Malawi Emergency Obstetric and Newborn Care Needs Assessment, 2014

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Acronyms

AMDD	Averting Maternal Death and Disability Program
APH	Antepartum haemorrhage
ARI	Acute respiratory infection
AVD	Assisted vaginal delivery
ARV	Antiretroviral
BEmONC	Basic emergency obstetric and newborn care
BTL	Bilateral tubal ligation
CEmONC	Comprehensive emergency obstetric and newborn care
CHAI	Clinton Health Access Initiative
CHAM	Christian Health Association of Malawi
CHW	Community health worker
CMW	Community midwives
CO	Clinical Officer
CPD	Cephalo-pelvic disproportion
CHSU	Community Health Sciences Unit
C/S	Caesarean section
D&C	Dilatation and curettage
D&E	Dilatation and evacuation
DFID	Department for International Development (United Kingdom)
DHMT	District Health Management Team
DHO	District Health Office
DOCFR	Direct obstetric case fatality rate
E&C	Evacuation and Curettage
EHP	Essential health package

EHRP	Emergency Human Resources Programe
EmONC	Emergency obstetric and newborn care
FANC	Focused antenatal care
FP	Family planning
GNI	Gross national income
GPS	Global Positioning System
H4+	Collaboration of UN Agencies (WHO/UNICEF/UNFPA/UNAIDS/UN Women, &World Bank)
HCW	Health Care Worker
HF	Health Facility
HMIS	Health management information system
HRMIS	Human resources management information system
ICPD	International Conference on Population and Development
IEC	Information Education and Communication
IV	Intravenous
KMC	Kangaroo mother care
LMIS	Logistics management information system
MDG	Millennium Development Goal
MMR	Maternal mortality ratio
MNH	Maternal and newborn health
MOH	Ministry of Health
MVA	Manual vacuum aspiration
NGO	Non-governmental organisation
NSO	National statistical office
OB/GYN	Obstetrics/gynaecology
OPD	Outpatient department

PAC	Post abortion care
PMTCT	Prevention of mother to child transmission
PNC	Postnatal care
PPH	Postpartum haemorrhage
PROM	Premature rupture of membranes
RHD	Reproductive Health Directorate
SPA	Service Provision Assessment
SSDI	Support for Service Delivery and Integration
STI	Sexually transmitted infection
TA	Traditional authorities
TBA	Traditional birth attendant
TTBA	Trained traditional birth attendant
TWG	Technical Working Group
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VCT	Voluntary counselling and testing
WHO	World Health Organization

Foreword

Over the years the Government of Malawi has provided sexual and reproductive health services, including maternal and newborn health care to the people of Malawi.

The Government with the support from various development partners notably DFID, UNICEF, UNFPA, WHO, USAID, NORAD, EU, JICA, the World Bank, has implemented safe motherhood programmes in various districts of the country. As a result, recent studies have revealed a declining trend in maternal mortality in Malawi.

A number of studies have helped to shed light on the maternal mortality situation in the country, documenting the low quality of health care services provided to women during pregnancy, childbirth and the postnatal period as the main cause and predisposing factor to maternal deaths. These studies have suggested an urgent need to further strengthen the provision of quality maternal and newborn health care, in order to reduce further the high maternal mortality in Malawi.

Consequently the Reproductive Health Directorate of the Ministry of Health conducted this assessment, as a follow up to the 2010 EmONC assessment, to determine the capacity of the health care delivery system to reduce maternal mortality and to propose an action orientated plan. The assessment was carried out in collaboration and with financial support from USAID, UNFPA, UNICEF, Save the Children International, CHAI and other partners in all districts.

The results of this assessment confirm the findings of previous studies and specifically identify progress made towards the reduction of maternal mortality, and the availability and functioning of emergency obstetric and newborn care (EmONC) in Malawi.

This is yet another Government effort to improve health care service delivery for the people of this country in line with the ICPD Programme of Action, and the MDGs. It is hoped that the report will guide policy makers, programme managers, development partners, service providers and communities in their efforts to support the Ministry of Health in its quest to address maternal and newborn health issues in Malawi.

We thank all those who, in diverse ways, helped to make this assessment a success.

Dr. McPhil Magwira

Secretary for Health

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Executive Summary

In 2014, the Ministry of Health (MOH) in Malawi conducted a nationwide assessment of emergency obstetric and newborn care (EmONC) services. This cross-sectional facility-based survey used 10 data collection modules. Data collection began on 23rd September 2014 and concluded on 17th October 2014, in all 28 districts.

Facilities in both the public and private sector (for-profit and not-for-profit) were included. Since the focus of the assessment was obstetric and newborn care, health facilities that did not offer maternal and newborn health (MNH) services were not selected.

In all districts, a census of all hospitals and a 60 percent random sample of health centres that ought to have performed deliveries in the previous year yielded a total of 365 facilities: 87 hospitals and 278 health centres. All these facilities were visited during the assessment. During analysis, weighting procedures were applied to extrapolate results to the district and national level, representing all 87 hospitals and 464 health centres. Such weighting was necessary as a stratified random sample of health centres was taken and weighting applied to all indicators and presentations that have health facility as a unit of measurement. Case reviews and provider's interviews, on the other hand, are not weighted as their sampling strategy is based on convenience.

EmONC Indicators

In 2009, the World Health Organization (WHO) published *Monitoring Emergency Obstetric Care: A Handbook* — the result of a collaborative effort by AMDD, UNFPA, UNICEF and WHO. The handbook offers guidance on a suite of indicators for monitoring progress of the prevention of maternal and perinatal deaths — a task central to achieving the Millennium Development Goals (MDGs) of the United Nations (UN).

A key objective of the assessment in Malawi was to measure the adequacy of EmONC using the indicators recommended in the handbook:

1. Is the number of fully functioning EmONC facilities sufficient for the population of the country?
2. Is the distribution of these facilities equitable?
3. Do pregnant women access these facilities for delivery?
4. Do women with major obstetric complications access these facilities?
5. Are enough critical services (for example, caesarean deliveries and blood transfusion) being provided?
6. Is emergency newborn care available?
7. Is the quality of EmONC adequate?

The assessment also sought to identify medical services in addition to EmONC that are needed to reduce maternal and newborn mortality.

A set of nine lifesaving services — "signal functions" — described in the handbook were used to assess facilities in terms of their EmONC capacity, in order to determine the availability of EmONC services in each district and nationally. The presence or absence of these signal functions defined a facility's level of emergency obstetric and newborn care: basic or comprehensive. To qualify for the basic EmONC designation, a facility needed to have provided seven signal functions that the handbook deemed basic during the three months prior to the survey. To qualify for the comprehensive EmONC designation, a facility needed to have performed all nine signal functions. Hospitals that had performed seven or eight signal functions were classified as partially functioning CEmONC facilities. Likewise health centres that had provided five or six signal functions were also classified as partially functioning BEmONC facilities. Facilities that did not meet these criteria were classified as non-EmONC facilities.

