the considered area (functioning = no shortfalls in the nine signal functions and maternal and newborn services available 24/7)	MAXIMUM five EmONC health facilities per 500,000 population, including at least one CEmONC health facility
2. Number of functioning BEmONC health facilities in the considered area (functioning= no shortfalls in the seven signal functions and maternal and newborn services available 24/7)	
3. Proportion of functioning EmONC health facilities in the considered area: - numerator = number of functioning EmONC health facilities; - denominator = number of designated EmONC health facilities in the considered area (in the programmatic cycle(s))	At least 80% of designated EMONC health facilities need to be functioning in the considered programmatic cycle(s)
4. Proportion of expected deliveries in functioning EmONC health facilities: - numerator = number of deliveries in functioning EmONC facilities; - denominator = expected number of deliveries in the considered area (in the programmatic cycle(s))	All expected deliveries should take place in functioning EmONC health facilities. An intermediary and realistic recommended target is that 30-50% of expected deliveries should be in functioning EmONC health facilities in the considered area (in the programmatic cycle(s))
5. Proportion of expected births with major direct obstetric complications in functioning EmONC health facilities (Met Need for EmONC): - numerator = number of major direct obstetric complications in functioning EmONC health facilities - denominator = expected number of major direct obstetric complications in the considered area (in the programmatic cycle(s)) - corresponding to 15% of expected births in the considered area	All expected births with major direct obstetric complications should take place in functioning EmONC health facilities. An intermediary and realistic recommended target is at least 50% of expected births with major direct obstetric complications should be in functioning EmONC health facilities in the considered area (in the programmatic cycle(s))

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KEY INDICATORS	RECOMMENDED TARGETS
6. Proportion of the population able to access the closest designated EmONC health facility within 2 hours of travel time in the considered area	At least 80%
7. Proportion of the population able to access the closest functioning EmONC health facility within 2 hours of travel time in the considered area	At least 80% with intermediate realistic targets of 50% then 60% and 70%, according to the baseline and resources available (in the programmatic cycle(s))
8. Proportion of the population able to access the closest functioning EmONC health facility providing quality care within 2 hours of travel time in the considered area	At least 50% with intermediate realistic targets of 20% then 30% and 40%, according to the baseline and resources available (in the programmatic cycle(s))
9. Proportion of regions or provinces reaching a sufficient coverage of the population by functioning EmONC health facilities: - numerator: number of regions or provinces reaching a sufficient coverage - denominator: number of regions or provinces in the country	100% as all regions or provinces in the country should reach 80% of the population covered by functioning EmONC facilities within 2 hours of travel time (in the programmatic cycle(s))
10. Caesarean section rate: - numerator = number of caesareans in functioning EmONC facilities; - denominator = number of expected births in the considered area	At least 5 per cent (complemented with a quality analysis using the Robson classification on a sample of caesarean indications)
11. Direct Obstetric case fatality rate: - numerator = number of maternal deaths due to major direct obstetric complications in EmONC facilities of the considered area - denominator = number of women treated for major direct obstetric complications in the same EmONC facilities over the same period	Below 1%

KEY INDICATORS	RECOMMENDED TARGETS
12. Intrapartum and very early neonatal death rate: - numerator = number of intrapartum deaths (fresh stillbirths; ≥ 2.5 kg) and very early neonatal deaths (≤ 24 h; ≥ 2.5 kg) in the EmONC facilities of the considered area - denominator = number of deliveries in the same EmONC facilities over the same period	To be decided
13. Shortfall in midwives in the EmONC network: - numerator = number of midwives actually working in the EmONC health facilities - denominator = number of midwives required in the national network of EmONC facilities to meet national standards	0%
14. Percentage of "good" BEmONC/CEmONC facility referral links in the national network: - numerator = number of BEmONC/CEmONC facility referral links that are unproblematic and done in less than 2 hours - denominator = total number of BEmONC/ CEmONC facility referral links in the considered area	90%

The monitoring of the national network of EmONC facilities allows to track on a quarterly basis the offering of the signal functions, which impacts the definition of a functioning EmoNC health facility. For example, is an EmONC health facility functioning for a year if it is functioning for the four quarters of the year or only for three quarters (including the last quarter). These questions are currently under consideration in countries that are monitoring their national EmONC network, such as Burundi, Madagascar, Senegal and Togo.

In addition, the use of AccessMod to calculate the proportion of the population covered by a functioning EmONC health facility within 2 hours or 1 hour travel of time seems to be a more interesting indicator than the "availability of EmONC", linked to the number of functioning EmONC health facilities for 500,000 population. The authors recommend

that in the future the coverage of the population by functioning EmONC health facilities replaces the EmONC availability as international tracer.

Finally, a new indicator should be considered, the population covered within 1 or 2 hours of travel time by a functioning EmONC health facility with quality of care. The definition of the quality of care should be based on an index covering both the provision and experience of care as recommended by WHO.

5.3 Analysis dashboard

The analysis indicators captured at the national and regional/district levels should be displayed in the form of a dashboard comprising key indicators (with tables and graphs) to facilitate analysis and decision-making. These dashboards should be established during the national design workshop, and the indicators to be captured on the dashboards decided upon in a plenary session – see Table 7 for the indicators captured on the national and regional dashboards in Togo.

TABLE 7: RMNH INDICATORS INCLUDED IN NATIONAL AND REGIONAL DASHBOARDS OF EmONC HEALTH FACILITIES - TOGO

INDICATORS		DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part I: EmONC result indicators				
1. EmONC availability and coverage	1.1. Proportion of functioning EmONC health facilities in the considered area:	- numerator = number of functioning EmONC health facilities; - denominator = number of designated EmONC health facilities in the considered area (in the programmatic cycle(s)) Criteria for functioning EmONC health facility (for a quarter but should also be measured over a semester and over a year): - criteria for functioning BEmONC health facility: 7 signal functions performed (over the last quarter for quarterly analysis; or over two quarters to be functioning for the semester; or over at least three quarters including the last quarter to be functioning for the year) + opening 24h/7d - criteria for functioning CEmONC health facility: 9 signal functions performed (over the last quarter for quarterly analysis; or over two quarters to be functioning for the semester; or over at least three quarters including the last quarter to be functioning for the year) + opening 24h/7d This indicator can be disaggregated for BEmONC and CEmONC.	Yes	Yes
	1.2. Number of deliveries in functioning and in not functioning EmONC health facilities, in other maternities, and outside any health facilities	Number of deliveries in functioning EmONC facilities; in non functioning EmONC health facilities; in other maternities (= number of institutional deliveries calculated using the institutional delivery rate - number of deliveries in EmONC health facilities); outside any health facility (= number of expected birth - estimated number of institutional deliveries)	Yes	Yes

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INDICATORS	DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part I: EmONC result indicators			
1. EmONC availability and coverage	1.3. Proportion of deliveries in functioning and in not functioning EmONC health facilities, in other maternities, and outside any health facilities	<u>Calculation of the proportion:</u> '- numerator = number of deliveries in functioning EmONC facilities; in non functioning EmONC health facilities; in other maternities (= number of institutional deliveries calculated using the institutional delivery rate - number of deliveries in EmONC health facilities); outside any health facility (= number of expected birth - estimated number of instituional deliveries) - denominator = expected number of deliveries in the considered area in the programmatic cycle(s) (= population * crude birth rate/1000)	Yes	Yes
	1.4. Proportion of designated EmONC health facilities with less than 30 deliveries per month	- numerator = number of designated EmONC health facilities with less than 30 deliveries per month; - denominator = number of designated EmONC health facilities in the considered area (in the programmatic cycle(s))	Yes	Yes
	1.5. Number of gaps in signal functions (and description of signal functions missing)	Analysis of the performance of a signal function should be done in the past 3 months.	No	Yes
	1.6. Number of EmONC facilities with gaps in each signal functions	Number of EmONC facilities with gaps (per signal function)	Yes	Yes

INDICATORS	DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part I: EmONC result indicators			
1. EmONC availability and coverage	1.7. Number of major direct obstetric complications treated in functioning and in not functioning EmONC health facilities	Number of major direct obstetric complications treated in functioning EmONC facilities; in non functioning EmONC health facilities	Yes	Yes
	1.8. Met Need for EmOC: proportion of expected major direct obstetric complications treated in functioning EmONC health facilities	- numerator = number of major direct obstetric complications treated in functioning EmONC health facilities - denominator = expected number of major direct obstetric complications in the considered area (in the programmatic cycle(s)) - corresponding to 15% of expected births in the considered area	Yes	Yes
	1.9. Proportion of the population able to access the closest designated EmONC health facility within 2 hours of travel time in the considered area	Calculated using AccessMod (https://www.accessmod.org/). Can be disaggregated by national and regional levels (with and without the contribution from neighbor regions) and the travel time can be reduced to less than 2h (eg. 1h or 30 min) according to the context	Yes	Yes
	1.10. Proportion of the population able to access the closest functioning EmONC health facility within 2 hours of travel time in the considered area	Calculated using AccessMod (https://www.accessmod.org/). Can be disaggregated by national and regional levels (with and without the contribution from neighbor regions) and the travel time can be reduced to less than 2h (eg. 1h or 30 min) according to the context	Yes	Yes