UN guidelines recommend at least five 5 EmONC facilities (including at least one comprehensive facility) for every 500,000 people. Applying these standards to Malawi's 2014 projected population of 15,805,239, there should be 158 EmONC facilities: 126 basic EmONC facilities and at least 32 comprehensive EmONC facilities. In this assessment, 64 fully functioning EmONC facilities were found: 45 comprehensive and 19 basic EmONC facilities. While there is a deficit of 107 basic EmONC facilities, the minimum number of comprehensive EmONC facilities is exceeded by 13.

Out of the 87 hospitals, 45 (52 percent) were comprehensive, 28 (32 percent) were partially functioning and 14 (16 percent) were non-EmONC. Of the 464 health centres, 19 (4 percent) were basic, 148 (32 percent) were partially functioning, and 297 (64 percent) were non-EmONC.

In the three-month period prior to the survey, 99 percent of facilities with childbirth services had staff who provided parenteral oxytocics, 89 percent had staff who provided parenteral antibiotics and 90 percent of facilities had staff who performed neonatal resuscitation. Assisted vaginal delivery was performed at 28 percent of facilities; manual removal of placenta at 40 percent of facilities and removal of retained products of conception was performed at 42 percent of facilities. Failure to provide assisted vaginal delivery, manual removal of placenta and the removal of retained products of conception accounted for why many facilities did not meet the basic EmONC standard. Fifty-eight percent of facilities had staff who administered parenteral anticonvulsants in the three months preceding the survey: 59 percent of them exclusively used magnesium sulphate — the first-line anticonvulsant, while 15 percent of them used diazepam exclusively.

A total of 476,272 institutional deliveries were conducted during the 12-month period under review. Health centres accounted for 56 percent of these deliveries while 44 percent of

deliveries were conducted in hospitals. Institutional deliveries accounted for 60 percent of expected births in the country; 24 percent of these births took place in EmONC facilities. Institutional birth rates varied by district, ranging from 41 percent in Nsanje district to 116 percent in Mwanza district.

Met need for EmONC is computed as the proportion of expected obstetric complications treated in an EmONC facility. Out of the 118,539 expected complications, 51 percent were seen at health facilities nationally and 25 percent were seen in EmONC facilities.

According to the UN handbook, caesarean delivery rates for populations should range between 5 percent and 15 percent if obstetric coverage is adequate. Only 4 percent of expected births were by caesarean delivery. Unlike the population based caesarean delivery rate, there are no clear standards for institutional caesarean rates. In the private for-profit sector, 12 percent of the deliveries were by caesarean section, compared to 6 percent in the government sector and 7 percent in Christian Health Association of Malawi (CHAM) facilities.

The direct obstetric case fatality rate (DOCFR) indicates the ability of facilities to handle obstetric emergencies. It is recommended that facilities keep this rate to less than 1 percent. Nationally, the DOCFR was 1 percent. A total of 396 maternal deaths due to direct causes were documented in facility registers. Postpartum haemorrhage (PPH) was the leading cause of maternal death; it accounted for 23 percent of all direct causes of maternal death. Other leading direct causes of maternal deaths were post-partum sepsis (19 percent), severe pre-eclampsia/eclampsia (16 percent) and ruptured uterus (13 percent). Complications of abortion accounted for 7 percent of these deaths. The national intrapartum and very early neonatal death rate was 20 per 1000 deliveries.

Performance of other MNH services

By self-report, focussed antenatal care services were performed at 98 percent of all facilities assessed, 97 percent provided postnatal care (PNC), 86 percent provided family planning services and 98 percent provided diagnosis and treatment of sexually transmitted infections (STIs). Ninety-eight percent of facilities provided prevention of mother to child transmission (PMTCT). Ambulatory kangaroo mother care (KMC) was provided in 63 percent of facilities and 21 percent of facilities provided corticosteroids to pregnant mothers at risk of pre-term labour. Only 16 percent of hospitals in Malawi provided fistula repair services and cervical cancer screening was available in 74 percent of hospitals and in 15 percent of health centres.

Infrastructure and referral for MNH services

There was no source of electricity in 13 percent of facilities surveyed. Of those that had electricity, 65 percent relied on power lines (the grid) and 22 percent relied on solar as their primary source of electricity. Powerlines (the grid) and generator were available in 20 percent of facilities. More than a third of facilities in Chitipa, Ntchisi and Thyolo had no source of

electricity. While all hospitals had a source of electricity, 15 percent of all health centres had no source of electricity.

There was no water source in 6 percent of all facilities surveyed. From those that had a source of water, 64 percent had piped water while 30 percent relied on boreholes. Almost a third of facilities in Mchinji and Chikhwawa had no source of water. By facility type, 3 percent of rural/community hospitals and 7 percent of health centres had no source of water.

Almost all facilities surveyed reported that they had at least one functioning mode of facility-owned telecommunication on site and 90 percent reported having a functional mobile phone owned by the facility or individual. Only 33 percent of facilities had a functioning motor vehicle ambulance and 6 percent had a functioning motorcycle ambulance. By facility type, only 23 percent of health centres and 74 percent of rural/community hospitals had a functioning motor vehicle ambulance.

Nationally, 18 hospitals and 370 health centres lacked capacity to perform obstetric surgery. For the hospitals without capacity, the median distance to the nearest facility with capacity to perform obstetric surgery was 46 Km, while for the health centres it was 34 Km.

Human Resources

Health facility managers were interviewed about their staffing situation and this was compared to the 2011 staffing norms in the public sector. At national level, severe gaps exist in terms of absolute numbers required across all selected cadres: enrolled nurse/ nurse midwife technicians (gap of 7,077), clinical officers (gap of 1,443), laboratory technicians (gap of 229), medical assistants (gap of 602), registered nurse/midwives (gap of 360), laboratory technicians (gap of 317), anaesthetists (gap of 100), medical officers (gap of 37), obstetrician/gynaecologists (gap of 35), surgeons (gap of 34) and peaditricians (gap of 27). By facility type, the data suggest an excess of medical doctors, laboratory technicians and anaesthetitsts in central hospitals leaving lower level facilities with severe shortages.

The data indicate further that 23 percent of health centres in Malawi have at least 2 midwives and 2 medical assistants. While all health centres in Mchinji and at least three quarters of health centres in Chitipa, Ntchisi, Chiradzulo and Nsanje have at least 2 midwives and 2 medical assistants, none of the health centres in 5 districts (i.e. Karonga, Nkhata Bay, Rumphi, Likoma and Neno) has at least 2 midwives and 2 medical assistants.