INDICATORS	DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part I: EmONC result indicators			
1. EmONC availability and coverage	1.11. Proportion of the population able to access the closest functioning EmONC health facility providing quality care within 2 hours of travel time in the considered area	Calculated using AccessMod (https://www.accessmod.org/). Can be disaggregated by national and regional levels (with and without the contribution from neighbor regions) and the travel time can be reduced to less than 2h (eg. 1h or 30 min) according to the context. Only functioning EmONC health facilities with a DOCFR below 1% are considered for this indicator.	Yes	Yes
	1.12. Proportion of regions or provinces reaching a sufficient coverage of the population by functioning EmONC health facilities within 2h travel time	- numerator: number of regions or provinces reaching a sufficient coverage of the population by functioning EmONC (to be set at national level but should aim to be at least 80% with intermediate realistic targets of 50%, 60% and 70%, according to the context) - denominator: number of regions or provinces in the country	Yes	No
	1.13. Caesarean section rate in functioning EmONC health facilities	- numerator = number of caesareans in functioning EmONC facilities - denominator = number of expected births in the considered area Minimal threshold for c-section rate of 5%.	Yes	Yes
	1.14. Proportion of maternal deaths notified(in designated EmONC health facilities)	- numerator = number of maternal deaths in designated EmONC health facilities notified through the MPDSR system - denominator = number of maternal deaths in designated EmONC health facilities	Yes	Yes
	1.15. Proportion of maternal deaths reviewed (in designated EmONC health facilities)	- numerator = number of maternal deaths in designated EmONC health facilities reviewed through the MPDSR system - denominator = number of maternal deaths in designated EmONC health facilities	Yes	Yes

INDICATORS	DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part I: EmONC result indicators			
2. Quality of care (provision of care) indicators	2.1. Number of maternal deaths in the designated EmONC network	Number of maternal deaths in the designated EmONC health facilities	Yes	Yes
	2.2. Direct Obstetric case fatality rate in the designated EmONC network (also calculated for both functioning and non functioning EmONC health facilities)	- numerator = number of maternal deaths due to major direct obstetric complications in designated EmONC facilities of the considered area - denominator = number of women treated for major direct obstetric complications in the same EmONC facilities over the same period Maximum threshold of 1% (international recommendation). The DOCFR should be measured on a quarterly basis in designated EmONC health facilities with an important obstetric activity. For health facilities with lower obstetric activity, the calculation period should be extended (eg. calculated based on semester or annual data)	Yes	Yes
	2.3. Intrapartum and very early neonatal death rate in the designated EmONC network	- numerator = number of intrapartum deaths (fresh stillbirths; ≥ 2.5 kg) and very early neonatal deaths (< 24 h; ≥ 2.5 kg) in the EmONC facilities of the considered area - denominator = number of deliveries in the same EmONC facilities over the same period	Yes	Yes
	2.4. Proportion of fresh stillbirths who are are resuscitated in the designated EmONC network	- numerator = number of basic neonatal resuscitations (with bag and mask) - denominator = number of fresh stillbirths ≥ 2.5 kg in the same EmONC facilities over the same period	No	Yes

INDICATORS	DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part II: Referral linkages and EmONC process indicators			
3. Referral linkages	3.1. Number of BEmONC health facilities which referral link to CEmONC health facility is monitored (disaggregated by the quality of link - cf. definition)	- green link – referrals are generally unproblematic and done in less than 2 hours; - orange link – difficulties with referral link related to problems that can be solved in the short/medium term, generally by the health sector itself, and/or a reference between 2 and 4 hours; - red link – major problems with referral link generally related to the state of travel routes or with river crossings, which are difficult to resolve in the medium term and which often involve other sectors than the health sector, and/or a reference above 4 hours	No	Yes
	3.2. Proportion of "good" (green) BEmONC/CEmONC facility referral links in the national network	- numerator = number of BEmONC/CEmONC facility referral links that are unproblematic and done in less than 2 hours (green links) - denominator = total number of BEmONC/CEmONC facility referral links in the considered area	Yes	Yes
	3.3. Proportion of patients with major obstetric or newborn complications referred from BEmONC to CEmONC health facilities	- numerator = number of patients with major obstetric or newborn complications referred from BEmONC to CEmONC health facilities - denominator = total number of patients treated in BEmONC health facilities with major direct obstetric or newborn complications	Yes	Yes
4. Availability of Reproductive Maternal and Newborn Health Services	4.1. Availability of EmONC services 24h/7d	Maternity opened 24h/7d and there is the minimum number of midwives required by the national norm for ensuring 24h/7d services (eg. min 3 midwives)	No	Yes

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INDICATORS	DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part II: Referral linkages and EmONC process indicators			
4. Availability of Reproductive Maternal and Newborn Health Services	4.2. Vacuum extractions	Number of vacuum extractions performed	No	Yes
	4.3. Infection prevention	The national package of infection prevention is implemented (yes/no indicator)	No	Yes
	4.5. Partogram	Systematic use of the partogram (yes/no indicator)	No	Yes
	4.6. Water	Availability of water in the delivery room (yes/no indicator)	No	Yes
	4.7. Post-partum family planning/ contraception	Number and proportion of women receiving counselling for a modern contraceptive method within 48h after delivery	Yes	Yes
	4.8. Implants/IUDs	Number of implants and number of IUDs	No	Yes
	4.9. Elimination of mother-to-child transmission of HIV (EMTCT)	Availability of EMTCT services (yes/no indicator)	No	Yes

INDICATORS	DEFINITIONS	1. Included in national dahsboard (graphs with national level trends over time and graphs with the indicators for all the regions at a specific time)?	2. Included in regional/district dashboard (graphs with regional level trends over time and graphs with the indicators for all the EmONC health facilities of the region at a specific time)?
Part III: Inputs (Human Resources and Essential Medicines)			
5. Human Resources (midwives)	5.1. Shortfall in midwives in the EmONC network	- numerator = number of midwives actually working in the EmONC health facilities (part of the shift) - denominator = number of midwives required in the national network of EmONC facilities to meet national standards The number of midwives needed in the EmONC health facilities should be calculated based on the national norm which needs to include the minimum number of midwives needed for ensuring 24h/7d services and a maximum number of deliveries per midwife per month. For example, minimum 3 midwives for ensuring 24h/7d services and maximum 30 deliveries per midwife per month to ensure that midwives are able to perform other reproductive health services and link with other maternities and communities. A BEmONC health facility doing 130 deliveries per month would need: 3 midwives (for 24h/7d) + 1 midwife (for covering deliveries from 91 to 120) + 1 midwife (for covering deliveries from 121) = 5 midwives.	Yes	Yes
6. Essential medicine	6.1. Number of EmONC health facilities with stock-outs of essential medicines	-Stock-outs of Oxytocin, Misoprostol, Mg Sulfate	Yes	Yes
		- Other stock-outs: ampicillin, vitamin K1, rifamycine eye drops, etc	No	Yes

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The national dashboard should include a range of key SRH/MNH indicators from the EmONC network in the form of tables and graphs. It should be displayed on an interactive dashboard, with the user able to use filters to automatically generate graphs.

We recommend to include the following graph representations for specific key RMNH indicators in the EmONC network (see Figures 39 to 44).

FIGURE 39: NUMBER OF REFERRAL HEALTH FACILITIES IN THE NATIONAL EmONC NETWORK. DATA FROM RMNH MONITORING FOR 2016 MINISTRY OF HEALTH, TOGO

Number of EmONC facilities per region - Togo (Q1-Q4 2016)

Number of designated/planned EmONC facilities

Number of recommended EmONC facilities (international norm)

Number of functioning EmONC facilities
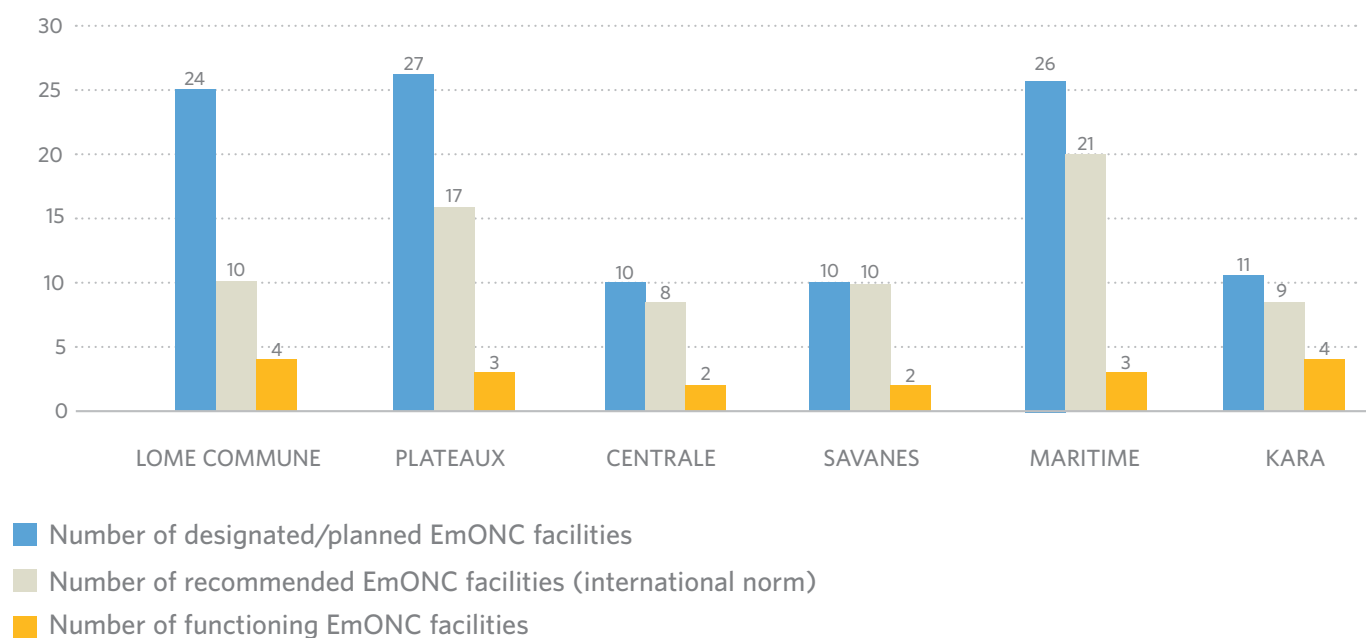
FIGURE 40: NUMBER OF BIRTHS IN THE NATIONAL EmONC NETWORK. DATA FROM RMNH MONITORING FOR 2016, MINISTRY OF HEALTH, TOGO

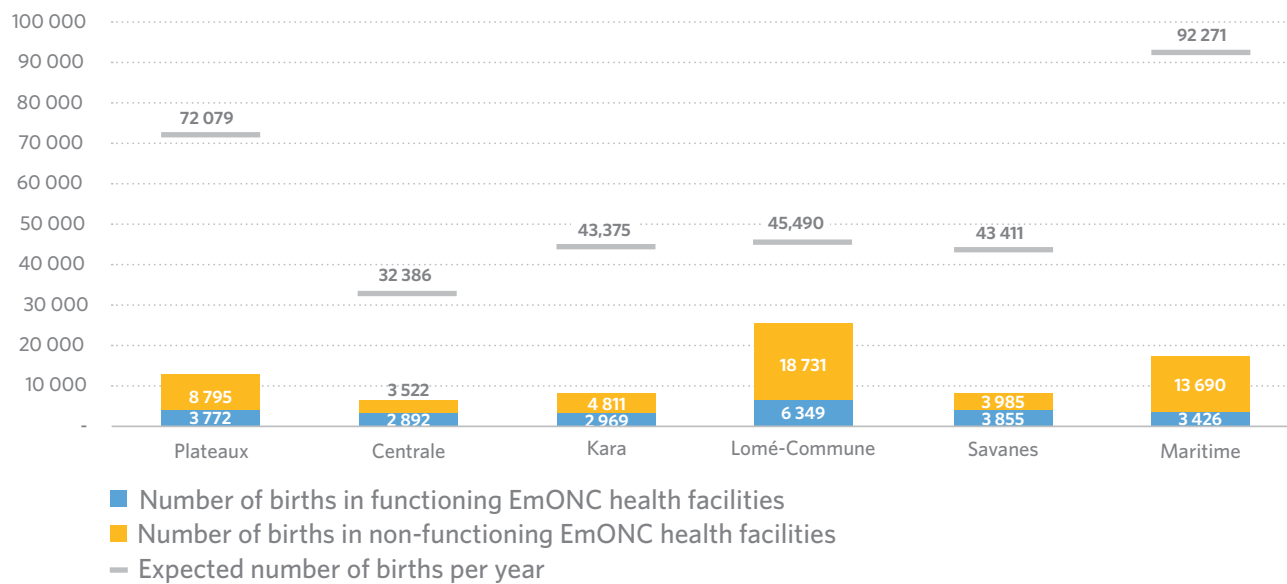**Number of births – national EmONC network per region – Togo (Q1-Q4 2016)**

■ Number of births in functioning EmONC health facilities
■ Number of births in non-functioning EmONC health facilities
▬ Expected number of births per year

FIGURE 41: NUMBER OF EXPECTED DIRECT OBSTETRIC COMPLICATIONS IN THE NATIONAL EmONC NETWORK. DATA FROM RMNH MONITORING FOR 2016, MINISTRY OF HEALTH, TOGO

Number of women with direct obstetric complications – national EmONC network per region - Togo (Q1-Q4 2016)

■ Number of direct obstetric complications treated in functioning EmONC health facilties
■ Number of direct obstetric complications treated in non-functioning EmONC health facilties
▬ Expected number of direct obstetric complications in the region (15% of expected number of births)

135
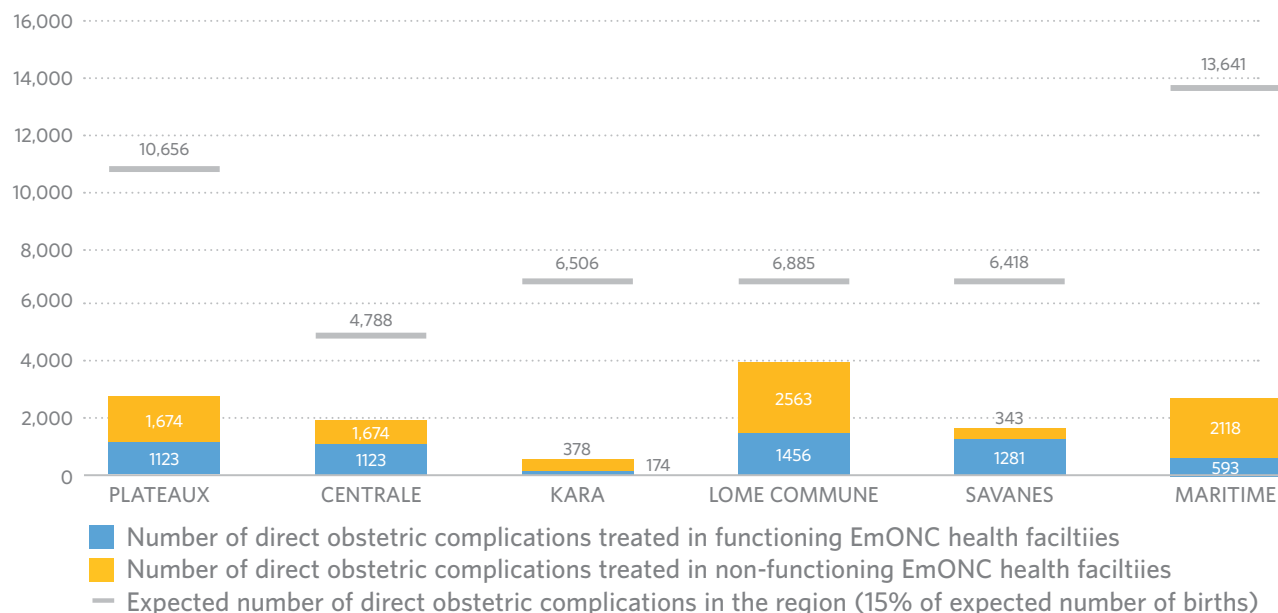
FIGURE 42: FATALITY RATE DUE TO DIRECT OBSTETRIC CAUSES IN THE NATIONAL EMONC NETWORK. DATA FROM RMNH MONITORING FOR 2016, MINISTRY OF HEALTH, TOGO

Direct Obstetric Case Fatality rate (DOCFR - in functioning EmONC health facilities) - per region - Togo (Q1-Q4 2016)
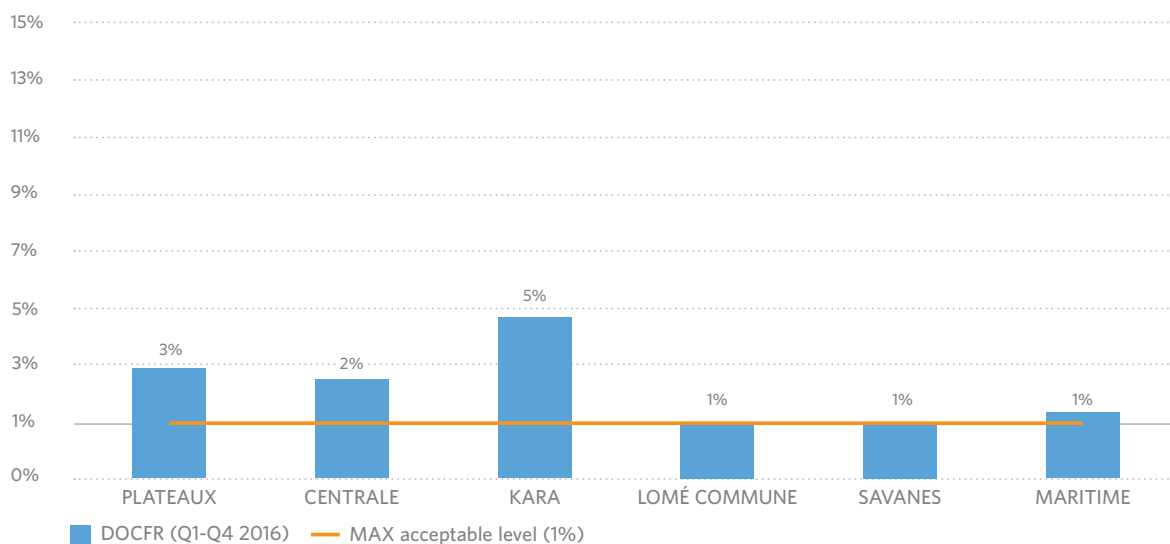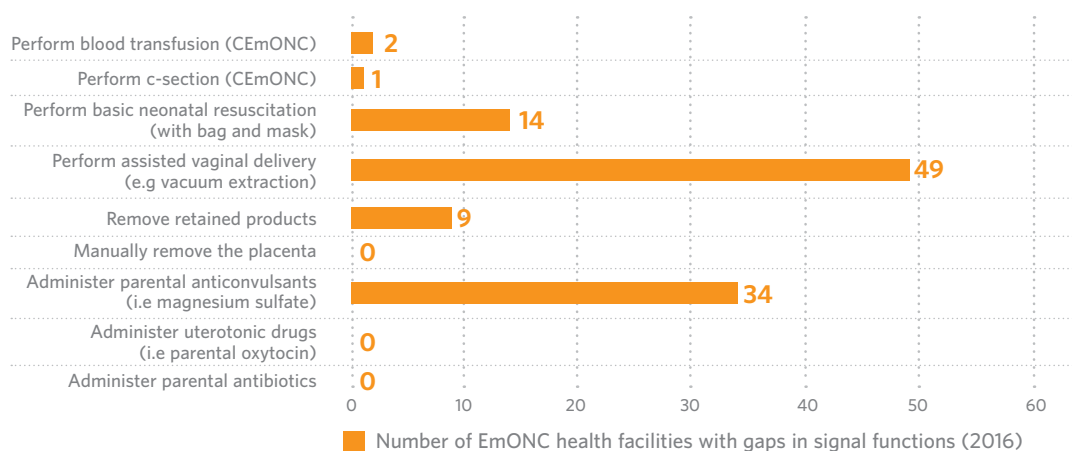