Drugs, equipment and supplies

Nationally, 99 percent of all facilities with a pharmacy or supply of drugs stocked antibiotics and benzathine benzylpenicillin was the antibiotic most commonly stocked (97 percent of facilities had it). Similarly, 99 percent of facilities stocked anticonvulsants/sedatives and 96 percent reported having oxytocics or prostaglandins in stock. Only 35 percent stocked antihypertensives. IV fluids were found in 98 percent of facilities and the most common intravenous (IV) fluid was glucose found in 96 percent of facilities. Ninety-eight percent of facilities stocked antimalarials and antiretrovirals (ARVs). Oral contraceptives were found in

85 percent of facilities, implanon in 82 percent of facilities, jadelle in76 percent of facilities while 3-month injectables were found in 86 percent of facilities. Emergency contraception was found in 86 percent of facilities.

Recommendations

EmONC Indicators

1. Strengthen the capacity of the 148 partially functioning BEmONC facilities to be fully functional BEmONC facilities and connecting them operationally to CEmONC facilities.
2. Strengthen the 28 partially functioning CEmONC facilities to be fully functioning CEmONC facilities.
3. Strengthen the referral system from BEmONC facilities to CEmONC facilities through provision of motor vehicle ambulances in targeted health centres and improvements in road infrastructure.
4. Emphasize the use of best practice guidelines including the use of oxytocin and magnesium sulphate.
5. Provide effective communication systems for referral through provision of mobile phones and airtime supported by health facilities
6. Develop a plan to equip and train staff at health centres to perform all basic signal functions including assisted vaginal delivery, manual removal of placenta and removal of retained products of conception.

Other essential MNH services

1. Strengthen ambulatory and in-patient KMC in all facilities
2. Train in the provision of corticosteroids to pregnant mothers at risk of pre-term labour
3. Ensure the provision of Family planning commodities and supplies at all facility levels including rural/community hospitals and health centres.
4. Develop and implement a comprehensive national policy or strategy for cervical cancer screening.
5. Increase training of clinicians and support staff in fistula repair and support their clinical practice.
6. Strengthen community-based MNH services.

Infrastructure and Referral for MNH

1. Ensure 24-hour water and electricity supply at health facilities at all times.
2. Initiate/strengthen community mobilisation actions such as mobilising communities to devise back-up funds or plans for emergency transport and Central communities about the danger signs during pregnancy, childbirth, the postpartum period and for the newborn.
3. Improve patient care/referral management, the logistics management information system (LMIS), and the health management information system (HMIS).
4. Improve record-keeping and documentation at all levels (Central, district, health centres).

Human Resources

1. Train and recruit nurses/midwives, clinical officers and medical officers and plan their subsequent deployment to facilities where demand exceed supply.
2. Re-deploy excess staff from central hospitals to lower level facilities based on need.

3. Develop health human resources management framework with benchmarks for refresher training and rotation of staff from heavy workload facilities to low workload facilities and vice-versa.
4. Conduct refresher trainings of clinicians and midwives. Major topics to include:
    a. Early newborn care
    b. Care of the sick newborn including low birth weight and preterm babies
    c. BEmONC training – including manual vacuum aspiration (MVA), vacuum delivery and manual removal of the placenta
    d. Post-abortion care and management of the victims of gender-based violence
5. Improve staff retention and motivation.
6. Improve the human resources management information system (HRMIS)

Drugs, Equipment and Supplies

1. Carry out a comprehensive review of access to blood supplies and distribution of blood banks
2. Train staff to use approved protocols and clinical guidelines for post-abortion care, post-exposure prophylaxis, KMC and management and referral of sick newborns.
3. Strengthen biological waste management.
4. Recommend and make available WHO revised partograph in all facilities conducting deliveries.

Policy level recommendations

1. Develop all-encompassing policy/guidelines on quality assurance.
2. Enhance a multi sectorial collaboration with line ministries (Ministry of Road and Transport, Ministry of Education etc.).
3. Establish maternity waiting homes in hospitals and health centres for women who live far from health facilities.
4. Increase the overall budgetary allocation to the health sector and development partners should pledge a multi-year budgetary support.
5. Find alternative and sustainable health financing mechanisms.

CHAPTER ONE Introduction

1.01 Geography and Administration

Malawi is a landlocked country south of the equator in sub-Saharan Africa. The United Republic of Tanzania borders it to the North and Northeast, Mozambique to the East, South, and Southwest, and Zambia to the West and Northwest. The country is 901 kilometres long and ranges in width from 80 to 161 kilometres. It has a total surface area of 118,484 square kilometres of which about 80% is land. The remaining area is mostly composed of Lake Malawi, which is about 475 kilometres long and runs down Malawi's eastern boundary with Mozambique.

Malawi is divided into three regions: the Northern, Central, and Southern Regions. There are 28 districts in the country: 6 districts are in the Northern Region, 9 in the Central Region, and 13 in the Southern Region (Fig. 1.01). Administratively, the districts are subdivided into Traditional Authorities (TAs). Traditional Authorities are composed of villages, which are the smallest administrative units.

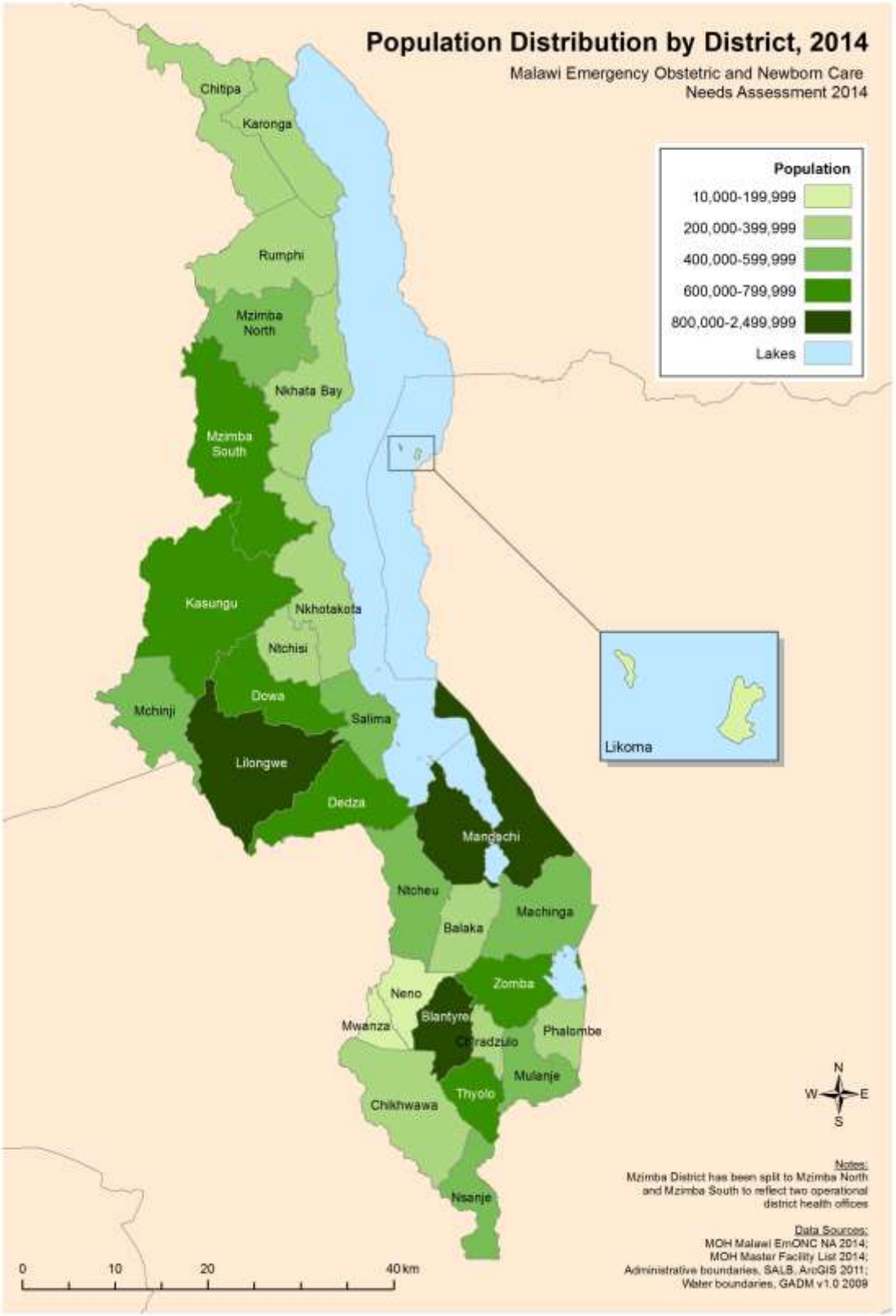
Fig. 1.01: Map of Malawi showing administrative districts