FIGURE 43: NUMBER OF EmONC REFERRAL FACILITIES WITH A SHORTFALL IN SIGNAL FUNCTIONS. DATA FROM RMNH MONITORING FOR 2016, MINISTRY OF HEALTH, TOGO

Number of EmONC health facilities with shortfall in signal functions - Togo (Q1-Q4 2016)

136

FIGURE 44: ESTIMATED SHORTFALL IN MIDWIVES IN THE NATIONAL EmONC NETWORK (FIGURES UNDERESTIMATED FOR LOMÉ COMMUNE). DATA FROM RMNH MONITORING FOR FOURTH QUARTERS OF 2016, MINISTRY OF HEALTH, TOGO

Estimated gaps in the number of midwives deployed in the EmONC health facilities per region – Togo (Q4 2016)
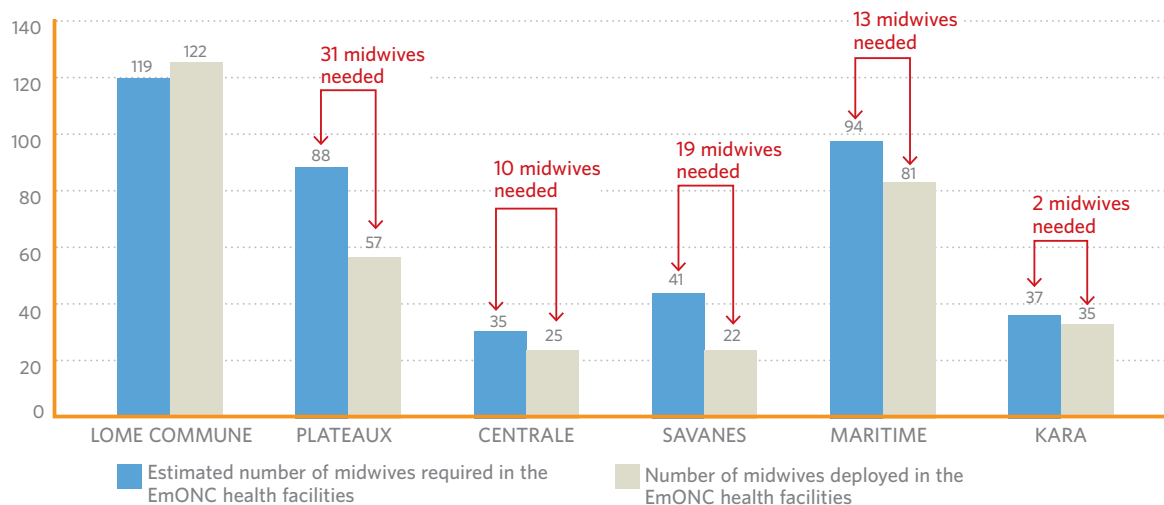
The regional dashboards should include a range of key RMNH indicators for each designated EmONC health facility EmONC health facilities (from each region) in the form of a colour-coded table. The regional dashboard should serve as an analytical tool for the regional support team to easily identify strengths and weaknesses in terms of availability and quality of EmONC (for example, green indicates good practices, red indicates shortcomings), as illustrated in Table 8.

TABLE 8: EmONC HEALTH FACILITY NETWORK - EXAMPLE OF REGIONAL DASHBOARD (KARA REGION) FOR QUARTER 4 2015

These dashboards can be created using statistical software, DHIS 2 or the EmONC network analysis tool developed by the UNFPA Technical Division (automated Excel spreadsheet developed alongside this manual and available on the UNFPA website).

Name of the EmONC health facilities	Type of EmONC health facility	Quality of referral linkages BEmONC to CEmONC (2013)	Quality of referral linkages BEmONC to CEmONC (2015)	Status of the EmONC health facility - previous quarter (Q3 2015)	Status of the EmONC health facility (Q4 2015)	Status of the health facility (Q3-Q4 2015)	Number of gaps in signal functions (Q4 2015)	Main deficits in signal functions (Q4 2015)	Open 24h/7	Availability of water (Q4 2015)	Stock-outs of essential medicines (Q4 2015)	Partogram use (Q4 2015)	Infection Prevention (Q4 2015)
CHP A	BEmONC	Good	Good	Not functional	Not functional	Not functional	1	Vacuum extractions	No	Yes	Rifamycine eye drops	Yes	No
CHP B	BEmONC	Financial constraints	Financial constraints	Functional	Functional	Functional	0	No deficit	Yes	Yes	Misoprostol	Yes	No
CMS C	BEmONC	Good	Good	Functional	Not functional	Not functional	1	Vacuum extractions	No	Yes		Yes	Yes
CHP D	BEmONC	Good	Good	Not functional	Not functional	Not functional	1	Vacuum extractions	Yes	Yes		Yes	No
CHP E	BEmONC	Good	Good	Functional	Functional	Functional	0	No deficit	Yes	Yes		Yes	No
CMS F	BEmONC	Good	Good	Not functional	Not functional	Not functional	1	Vacuum extractions	Yes	Yes	Oxytocin, Misoprostol, Vit K1, Rifamycine eye drops	Yes	No
CHP G	CEMONC			Not functional	Not functional	Not functional	1	Vacuum extractions	No	Yes		Yes	Yes
CHP H	CEMONC			Not functional	Not functional	Not functional	0	No deficit	No	Yes		Yes	No
CHR I	CEMONC			Not functional	Not functional	Not functional	1	Vacuum extractions	Yes	Yes		No	No
CHU J	CEMONC			Not functional	Not functional	Not functional	1	Vacuum extractions	Yes	Yes	Oxytocin, Misoprostol, Vit K1, Rifamycine eye drops	Yes	No
HME K	CEMONC			Functional	Functional	Functional	0	No deficit	Yes	Yes		No	Yes
Indicators				EmONC Availability:	EmONC Availability:	EmONC Availability:		Signal function with most deficit:	Prop. EmONC health fac. with water:		Major stock-outs:	Prop. EmONC health fac. with partogram use:	Prop. EmONC health fac. with infection prevention:
				36% (4/11)	33% (3/11)	33% (3/11)		Vacuum extractions		100%	Misoprostol, Oxytocin, Rifamycine eye drops	82%	27%

Obstetric Activity (# deliveries) per month in Q4 2015	...including number of vacuum extractions (Q4 2015)	...including number of c-sections (Q4 2015)	Number of major direct obstetric complications (Q4 2015)	Number of maternal deaths (Q4 2015)	Number of maternal deaths notified (Q4 2015)	Number of maternal deaths reviewed (Q4 2015)	Direct Obstetric Case Fatality Rate (Q4 2015)	Number of neonatal rescuscitations / Number of fresh stillbirths ≥ 2.5 kg (Q4 2015)	Number of midwives deployed in the EmONC health facilities facilities (Q4 2015)	National norm of number of midwives in EmONC health facilities (min 3 midwives for 24h/7d and MAX 30 deliveries/ midwife/month)	Estimated gap in midwives (Q4 2015)	Number of Implants (Q4 2015)	Number of IUDs (Q4 2015)
29	0		1	0	0	0	Not enough data to calculate	1,75	1	3	2	123	2
54	4		7	0	0	0	Not enough data to calculate	3,00	3	3	0	168	39
38	0		41	0	0	0	Not enough data to calculate	18,00	1	3	2	60	1
31	0		9	0	0	0	Not enough data to calculate	8,50	6	3	0	53	7
19	4		5	0	0	0	Not enough data to calculate	7,00	3	3	0	53	6
37	0		9	0	0	0	Not enough data to calculate	18,00	3	3	0	126	3
25	0	22	70	0	0	0	Not enough data to calculate	5,00	1	3	2	215	11
92	5	41	58	0	0	0	Not enough data to calculate	5,67	3	4	1	188	8
86	0	141	180	1	1	1	0,56%	2,80	7	4	0	24	6
112	0	148	175	0	0	0	0%	2,79	4	5	1	22	13
74	5	22	36	0	0	0	Not enough data to calculate	0,75	3	3	0	18	8
Total:	Total:	Total:	Total:	Total:	Maternal death notification rate:	Maternal death review rate:			Total number of midwives deployed in the EmONC health facilities:	Total number of midwives needed in the EmONC health facilities:	Total gap in midwives:	Total:	Total:
597	18	374	591	1	100%	100%			35	37	8	1,050	104

6. Technical Sheet no. 6: The concept of implementation science and its application in developing the EmONC network

6.1. What is Implementation Science?

Implementation science is defined as the scientific study of methods that promote the full and effective use in practice of evidence-based findings from research and other means. It seeks to identify the drivers for the sustainable uptake, adoption, and implementation of evidence-based interventions. Implementation science is multi-sectoral and is used in various domains, including healthcare, education, and crime prevention.

One of the prerequisite for a successful implementation is the clarity of the programme to implement and of its operationalization: the more the key components of a programme are clearly explained to stakeholders through training and technical support, the more they will be able to focus on the key factors for a successful implementation and be able to replicate it in various settings.

It is also demonstrated that the level and quality of the implementation of programmes impacts the results obtained[32,33,34,35,36]. An effective implementation increases the probabilities of success of the programme and leads to better results. In addition, a dynamic context that promotes the engagement of stakeholders and that is open and flexible to changes facilitates a successful implementation. The following formula illustrates this:

Effective Programme + Effective Implementation + Dynamic Context
=
Increase of probability of positive results

This is important because a programme or an intervention could appear to fail while the real problem is not that the programme does not work, but that the process of putting the program in place is inadequate.

The challenges of implementation in EmONC and maternal health more broadly have been widely recognized, including by UNFPA, UNICEF, WHO, and in many peer-reviewed papers[37,38]. Implementation of service delivery programs such as EmONC is complex in part because these programmes have the following attributes:

- transaction intensive: the number of deliveries and obstetric and neonatal complications can be important (particularly in health facilities with important obstetric activity and limited skilled attendants at birth)

- health system driven: the improvement of the availability and the quality of SRH/MNH services in EmONC facilities requires all health systems' components to be in place (from skilled health personal to essential medicines, policies, governance, quality of care standards, and data) and sufficient demand for services (which is linked to geographic, financial access, quality of care, and gender equality)

- judgment intensive: the health care workers must exercise judgment, which can be complex, for each childbirth;

- Stakes not supporting the "mission": there can be powerful pressures and incentives for those agents to do something other than implement a solution, such as charging informal fees or steering patients from free public health facilities to expensive private practices.

6.2. The growing importance of Implementation Science

For many years in the field of public health, implementation has been an intuitive or passive process involving "diffusion" and "dissemination" of information and evidence-based interventions to leaders and practitioners with the expectation that they would then put these interventions into practice. However, as evidence-based programmes were evaluated, it has become clear that innovations and interventions are not self-implementing. Recent studies suggest that it takes on average about 17 years for evidence based practices in healthcare to be implemented and only about 14% of evidence based practices from research are included in day to day clinical practices.

"Studies suggest that it takes an average of 17 years for research evidence to reach clinical practice."

Balas, E. A., & Boren, S. A. Yearbook of Medical Informatics: Managing Clinical Knowledge for Health Care Improvement. Stuttgart, Germany, 2000.

"It takes an estimated average of 17 years for only 14% of new scientific discoveries to enter day-to-day clinical practice."

Westfall, J. M., Mold, J., & Fagnan, L. Practice-based research - "Blue Highways" on the NIH roadmap. JAMA, 297(4), p. 403, 2007.

In response to the failures of implementing programmes at scale, the field of 'implementation science' rapidly expanded in the last decade and effective implementation of evidence-based interventions has become an increasing concern for countries. For example, in its national RMNCAH investment case (2015), Uganda considers that "high maternal and child mortality [in the country] is not much due to lack of appropriate policies at national and sub-national levels but rather due to inadequate policy implementation". As previously highlighted, the availability of EmONC services remains limited in most low income countries, reflecting weaknesses in the development and implementation of facility networks. A recent UNFPA-WHO survey on MDSR also shows disparities among countries in the implementation of MDSR systems. For example, Bangladesh, Burkina Faso, and Senegal have MDSR frameworks in place but respectively notify 15%, 19%, and 4% of maternal deaths while Congo, Niger and Rwanda respectively notify 42%, 25%, and 31% of maternal deaths.

A systematic review of the lessons learned from the implementation of programmes[32] has contributed to define a set of concepts to facilitate successful implementation, such as the presence of implementation teams, implementation drivers, and quality improvement cycles. These concepts, described in the next section, can be applied to the implementation of EmONC network development and monitoring.

6.3. The concepts of Implementation Science

6.3.1. Implementation support teams/quality improvement teams

The implementation of programmes is an active process and it is critical to have human resources exclusively dedicated to support effective implementation. Recent researches show the importance of having implementation teams within the organizations to support key interventions for a purposeful and effective implementation.

Despite these evidences, consciously built implementation support teams are not currently a standard part of maternal health programs. There is rarely a budget designated for proactively supporting implementation through these teams.

Implementation support teams can have different structures and mandates in different settings but their main objective is to provide technical expertise to strengthen the implementation of a programme. They are typically composed of three to five persons. Some implementation teams are composed of the developers and implementers of the programme, others also include experts outside the organization or implementation entity. The most important is to have the expertise and resources required for: (1) monitoring the implementation process; (2) using data to make continuous improvements to program implementation; (3) build and manage

relationships among the partners; (4) facilitating changes needed to integrate the programme in the existing organizational structures; and (5) providing coaching to implementers[32].

In the context of the development of a national network of EmONC facilities, the EmONC monitoring teams (regional/district teams and national team) should play the role of the implementation support teams for facilitating the implementation of the EmONC monitoring and the response phases. One approach is to have an implementation support team at central level, and one per sub-national (regional/provincial/state) level. According to the context and the expertise available in programme implementation, these EmONC monitoring teams should themselves be coached by implementation experts in order to be able to effectively support health facility teams in the implementation of the EmONC development approach. Such support on implementation should complement other technical supports such as supportive supervision and mentoring, already implemented in many countries. The table 10 in technical sheet 7 clarifies these different types of support. In the context of the EmONC development, the implementation support teams should:

- Be composed of minimum three persons (for the continuity of the team) with a mix of skills and expertise in:

    - Clinical

    - Programme implementation (including M&E)

    - Organizational change

    - Pedagogy.

- Be in regular contacts with the facility teams to support them implement the data collection, analysis, and response phases (including the PDSA cycle)

A national level child health program in Ghana has illustrated the added value of implementation support teams. The implementing team distilled some key lessons about implementation support, including ensuring that site visits are targeted to address health facility-specific concerns, and building a culture of using data for measurement and quality of care improvement[39].

6.3.2. Implementation drivers

The implementation drivers/components are the elements that positively influence the success of the implementation and replication of a programme. These drivers refer to the capacities, infrastructure, and functioning of organizations and are grouped in three categories (as shown in figure 46):

1. Competency drivers: are activities to develop, improve, and sustain ability to put programs and innovations into practice in order to benefit to the patient or the community. The three competency drivers include: (a) selection of staff, (b) training, (c) coaching/feedback from performance assessment. Mentioned less often, but equally important, is the integration of these components. Too often practitioners leave training and find their new knowledge and skills are not supported by their supervisor. In an integrated approach, supervisors are prepared to support and expand the knowledge and skills introduced in training.

2. Organization drivers: are mechanisms set-up and maintained to ensure the enabling conditions and environment for the programme or innovation to be implemented and therefore to obtain results. The three organization drivers include: (e) system interventions meaning the importance to ensure commitment and support for change at all levels of the system/organization and to rely on champions and persons with influence to work together to build and sustain the culture, policies, regulatory practices, and funding mechanisms necessary for both the implementation drivers and the intervention practices to thrive, (f) facilitative administrative supports including internal policy analyses and decisions, procedural changes, funding allocations and a culture that is focused on what it takes to implement with good outcomes and reduces barriers for implementation, for example by minimizing paperwork and ensuring that issues such as practitioner workload, safety, remuneration, communication, and feedback are proactively addressed by the administration to the satisfaction of the practitioners, and (g) decision supported by data and evidence as a critical component for continuous quality improvement. Implementation support teams help organizations establish and evolve their data systems so information is immediately accessible and useful to practitioners, trainers, coaches, and managers for short-term and long-term planning and improvement at clinical and organizational levels.

3. Leadership drivers: are the leadership strategies to set-up for supporting the implementation of the programme or the innovation. Competent leaders are needed throughout an organization for supporting implementation. It is rare to find a description of change that does not point to leadership as an important contributor to success or failure. Both (h) technical and (i) adaptive leadership are needed. Technical leadership might be thought of as good management. The leader is engaged, quick to recognize and respond to issues that arise, organizes groups to solve problems, and regularly produces desired results. Technical leaders work in the zone where there is substantial agreement about what needs to be done and reasonable certainty about how to do it. Adaptive leadership is required in the zone of complexity where there is little agreement and less certainty. The concept of adaptive leadership resonates with leaders who recognize the layers of complexity involved

in any large-scale systems reform. For example, adaptive leaders understand the difference between "authority" (i.e., a formal position of power) and "leadership" (i.e., the act of helping people through to achieve meaningful change). Heifetz & Linsky[40] note that "authority" is organized to provide "direction, protection, and order" and maintain a stable system. When systems undergo change, the natural tendency of those in the system is to look to those in authority to minimize the tension of change and regain stability. However, when change is the goal, formal authority can get in the way of leadership because it is designed to maintain systems, not to help people overcome their natural tendencies to maintain the status quo. When organizations and systems are being changed on purpose, adaptive leadership is needed to manage the change process. Implementation support teams can help leaders and their management teams explore the nature of adaptive challenges and make good use of adaptive leadership methods to resolve issues, particularly in the case of quality improvement cycles that require continuous review of practices.