Malawi has a tropical, continental climate with maritime influences. Rainfall and temperature vary depending on altitude and proximity to the lake. From May to August, the weather is cold and dry. From September to November, the weather becomes hot. The rainy season begins in November and continues until April. The geographic terrain is generally low with small hills scattered all over the country. Most villages are accessible throughout the year through tarmac or earth roads maintained by the Ministry of Transport and Public Works through the National Roads Authority.

In 2014 Malawi's population was estimated at 15.8 million with females comprising 51% of the total population[1] (Fig.1.02). Of these 45% are said to be in the reproductive age bracket (15-49), 19 % are aged 15-24 years (i.e. youths), and 23% are adolescents (10-19). This means that the population has almost doubled over a 27-year period as in 1987 it was at 8 million.

[1] 2008 Malawi population and Housing Census, Zomba, Malawi

Fig. 1.02: Map of Malawi showing population distribution by district



Childbearing starts quite early in Malawi with a mean age at first childbirth reported at 19 years. Malawi has experienced rapid urbanization from 8% in 1977 to 15% in 2008, which has a great impact on the social services including health. The proportion of Malawi's population residing in urban areas is estimated at 15.3%.

1.02 Social-economic situation

Malawi is one of the poorest countries in the world. Its estimated Gross National Income (GNI) per capita in 2013 was only US$ 270[2]. It has a predominantly agricultural economy. Tobacco, tea, and sugar are the major export commodities. Tobacco exports and development assistance provide the bulk of Malawi's foreign earnings. Eighty five percent of the population lives in rural areas, mostly in small farm households. Sixty five percent of the population is defined as poor and unable to meet its daily consumption needs; The Profile of Poverty in Malawi (2000) shows that 65.6% of women are poor as compared to57.9% of men[3]. Adult literacy rate for women in Malawi is 59% as compared to 69% among men[4].

1.03Malawi Health Care Delivery System Survey

Health care services in Malawi are provided by three main agencies. Government through the Ministry of Health (MOH) provides about 60%; the Christian Health Association of Malawi (CHAM) provides 39% plus a small contribution from the private-for-profit health sector. Health services are provided at three levels: primary, secondary and tertiary. At primary level, services are delivered through rural hospitals, health centres, health posts, outreach clinics and also through community health initiatives. District and CHAM hospitals provide secondary level health care services to back up the activities of the primary level while central hospitals provide tertiary level and specialized services. All maternity-related services are offered free of charge in Government facilities. Of late, service agreements between Government and CHAM have resulted in free maternity services in some CHAM facilities.

Health care resources are unevenly distributed. Only 46% of the population has access to a formal health facility within a 5km radius, and only 20% of the population lives within 25 km of a hospital)[5]. Access is worse in rural areas. There is a particularly significant mal-distribution of health personnel, which favours urban areas, and the secondary and tertiary levels of care. The total number of professional Health Care Workers (HCWs) increased by 53% from 5,453 in 2004 to 8,369 in 2010; the capacity of health training institutions increased across a range of programs; and staff retention improved, among other things. However, only four of the 11 priority cadres (namely clinical officers, environmental health officers, radiology and laboratory technicians) met or exceeded their targets as set in the original EHRP design.

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[2] World bank 2009 accessed on line on 30th October 2010: data.worldbank.org/country/Malawi

[3] Government of Malawi: Malawi Poverty Reduction and Strategy paper (MPRSP)

[4] 2008 Malawi population and Housing Census, Zomba, Malawi

[5] EHP document 2004

Despite an investment of $53million during the EHRP on pre-service training capacity, annual output of nurses only increased by 22%. Despite these improvements, challenges of shortage of health workers remain in the health system.

Malawi's health system is grossly under-resourced. Per capita expenditure is now about US$ 12, which is inadequate for delivery of basic primary health care. In 2002, an extensive exercise to determine the cost of delivering an "Essential Health Package"(EHP) of well-proven and cost effective health services that would deal with the main burden of disease, calculated a figure of US$ 17.53 per capita per year[6].

1.04 Maternal Health in Malawi and globally

Of the 210 million women that become pregnant every year worldwide, 30 million (15%) develop complications, which lead to death in around 289,000 of them with developing countries accounting for 99% of these deaths[7]. These deaths are caused by severe bleeding (27%), hypertensive disorders (14%), sepsis (11%), unsafe abortion (8%), embolism (3%), and others (10%), while more than a quarter of maternal deaths are due to indirect causes[8]. For every maternal death, about 30 more suffer serious conditions that can affect them for the rest of their lives. The tragedy is that almost all of these deaths are preventable and it is estimated that almost 80% of maternal deaths are avoidable. However, while many other health indicators have improved in the developing world over the last decades, maternal mortality and morbidity continue to take a high toll[9].

The Millennium Development Goals (MDG) adopted at the 2000 Millennium Summit set two targets for assessing progress in improving maternal health (MDG 5): reducing the maternal mortality ratio (MMR) by three quarters between 1990 and 2015, and achieving universal access to reproductive health by 2015. Closer examination of maternal mortality levels is needed to inform planning of reproductive health programmes, to guide advocacy efforts and research at the national and international levels, and to inform decision-making for the achievement of MDG 5. To be useful for the latter purpose, the country estimates must be internationally comparable.