FIGURE 45: DRIVERS FOR IMPLEMENTING CHANGES AND INNOVATIONS

Source: Fixsen D.L, Karen A. Blase K.A, Naoom S.F, Duda M.A, Implementation Drivers: Assessing Best Practices, National Implementation Science Network (NIRN), University of North Carolina Chapel Hill, 2015

This framework aligns well with lessons from the maternal health literature. For example, as for competency drivers, it has long been clear that in-service training (short term - knowledge base) alone is not sufficient for maintaining skills. This also requires an appropriate selection of candidates for training[37], as well as ongoing coaching, supervision and mentoring[41,42]. As shown on table 9, the capacity of health professionals to apply a practice in their own work environment can increase from 5% to 95% when in service training (theory+practical demonstration during the training+practice off-site) is complemented by on-site mentorship/coaching.[61]

TABLE 9: EFFECTIVENESS OF IN-SERVICE TRAINING APPROACHES FOR THE IMPLE-MENTATION OF NEW SKILLS

| | OUTCOMES | | |
| | % of Participants who Demonstrate Knowledge, Demonstrate New Skills in Training Setting, and Use new Skills in the work environment | | |
TRAINING COMPONENTS	KNOWLEDGE	SKILL DEMONSTRATION	USE IN THE WORK ENVIRONMENT
Theory and Discussion	10%	5%	0%
...+Demonstration in Training	30%	20%	0%
...+Practice & Feedback in Training	60%	60%	5%
...+Coaching in the work environment	95%	95%	95%

The maternal health literature also supports the applicability of the organization and leadership drivers. It demonstrates that the right management practices can facilitate change and make a demonstrable difference in the ability of a facility to provide respectful and quality maternal care[43]. But individual facilities ultimately need to be supported by strengthening the entire health system[44]. The experience of Cambodia, which has achieved MDG 5, is particularly instructive in this regard[45]. The effort to improve referral for EmONC by systematically working to forge personal relationships and organizational ties within a referral network, profoundly changed how the system performed when a life-threatening

obstetric complication occurs. Such new practices are supported by strengthening health information systems so that they inform ongoing problem-solving and decision making at policy level and for improving service-delivery[46]. An additional example from Zimbabwe demonstrates the potential positive impact of a strengthened decision support data system. Program implementers created a monthly clinical data dashboard in a hospital and staff (both management and midwives) were committed to the program, which allowed the identification of negative trends in clinical outcomes and the formulation and implementation of remedial actions[47].

6.3.3. Quality Improvement (QI) cycles

Along implementation drivers, quality improvement cycles (eg. PDSA), as defined in the box below, have successfully been used in maternal and newborn health to address gaps in availability and quality of care [48,49,50]. For example, a regional hospital in Ghana successfully implemented QI to address maternal mortality from 2007 to 2011. Despite a 50% increase in deliveries in the hospital over this period, the maternal mortality ratio fell by 22.4%[51]. A QI collaboration in Niger that provided coaching support led to consistently higher compliance with essential obstetric and newborn care standards, as assessed through chart review and direct observation of care[52].

> **Quality improvement (QI):** "Quality improvement is the effort to improve the level of performance of a key process. It involves measuring the level of current performance, finding ways to improve that performance, and implementing new and better methods." (Donald M. Berwick, et al. Curing health care. Jossey-Bass Publishers, 1990).

Quality Improvement methods and tools

The following section briefly describes few quality improvement methods and tools that could be used by the support teams and the teams in the health facilities and at district/regional and national level for supporting quality improvement cycles in designated EmONC facilities.

Ishikawa or "fishbone" diagram (cf. Figure 47): also called the cause and effect diagram is a graphic tool used to explore and display the possible causes of a certain effect. As shown on the example below, such diagram is typically structured according to the "5M" model consisting of the following dimensions: Material (the raw material, consumables, and information); Machine (the equipment, softwares, technology); Method (the process);

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Manpower (the human interventions); and the Medium (the environment, the context). Each 'bone' corresponds to one of these categories with the most direct causes being closer to the main 'bone'.
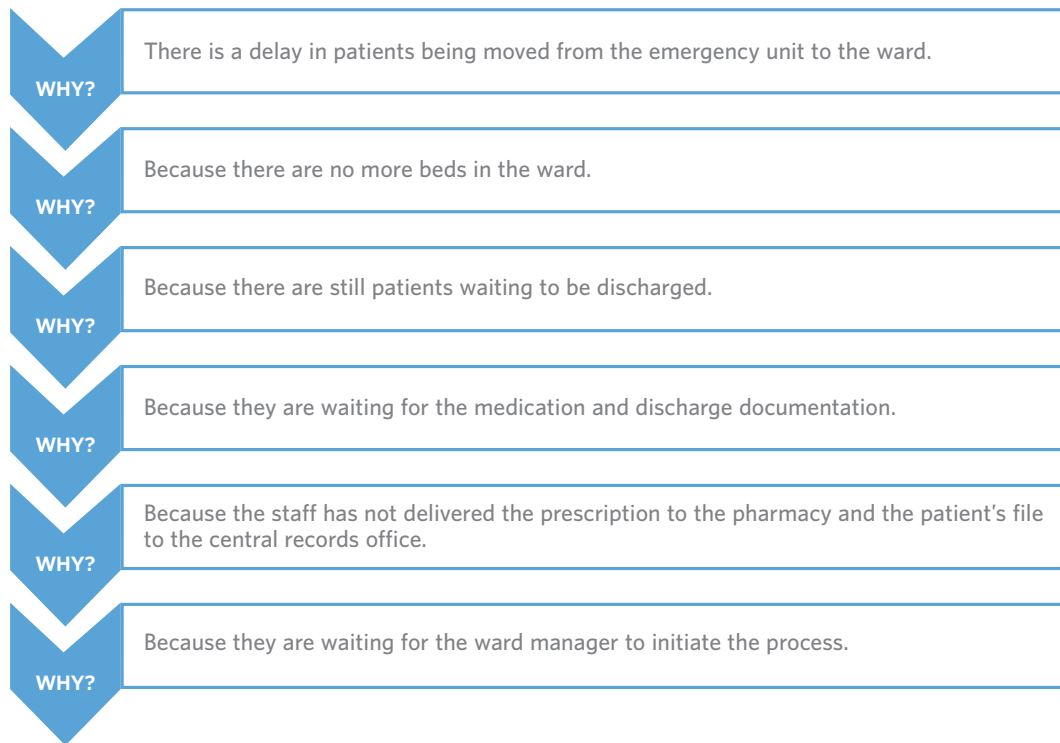
This diagram has a variety of benefits:

- It helps teams understand that there are many causes that contribute to an effect.
- It graphically displays the relationship of the causes to the effect and to each other.
- It helps to identify areas for improvement and to prioritize them.

FIGURE 46: EXAMPLE OF ISHIKAWA OR "FISHBONE" DIAGRAM - DELAY OF LAB RESULTS
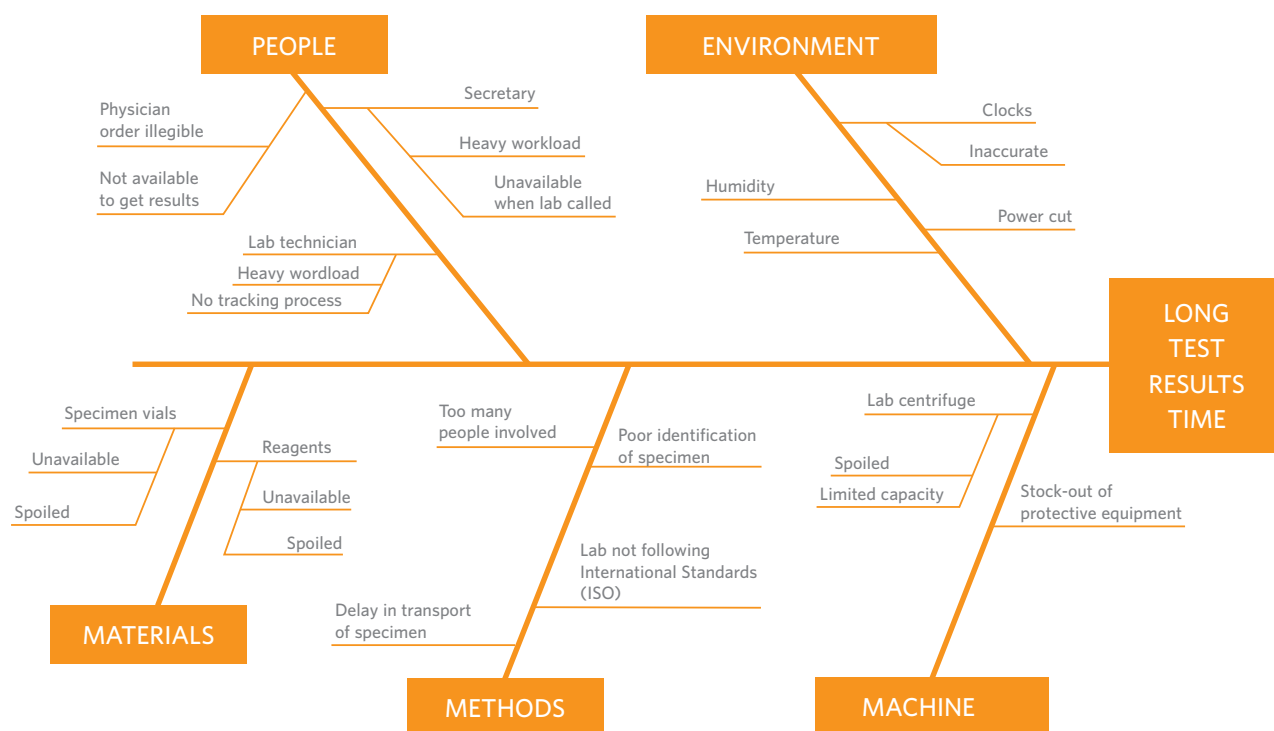
"five whys" method (cf. Figure 48): is a simple questioning process designed to identify the root cause(s) of a problem. It consists first in defining the problem to be explored and then in asking why the problem exists. This process may take more or less than five whys to identify the root cause.