Maternity MDG targets are unlikely to be met without significant additional investment to increase Emergency Obstetric Care (EmONC) access to many more pregnant women

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[6] Ministry of Health, RHU, Report of a nationwide assessment on emergency obstetric care services in Malawi, Lilongwe, July 2005

[7] Trends in Maternal Mortality: 1990 to 2013; WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division; 2014

[8] Say L, Chou D, Gemmill A, Tunçalp O, Moller A, Daniels J, Gülmezoglu AM, Temmerman M, Alkema L (2014) Global causes of maternal death: a WHO systematic analysis. The Lancet, http://dx.doi.org/10.1016/S2214-109X(14)70227-X.

[9] Ministry of Health, RHU, Report of a nationwide assessment on emergency obstetric care services in Malawi, Lilongwe, July 2005

(Figure6). Using data from the 2010 EmONC survey it is estimated that only half of the births requiring emergency care are receiving such care. Plans are in place to increase this access from 8% to 15% of births by 2016 by staffing and upgrading existing maternity units[10].

It has been a challenge to assess the extent of progress towards the MDG 5 target due to the lack of reliable and accurate data on maternal mortality – particularly in developing-country settings where maternal mortality is high. Recently, the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA), the World Bank and the United Nations Population Division have published internationally comparable estimates of maternal mortality for 1990, 1995, 2000, 2005 and 2013[11]. These estimates revise and improve upon the earlier methodology used. According to these recent estimates, Malawi has one of the highest rates of maternal mortality in Eastern, Central and Southern African Region, but has shown decreasing trends since 1990 (Table 1.1).

Table 1.1: Maternal mortality in Eastern, Central and Southern Africa: Levels and Trends 1990-2013 (Source: WHO, UNICEF, UNFPA, World Bank and the United Nations Population Division; Trends in maternal mortality 1990 to 2013)

Country	**MMR - (Maternal deaths per 100,000 live births)**				
	1990	**1995**	**2000**	**2005**	**2013**
Angola	1,400	1,400	1,100	750	460
Botswana	360	370	390	340	170
Burundi	1,300	1,300	1,000	910	740
Congo	670	650	610	530	410
Congo DR	1,000	1,100	1,100	930	730

[10] The Malawi Health Sector Strategic Plan 2011-2016

[11] Trends in Maternal Mortality: 1990 to 2013; WHO, UNICEF, UNFPA, The World Bank and The United Nations Population Division; 2014

Country	MMR - (Maternal deaths per 100,000 live births)				
	1990	**1995**	**2000**	**2005**	**2013**
Kenya	490	530	570	550	400
Lesotho	720	630	680	670	490
Madagascar	740	640	550	530	440
Malawi	1110	870	750	570	510
Mozambique	1,300	1,100	870	680	480
Namibia	320	280	270	250	130
Rwanda	1,400	1,400	1,000	610	320
South Africa	150	140	150	160	140
Swaziland	550	480	520	480	310
Tanzania, UR	910	890	770	610	410
Uganda	780	740	650	510	360
Zambia	580	630	610	430	280
Zimbabwe	520	550	660	740	470

A number of studies have helped to shed light on the high rates of maternal mortality in Malawi. An in-depth confidential inquiry into 312 institutional maternal deaths that occurred in 2001 in the Southern Region of Malawi showed that roughly two thirds of deaths were due to direct obstetric causes, whilst one third were due to indirect causes. The majority of direct maternal deaths were due to sepsis, obstructed labour and ruptured uterus, obstetric haemorrhage (APH and PPH), complications of abortion and eclampsia[12].

The Malawi Obstetric Quality of Care Assessment (MOQA), which was carried out in October 2003, in 18 randomly selected health facilities in 4 districts (Ntcheu, Salima, Nsanje and Karonga) revealed inadequacies in the formulation, dissemination, implementation and

[12]Ratsma, Y.E. 2003. Why more mothers die. The confidential enquiries into institutional maternal deaths in the Southern Region of Malawi, 2003.

reinforcement of policies and guidelines related to EmOC. Another major finding was the poor quality of care in terms of service provision, client education and availability of equipment, drugs and supplies.

The 2010 EmONC needs assessment reported that PPH/retained placenta, postpartum sepsis and ruptured uterus were the most common causes of maternal deaths, accounting together for 63% of all deaths due to direct causes.[13] A separate analysis of 81 maternal death audit reports (2005) from various districts in the country showed that 85% of the deaths took place in rural areas, compared to 15% in urban areas.

Since 1997 to date, Government of Malawi, through the Reproductive Health Directorate of the Ministry of Health, and with support from development partners: DFID, WHO, UNICEF, UNFPA and USAID, has implemented several initiatives in response to the increased maternal and newborn mortality. The initiatives focused on some of the following areas:

- Implementation of the Safe Motherhood Project, which was operational in the 12 districts in the Southern Region of Malawi with funding from DFID.
- Human resource strengthening through increased intake in pre-service training institutions and through in-service training of service providers
- Conducting EmONC needs assessments in 2005 and 2010
- Development of Obstetric Life Saving Skills trainers' and service providers' manuals.
- In-service training of health workers in Obstetric Life Saving Skills, Infection Prevention and Maternal Death Audit.
- Updating of curricula for Nurses/Midwife technicians to include all 7 BEmONC signal functions.
- Provision of communication materials including installation of radio communications and bicycle and motorised ambulances.
- Increasing number of BEmONC sites
- Upgrading hospitals, health centres and maternity units to equip them with standard utilities;
- Development of the Newborn Action Plan
- Development of newborn protocols

[13] Ministry of Health, RHU, Report of a nationwide assessment on emergency obstetric care services in Malawi, Lilongwe, July 2010

- Institutionalizing high impact newborn interventions like Helping Babies Breathe (HBB), Kangaroo Mother Care (KMC)
- Making maternal deaths notifiable and institutionalizing routine maternal death reviews and
- Development of an integrated manual for BEmONC targeting enrolled nurse/midwives and medical assistants.

Despite all the above efforts maternal and neonatal morbidity and mortality in Malawi has remained high. The Government of Malawi would like to better understand why maternal and neonatal morbidity and mortality remain high, and what actions are needed to reduce the number of women developing complications and dying during pregnancy and childbirth.