FIGURE 47: EXAMPLE OF "FIVE WHYS" METHOD - DELAY IN PATIENTS MOVED FROM THE EMERGENCY UNIT

WHY? There is a delay in patients being moved from the emergency unit to the ward.

WHY? Because there are no more beds in the ward.

WHY? Because there are still patients waiting to be discharged.

WHY? Because they are waiting for the medication and discharge documentation.

WHY? Because the staff has not delivered the prescription to the pharmacy and the patient's file to the central records office.

WHY? Because they are waiting for the ward manager to initiate the process.

Source: Van Deventer C, Mash B, African Primary Care Research: Quality improvement cycles, African journal of primary health care & family medicine, 2014.

Pareto chart (cf. Figure 49): is a type of bar chart in which the various factors that contribute to an overall effect are arranged in order from the largest to the smallest contribution to the effect. This ordering helps identify the "vital few" (the factors that have the largest contribution to the effect and therefore warrant the most attention), as distinguished from the "useful many" (factors that, while useful to know about, have a relatively smaller contribution to the effect). According to the "Pareto principle" — also known as the "80/20 rule" — in any group of factors that contribute to an overall effect, roughly 80% of the effect comes from 20% of the causes. Using a Pareto chart helps teams concentrate their quality improvement efforts on the factors that have the greatest impact. It also helps teams explain their rationale for focusing on certain areas and not others.

FIGURE 48: EXAMPLE OF PARETO CHART - TYPES OF ERRORS DISCOVERED IN ORDERS OF SURGICAL INSTRUMENTS
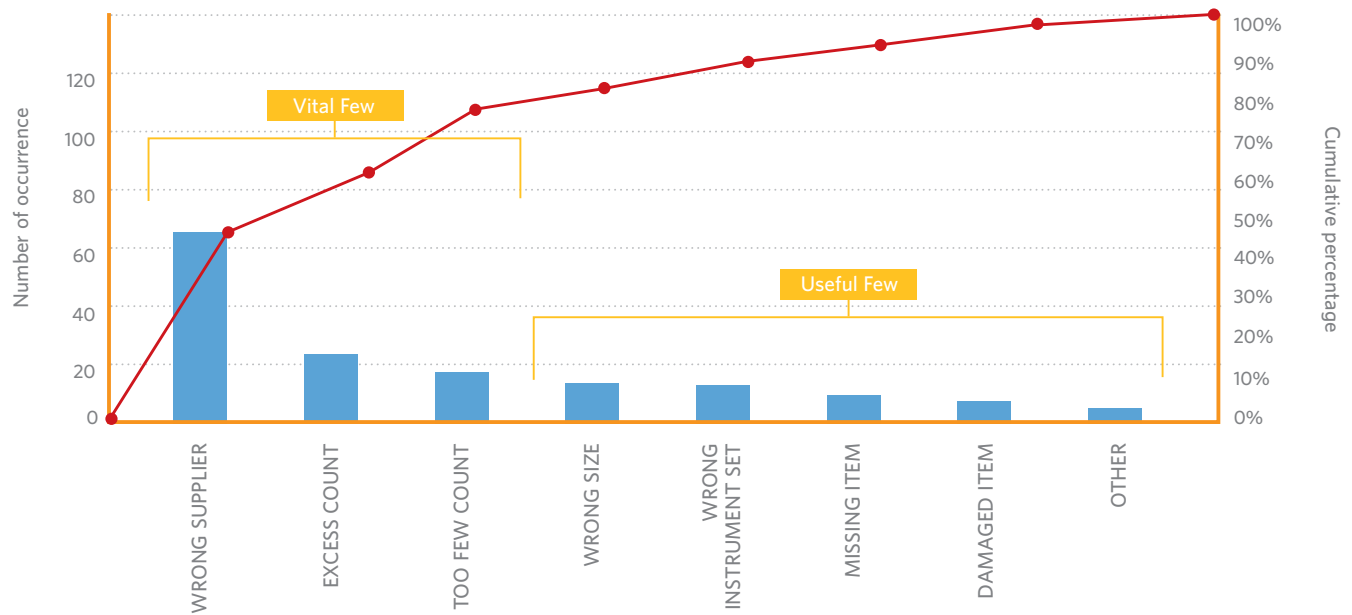
7. Technical Sheet nᵒ. 7: The concept of mentorship

This document describes an approach for developing a national network of EmONC health facilities that can manage obstetric and newborn care, including emergencies. The approach highlights in particular the importance of having skilled health personnel deployed as a team in these health facilities. This can be accomplished with an ambitious human resources policy that includes the strategies described below.

A first strategy for improving the quality of delivery care is to ensure that all the designated EmONC facilities are functioning with a team of skilled health personnel, composed of obstetricians and/or midwives, and to define their respectives roles and responsibilities. As previously mentioned in this manual, the missions of midwives in an EmONC facility are:

- to ensure respectful and people-centered care
- to safely manage eutocic deliveries
- to safely manage obstetric complications (BEmONC) until the midwife considers it necessary to call for an obstetrician or to refer the patient to a higher level health facility (CEmONC).

These missions requires a pre-service education system for midwives aligned with the national standards defined by the Ministry of Health, which themselves should be aligned with the international standards defined by ICM and WHO[53] and the regional standards such as the ones of the West African Health Organization (WAHO).

A second strategy (complement of the first one) is to support the improvement of quality of care in EmONC facilities through the supervision of the Ministry of Health, which should evolve towards a supportive supervision system. As previously described, these mechanisms should also be supplemented with support teams to support the change process related to the implementation of innovative approaches (such as EmONC monitoring and quality improvement/PDSA cycle) until they are adopted by health facility/district and regional teams.

Finally, it is advised to complement these mechanisms of the Ministry of Health by a mentorship programme for midwives in order to address identified gaps in terms of clinical and/or organizational competencies. More than half of the 32 high burden countries supported by UNFPA's MHTF programme have set-up such programme, with some having been evaluated such as the ones of Burkina Faso, Madagascar[54] and Bénin. Lessons learned from these programmes should be used to develop a specific guide for the implementation of a mentorship programme for midwives. This technical sheet only provides key principles for setting-up such programme.

7.1. The concepts of supervision, supportive supervision, implementation support teams and mentorship

It is important to make the distinction among supervision, supportive supervision, implementation support teams, and a mentorship programme in terms of definition, characteristics, and frequency of intervention in health facilities.

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TABLE 10: DEFINITION AND CHARACTERISTICS OF SUPERVISION, SUPPORTIVE SUPERVISION, IMPLEMENTATION SUPPORT TEAMS, AND MENTORSHIP.

DEFINITIONS	
Supervision	A hierarchical process, traditionally embedded in the administrative system of countries, consisting in a top down approach to ensure compliance of practices to protocols and guidelines (essentially clinical)
Supportive Supervision	A hierarchical process, traditionally embedded in the administrative system of countries, consisting of a more supportive form of supervision where two-way communication is practiced and decision making is shared. Supportive supervision has an ongoing practical focus integrating constructive feedback, rather than judging performance based on predetermined guidelines
Implementation support teams	Implementation experts from the MoH (or not) create a trusted, interpersonal, learning and supportive relationship with programme implementers, such as healthcare providers, to build a favorable environment for the implementation of a programme/innovation and a quality improvement culture with progress as key motivation driver
Mentorship	A trusted, interpersonal, learning and supportive relationship and broad skills transfer (clinical and/or managerial/organizational skills) from an individual with more experience in an area (the mentor) to a less experienced team or individual (the mentee). The objective of mentorship is to improve the performance of the mentee in the concerned area and to support the mentee's professional development and growth (Abiddin NZ, Hassan A. A review of effective mentoring practices for mentees development. J Stud Educ. 2011;2:72–89.) Coaching is often included as a component of the mentorship focusing specifically on the improvement of performance to bridge the know-do gap (Pearson M, Brew A. Research training and supervision development. Stud High Educ. 2002;27:135–50).

CHARACTERISTICS	FREQUENCY OF INTERVENTION
• Typically uses predefined checklists to evaluate the compliance of skills and practices to protocols/guidelines/rules • Hierarchical (top-down) relation between supervisor and supervisee, which can lead to sanctions and be disempowering for the learner - may blame staff, rather than empowering them to make improvements (Marquez L, Kean L. Making supervision supportive and sustainable: new approaches to old problems. MAQ Paper No. 4 . 2002) • Episodic problem-solving with little or no follow-up	Regular and short visits in the health facilities (limited in intensity and duration)
• Evaluate compliance practice to protocols/guidelines/rules as well as overall professionalism (including patient-centered care and respectful care) • Based on an interpersonal relationship but still with a hierarchical relation between a supervisor and a supervisee with possible sanctions • Approach based on problem-solving with follow-up - constructive feedback focusing on progress rather than only identifying weaknesses	Regular and short visits in the health facilities (limited in intensity and duration)
• Focus on effective implementation of a programme and/or an innovation (eg. EmONC monitoring and quality improvement in EmONC facilities) • Based on mutual trust and respect • Use local data to monitor performance and to identify and implement solutions to solve problems/issues/gaps • Based on the right to fail and empowers staff of health facilities to analyze their data and to make and implement decisions to address gaps in availability and quality of care - the support teams therefore use open questions and quality improvement methods described in the previous section (cf. Technical sheet 6)	Regular (every trimester or semester) visits to the health facilities for one day
• Focus on the improvement of skills, competencies, professionalism and career development using a holistic, learner-based, professional and career focused approach, shifting from the traditional check of the skills and protocols and guidelines to practice. • Based on mutual trust and respect with a peer to peer and empowering relationship that is mutually beneficial for both the mentor and the mentee who have a shared set of learning objectives. The mentee benefits from the mentorship through career advancement, learning, development and feedback, while the mentor may benefit through a positive impact on his/her practice, personal fulfilment, new ideas and revitalized interest in his/her work (McCloughen A, O'Brien L, Jackson D. Positioning mentorship within Australian nursing contexts: a literature review. Contemp Nurse. 2006;23(1):120–34.)	Regular and long visits (several days) in the health facility (high in intensity and duration) for a certain duration defined by the need. It is therefore a temporary support to address specific clinical, organizational, or management gaps.