It is against this background that Government of Malawi felt the need to conduct a follow-up EmONC needs assessment, which will inform the country on the progress that has been made thus far with the following specific objectives:

a) Provide evidence of progress compared to the 2010 EmONC assessment which will be useful in determining progress to date in line with the Road Map for Accelerating the Reduction of Maternal and Neonatal Morbidity and Mortality

b) Guide policy, planning, and (re)prioritization where necessary to address any gaps and strengthen the health system by continuing to use EmONC as a point of entry

c) Measure the availability of infrastructure, human resources, drugs, equipment and supplies to provide basic and comprehensive EmONC

d) Measure knowledge and competency levels of human resources regarding obstetric and newborn care

e) Carry out case reviews of the partograph, caesarean, and maternal and neonatal deaths

f) Map EmONC services as part of service availability mapping

g) Establish a mid-term progress assessment for monitoring the availability, geographic distribution, level of utilization, and quality of EmONC (using the EmONC Indicators) that will be linked to the Health Management Information System (HMIS) towards achievement of MDGs 4 & 5 by 2015

h) Formulate concrete recommendations that will guide policy and planning and help translate the study findings into best practice

CHAPTER TWO Methodology

2.01 Survey Overview

The Malawi 2014 EmONC needs assessment was a national cross-sectional facility-based survey that utilised 10 modules as data collection instruments. A total of 365 facilities were surveyed and this included a census of all hospitals and a 60% sample of all health centres providing deliveries. Data collection took place from 23rd September to 17th October 2014. Report writing was finalized in March 2015.

2014 Malawi EmONC Needs Assessment Schedule

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Planning and Advocacy										
Adaptation of modules, finalisation & pre-testing										
Develop data entry screens in CS Pro 5.0										
Recruit data collectors and supervisors										
Printing of data collection tools										
Recruit, train data entry clerks										
Data collector training										
Data collection and field level supervision										
Data entry (including review and cleaning at questionnaire level)										
Data cleaning										
Data analysis workshop (table shells adaptation, weighting, analysis)										
Report writing										
Report validation workshop										
Dissemination and action planning										

The following modules were used for the assessment:

- **Module 1: Identification of Facility and Infrastructure**
  Required interviewing a person of some authority at the facility and covered background information on the facility including capacity, infrastructure, and policies around payment for services.

- **Module 2: Human Resources**
  Involved interviewing one or more persons with excellent knowledge of the staffing patterns of health care workers providing obstetric and newborn care and which signal functions and essential services the staff provide. It also covered the staffing situation at the facility 24 hours / 7 days a week.

- **Module 3: Essential Drugs, Equipment & Supplies**
  Examined medications, equipment, and supplies that are necessary for the delivery of emergency obstetric and newborn services. This module was conducted primarily by interview with observation used to spot check items.

- **Module 4: Facility Case Summary**
  Used to collect the necessary data from facility registers and records in order to calculate the EmONC Indicators; these data included the number of deliveries (by type of delivery), obstetric complications (by cause), maternal deaths (by cause), stillbirths and very early neonatal deaths. The time period covered 12 months.

- **Module 5: EmONC Signal Functions & Other Important Services**
  Looked at how facilities *actually* function and whether they offer all, some or none of the services necessary to treat and save newborns and women with obstetric complications. It also looked at why these services had not been performed at the facility. Performance information was determined through interview and validation from the registers. This module referred to the three months and in some cases, 12 months prior to the survey. The last three months would have covered the period from June to August 2014, in all Districts.

- **Module 6: Partograph Review**
  Used to determine how many facilities used the partograph, the types of partograph used and how they were completed.

- **Module 7: Provider Knowledge & Competency for Maternal and Newborn Care**
  Assessed the knowledge of health providers about diagnosis and management of common maternal and newborn conditions; it also reviewed specific training for and performance of key services.

- **Module 8: Caesarean delivery review**
  The module was used to evaluate record-keeping for caesareans, indications for caesareans, fetal and maternal wellbeing after caesarean delivery.

- **Module 9: Review of maternal deaths**
  Designed to develop a profile of mothers who died from direct or indirect obstetric complications in health facilities over the 12-month period under review as well as information on contributory factors associated with maternal deaths.

- **Module 10: Review of newborn deaths**
  Designed to develop a profile of newborns who died within 28 days after delivery in health facilities over the 12-month period under review as well as contributory factors associated with neonatal deaths.

- **National Data Collection Tool**
  Designed to collect information at the national level. This tool helped the research team gather information such as: national and district-level populations, lists of health facilities, national drug lists, scope of work for midwives, information about policies on staffing levels, and availability of educational institutions for midwives, nurses and doctors.

2.02Establishment of Country Core Team

By July 2014, Malawi had already mobilized a country core team or technical working group (TWG) to coordinate the needs assessment by securing funding, human resources, access to facilities and ensuring government representation and legitimacy. The core team was entrusted with the following key tasks:

- Participation in the development of the 2014 Malawi needs assessment schedule
- Participation in development of the research protocol including budget preparation
- Ensuring that budget was adequate for the needs assessment process
- Working closely with the technical coordinator with regard to recruitment of data collectors and data entry staff and management of field work and data entry
- Working closely with the technical coordinator to acquire an updated list of health facilities providing maternal and neonatal care
- Participation in completing the national information module
- Participation in adaptation and pre-testing of modules
- Participation in data collector training program
- Monitoring progress of field work including making site visits for quality assurance
- Participation in data cleaning
- Planning, organizing and participation in data analysis and interpretation workshop
- Participation in report writing and report validation workshop
- Participation in dissemination of results and national action planning.

2.03Finalisation and Submission of Research Protocol

By end August 2014, the study protocol was finalized and submitted to the National Health Sciences Research Committee.

2.04 Selection of facilities

A three-step approach was followed to identify facilities for the assessment. The first step involved getting an updated list from DHOs of health facilities in the country providing

maternal and neonatal care. The Reproductive Health Directorate (RHD) of the Ministry facilitated this. In total, there were deemed to be 557 facilities in Malawi providing MNH services. This list included 87 hospitals and 468 health centres. The second step involved selection of all hospitals in the country providing MNH services regardless of type and ownership. All 87 hospitals were therefore included in the survey.

The third step involved random selection of 60% of all the health centres. This resulted in 278 health centres being selected for the survey. Table 2.1 has the distribution of surveyed facilities according to facility type by district and sector. For weighting and associated procedures, please see Section 2.11 under this chapter.