7.2. Organization of a mentorship programme

A well structured and managed mentorship programme can accelerate quality improvement in health facilities. The cost of such programme could be supported by leveraging the funds dedicated for classroom in-service training. QUALITY OF CARE needs to be at the core of a mentorship programme, from its conception to its implementation.

7.2.1. The mentors

The limited number of mentors in countries with high burden of maternal mortality is a major challenge for the implementation of such programme in high burden countries. The competencies of mentors is critical for the success of the programme and for a mentorship programme in EmONC facilities, the mentors should:

- have recognized clinical expertise in obstetric;
- have empathy and the willingness to share knowledge;
- speak the working language(s) of the country;
- demonstrate ethical behavior;
- have relevant expertise in team management;
- have relevant expertise in the management, monitoring, and evaluation of public health programmes, and preferably of sexual and reproductive health programmes.

Training/expertise in pedagogy should be considered as an advantage.

Mentors should have their status supervised by the Ministry of Health and should have a recognized status as part of their career advancement, with an increase in salary when becoming a mentor.

7.2.2. The beneficiaries of a mentorship programme

In a fragile health system, as encountered in many high burden countries, the limited number of mentors available should be prioritized to support designated EmONC facilities from the national EmONC network with health professionals organized in teams. The evaluation of the mentorship programme in Burkina Faso shows that the effectiveness of such a programme is significantly reduced if it is implemented in maternities staffed with a single health professional.

In addition, the mentors should support health facilities that are committed to improving quality of care. These facilities should be identified based on the recommendations from the supervision teams, the implementation support teams, and the health district. Targeting these EmONC health facilities also allows better management of the initial implementation of the mentorship programme and its costs.

The purpose of the mentorship programme in support of the development of the national EmONC network is to strengthen the capacities of midwives but also the overall maternity by:

a) evaluating the needs and strengthening the competencies of each midwife;

b) evaluating the needs and improving the availability and quality of health services and supportive services such as referrals, sanitation, and waste management;

c) evaluating and strengthening the team of the maternity, for example by clarifying the roles and responsibilities within the team, applying or discussing standard procedures and protocols, and improved team meeting management.

7.2.3. Expected results from the mentorship programme

The objectives of the mentorship programme should be linked to the expected results of the maternal and newborn health programme and these objectives are linked to gaps identified during (supportive) supervision visits, by the implementation support teams, and by the analysis of the monitoring of the activities and the results indicators of the health facilities. The mentors can therefore support strengthening clinical competencies of midwives and/or their professional behaviors. The mentors can also improve the organization of the maternity, team spirit, and quality improvement behaviors. They can also support the improvement of broader sexual and reproductive health services, such as advice and use of long-acting family planning methods, the secondary prevention of cervical cancer, the management of gender-based violence, and the prevention and treatment of HIV/STIs).

Building on their experience and their trusted relationship with the teams of the health facilities, mentors should also facilitate review of maternal deaths, a process that is facing quality challenges in many high burden countries. The trusted relationship between the mentor and the health facility team can be very helpful for these reviews.

In EmONC facilities, mentors should specifically contribute to reducing the gaps in signal functions linked to competencies and organizational issues. They should have a specific focus on the improvement of quality of care, which can be measured with indicators such

as the direct obstetric case fatality rate (DOCFR), the incidence of obstetric fistula, or studies analyzing the relevance of referrals or the perception of the quality of care in the maternity by local communities and authorities.

7.2.4. Programmatic tools

The mentorship programme should have:

- specific objectives;

- a costed operational plan with a defined timeline;

- a programmatic framework and related result indicator framework (with defined indicators);

- monitoring tools to monitor the work of the mentors and the results obtained in the health facilities.

- a competent mentorship program manager

This programme should be regularly evaluated by external and independent evaluators. As previously mentioned, this technical sheet should serve as a basis for the development of a detailed operational guideline on mentorship.

APPENDIX

Appendix 1

Overview of the implementation of the EmONC development approach from 2015 to 2020

Phases 1-3 of EmONC development

National EmONC development approach, monitoring sheet, and national EmONC network defined (with GIS/AccessMod): Benin, Chad, Cote d'Ivoire, Mozambique, Senegal, Sudan.

Phases 4&5 of EmONC development

Quarterly monitoring of key RMNH indicators in the national EmONC network (through HMIS/DHIS2): Burundi, Guinea, Haiti, Madagascar.

Phase 6 of EmONC development

Quality Improvement/response to address gaps in the national EmONC network based on monitoring data: Togo.

Haiti

Senegal

Guinea

Côte
d'Ivoire

Togo

Benin

Chad

Sudan

Burundi

Mozambique

Madagascar
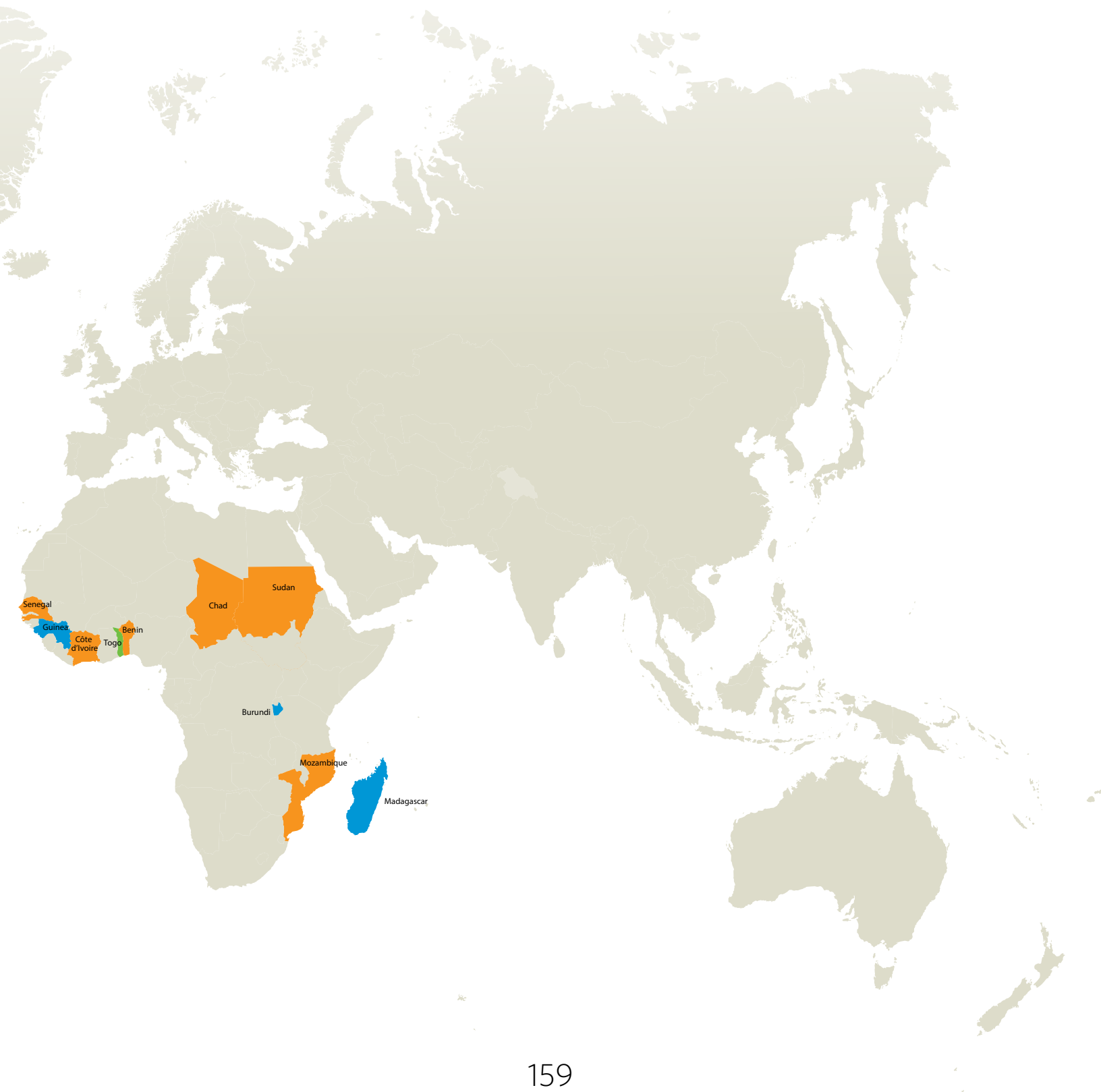
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