Table 2.1: Distribution of surveyed facilities according to facility type by district and sector

	Hospitals				Health Centres	Total number of facilities surveyed
	Central Hospital	District Hospital	Community /Rural Hospital	Other Hospital[1]		
	N	N	N	N	N	N
Malawi	**4**	**23**	**33**	**27**	**278**	**365**
District						
Chitipa	0	1	0	0	5	6
Karonga	0	1	3	0	7	11
Nkhata Bay	0	1	1	0	10	12
Rumphi	0	1	3	1	6	11
Mzimba North	1	0	0	2	12	15
Mzimba South	0	1	2	1	14	18
Likoma	0	0	1	0	1	2
Kasungu	0	1	3	0	8	12
Nkhotakota	0	1	2	1	8	12
Ntchisi	0	1	0	0	5	6
Dowa	0	1	3	0	10	14
Salima	0	1	0	0	8	9
Lilongwe	1	0	5	8	21	35
Mchinji	0	1	3	0	5	9
Dedza	0	1	0	1	16	18
Ntcheu	0	1	0	0	16	17
Mangochi	0	1	2	1	17	21
Machinga	0	1	0	0	10	11
Zomba	1	0	2	2	15	20
Chiradzulo	0	1	0	1	5	7

	Hospitals				Health Centres	Total number of facilities surveyed
	Central Hospital	District Hospital	Community /Rural Hospital	Other Hospital[1]		
	N	N	N	N	N	N
Blantyre	1	0	0	5	13	19
Mwanza	0	1	0	0	2	3
Thyolo	0	1	0	1	16	18
Mulanje	0	1	0	1	11	13
Chikhwawa	0	1	2	0	12	15
Nsanje	0	1	0	1	7	9
Phalombe	0	0	0	1	7	8
Balaka	0	1	0	0	6	7
Neno	0	1	1	0	5	7
Sector						
Government	4	23	16	3	199	245
CHAM	0	0	18	19	65	102
Private for profit	0	0	0	5	13	18
Location						
Rural	0	0	34	13	267	314
Urban	4	23	0	14	10	51

1. Other Hospital includes [Private, CHAM, Bwaila, Army and Police]

2.05Case selection within facilities

Five modules required the data collector to make some choices about who to interview or what cases to review. In the Provider Knowledge & Competency Interview for Maternal and Newborn care, the instruction to data collectors was to interview the provider who attended the largest number of deliveries in the last month who was present at the time of the visit.

In the Partograph review, the data collectors selected up to three cases. The instructions for the Partograph review were to choose three recent partographs completed in the last month, preferably by different providers.

In the cesarean review, data collectors selected the last 3 women who had a cesarean (in the last 12 months) but who were no longer hospitalized. In the maternal death review, data collectors selected the last 3 maternal deaths that occurred in the previous 12 months and similarly in the neonatal death review, data collectors selected the last 3 neonatal deaths that occurred in the previous 12 months.

Given the objectives of the survey, there was no attempt to make a random selection. The samples of providers and case reviews are convenience samples. For this reason, inferences based on these samples should not be applied to the larger population.

2.06 Module Adaptation and Pre-testing

The country core team with extensive consultation with technical experts from AMDD, Save the Children International, University of Malawi College of Medicine, Medical and Nurses and Midwives Council of Malawi were responsible for the initial adaptation of modules. A national 3-day consultative workshop was held in Salima to finalise the data collection tools. This workshop took place between 27-29 August 2014 at the Silver Sands Hotel, attended by 9 members of the TWG.

Adaptation was based on the generic modules from AMDD but also from the tools used in the 2010 Malawi needs assessment. These modules were further refined during pre-testing of these tools and during the data collectors' training that took place from 16th to 20thSeptember 2014. Permission was obtained from the Ministry of Health to use Bwaila Hospital to pre-test the tools. Following finalization of these modules, World Vision and UNFPA were requested to procure printing of these tools prior to the data collection exercise.

2.07 Data Collector Training

Classroom training was scheduled from 16th to 20stSeptember 2014 at the Kalikuti hotel in Lilongwe. In order to ensure quality in data collection, inclusion criteria for selection of data collectors were critical. Data collectors were selected based on their familiarity with clinical settings in Malawi and a good understanding of EmONC services. They were from a background of nursing, midwifery and clinical medicine. The RHD with support from core group members recruited 60 data collectors; for a complete list of data collectors, survey teams and survey facilitators, please see Table 2.4A in the appendix.

The consultants with support from some core group members played a leading role in coordinating the training program including:

- Managing logistics for the training
- Preparing training materials i.e. modules, training manuals, facilitation manuals, laptop and LCD projector
- Communicating with participants before training
- Preparing training site and field-based training activities
- Facilitating the training alongside other trainers.

The methodology used for training included:

- Pre-course test
- Power point/ Flip chart presentations
- Classroom reading of participant manual
- Group discussions and plenary presentations
- Role play sessions

- Question and answer sessions
- Familiarization and getting acquainted with all the facility registers used for maternal and neonatal care
- Field visits

The HMIS section of the Ministry of Health provided data for service availability mapping following a recent service provision assessment (SPA). Thus, it was not necessary to collect information on geographic coordinates using GPS devices.

2.08 Research Ethics

The data collectors were trained on the principles of confidentiality. No person's name was recorded on any of the modules except that of the data collector. Permission was requested from in-charge of facilities to visit the facility and interview members of staff. Team leaders carried with them letters of introduction from the Ministry of Health. The facility in-charges' responses and those of members of staff were always respected. Providers who were interviewed for module 7 provided oral consent.

2.09 Data collection

Data collection was scheduled from 23rd September to 10th October 2014. Logistics for field work were finalized and included:

- Arranging data collection teams
- Arranging team leaders and facilitators for data collection teams
- Determining schedules for and routes for data collection teams
- Arranging transportation for each data collection team including car, boat, air travel as appropriate
- Determining fuel allocation for each survey team
- Informing data collection teams of possible lodging locations while in the field
- Distribution of copies of the authorization letter from Ministry of Health to data collection team leaders to bring to each facility
- Sending authorization letters to all DHOs by e-mail and fax
- Printing of enough modules for field work and ensuring that there were extra modules for back up
- Distribution of supplies including pencils, pens, erasers, staplers, big envelopes (for completed questionnaires), air time vouchers, carrier bags, contact numbers for facilitators
- Developing a plan for collecting completed questionnaires from the field
- Scheduling quality assurance and support visits by members of the core team
- Establishing communication plan between team leaders, facilitators and technical coordinator
- Tracking completion rate of facilities in each region

2.10 Data entry, cleaning and analysis

Double data entry was conducted at Community Health Sciences Unit (CHSU), (HIV Department conference room) from 13th to 31st October 2014. The data manager, with

support from AMDD was responsible for preparation of data entry screens in CSPro 5.0. A team of 12 experienced data entry clerks were recruited to assist with data entry (Table 2.5A in the appendix). The process of data cleaning took place at UNFPA conference room from 3rd to 28th November 2014. The core team supervised the data entry and cleaning processes and clean datasets were then sent to AMDD for further cleaning. Cleaning continued throughout the process of preparing preliminary findings.

Cleaned data files were exported into SPSS (version 16) and Stata for analysis. Table shells were developed and adapted in a core group workshop, which took place in Blantyre (Malawi Sun Hotel) between12th to 23rd January 2015. At this workshop, there was representation from MOH (Reproductive Health Directorate), UNFPA, WHO, USAID, SSDI, Save the Children International, College of Medicine (Obstetrics and Gynaecology specialist), and AMDD. This working session served to adapt and finalize table shells, identify additional tables, fill adapted shells and prepare a report outline.

2.11 Weighting Procedures for Data Analysis:

Since the survey utilized a mix of methodologies: a census of Hospitals and a sample of health centres, weighting and extrapolation are crucial for presenting data on UN Indicators as well as overall facility based information on infrastructure, human resources, drugs and equipment supplies, deliveries, complications and deaths, and signal functions. The weighting was based on the total number of sampled health centres that conduct deliveries (sampled health centres represent nearly 60% of the total number of health centres in the country). The weighting process considered district level homogeneity of health centres in terms of service delivery. This means that all health centres in a certain district are given equal weights keeping other considerations constant (unchanged). However, for the case reviews (caesarean deliveries, partograph, maternal and neonatal deaths) and provider interviews, the data is presented without weighting as the sampling was based on convenience. Most recent cases at the time of the survey were selected for partograph, cesarean deliveries, maternal and neonatal death reviews. Similarly, a provider from the maternity who has attended the largest number of deliveries in each facility in the last month prior to the survey was included in the survey (with prior consent).

AMDD and FHI360 provided weights for calculation of EmONC and other indicators as shown in Table 2.4A in the Appendix.

2.12 Quality Assurance

Quality assurance activities were conducted at field level (i.e. during data collection), before data entry, after data entry and during data analysis and report writing. During data collection, team leaders played a crucial role in making sure that each module was completed correctly. In addition to this, a supervisor was assigned to each team. The role of the supervisor was to provide support to the data collection teams, providing logistical support where needed, reviewing of the modules for completeness, collection of completed modules

for submission to national coordinator. All members of the core group were involved in supportive supervision, spot-checking and validation of the data.

A review team was set up with the overall objective of reviewing all questionnaires arriving from the field for completeness, accuracy and consistency. The review consisted of 4 data entry clerks, data manager and the technical coordinator.

During data entry, there was close supervision by core group members and in particular the data manager who was responsible for handling all queries from data entry clerks. After data entry, all questionnaires were filed systematically by district for easy access and retrieval during data validation and analysis stages.

After data entry, there was a rigorous cleaning and validation process, which involved AMDD, core group members and consultants to ensure the data were cleaned to the required standard. Frequencies and cross-tabulations were run for consistency checks and to maintain quality of the data. In addition, re-categorization was done as part of quality assurance system. During data analysis, consistency checks were also conducted using table shells, which also involved handling missing facilities for specific questions, synthesising findings and triangulating with secondary documents for cross-checks and reliability of responses.

2.13 Limitations of the Survey

DHOs and Zonal Officers were requested to provide an updated list of facilities providing maternal and newborn care and because of this, a substitute list of health facilities was not prepared in the event that some facilities did not provide maternity services. It was however observed during data collection that not all facilities provided maternity services. In this case, a substitute list would have been ideal. How many health facilities were not delivery sites? We have to be transparent about this.

Accessibility and availability of facility records and documentation was a big challenge in many facilities such that some facilities were visited more than once. Incomplete records made data aggregation difficult during data collection. Inadequate record keeping meant missing data for some facilities.

Indirect obstetric complications and maternal deaths due to indirect causes are not likely to be found in maternity wards and as result, extensive record search outside the maternity area was necessary in order to get accurate data. Furthermore, complications and deaths are frequently under-recorded and therefore underestimated. Under-recording of complications and deaths will impact met need for EmONC and the direct obstetric case fatality rate.

In view of the fact that a sample of health centres was taken in the survey, when reporting at district levels, the extrapolated results (weighted data) may not reflect the true nature of the data at facility and district level.

Observation of equipment and spot checks of supplies and drugs were encouraged for some items. Given the very long lists of these articles, not all items were observed. It is possible that observation was not complete.

2.14 Organization of the report

Chapters 3 – 9 cover the results of the survey; they reflect to a great degree the different modules administered by the data collectors. Chapter 10 has specific programmatic and policy level recommendations as well as concluding remarks.

Because of the large number of tables in every chapter, the reader will find some tables in the text along with charts and graphs. The tables are numbered sequentially where the first number (to the left of the decimal place) refers to the chapter number. The letter 'A' follows some table numbers. The letter 'A'means that these tables are found in the Appendix at the end of the report in the 'Tables' section. For example, Table 3.01A will be found at the end of the report while Table 3.01 is found in the body of the text.

Since the survey used a mix of methods: census of hospitals and a stratified random sample of health centres, data presented in EmONC indicators, performance of signal functions and other MNH services, human resources, infrastructure and drugs and equipment, both proportions and "n" are weighted. While for the case reviews and provider knowledge, proportions and "n" are not weighted for the fact that convenient sample of these cases and providers do not require weighting.

CHAPTER THREE Emergency Obstetric and Newborn Indicators

This chapter reviews the eight EmONC indicators. These indicators measure availability, utilisation and quality of lifesaving services for pregnant women and newborn babies in Malawi. These indicators can be used to set priorities for programmes in the country as well as to monitor them. The indicators are described as follows:

- Indicator 1: Availability of emergency obstetric care: basic and comprehensive care facilities
- Indicator 2: Geographic distribution of emergency obstetric care facilities
- Indicator 3: Proportion of all births in emergency obstetric care facilities
- Indicator 4: Met need for emergency obstetric care
- Indicator 5: Caesarean sections as a proportion of all births
- Indicator 6: Direct obstetric case fatality rate (DOCFR)
- Indicator 7: Intrapartum and very early neonatal death rate
- Indicator 8: Proportion of maternal deaths due to indirect causes in emergency obstetric care facilities

Data collectors extracted routine service data from register entries over the 12 consecutive months of September 2013 to August 2014. The data were used to calculate the indicators. There are inherent weaknesses with using routine service data: inaccuracies and incompleteness are the most common data quality problems. Data collectors were trained to painstakingly count entries in the registers without relying on the monthly summaries prepared by health facility staff. They also probed when data appeared inconsistent with previous months.

The consultants also verified by calling facilities when data reported by data collectors appeared inconsistent, inaccurate or incomplete. The data presented in this chapter and in all succeeding chapters, except case reviews and health provider's knowledge, represent weighted data based on documented data from 365 health facilities surveyed.

3.01 Indicator 1: Availability of emergency obstetric and newborn care services

The performance of signal functions by health facilities in the 3-month period prior to the assessment was used to determine their EmONC status. The performance or non-performance of signal functions (refer to Table 3.01) is used to classify facilities as basic, comprehensive, partially functioning EmONC facilities or non-EmONC facilities. To be considered a basic EmONC facility, the first seven signal functions must have been provided and to be considered a comprehensive EmONC site, a facility must provide all nine signal functions.

Hospitals that performed seven or eight signal functions were classified as partially functioning CEmONC facilities and health centres that performed five or six signal functions were classified as partially functioning BEmONC facilities. Health centres that performed fewer than 5 signal functions were classified as non-EmONC. Hospitals were also considered as non-functioning EmONC facilities if they performed fewer than 7 signal functions and they also did not meet the basic EmONC classification.

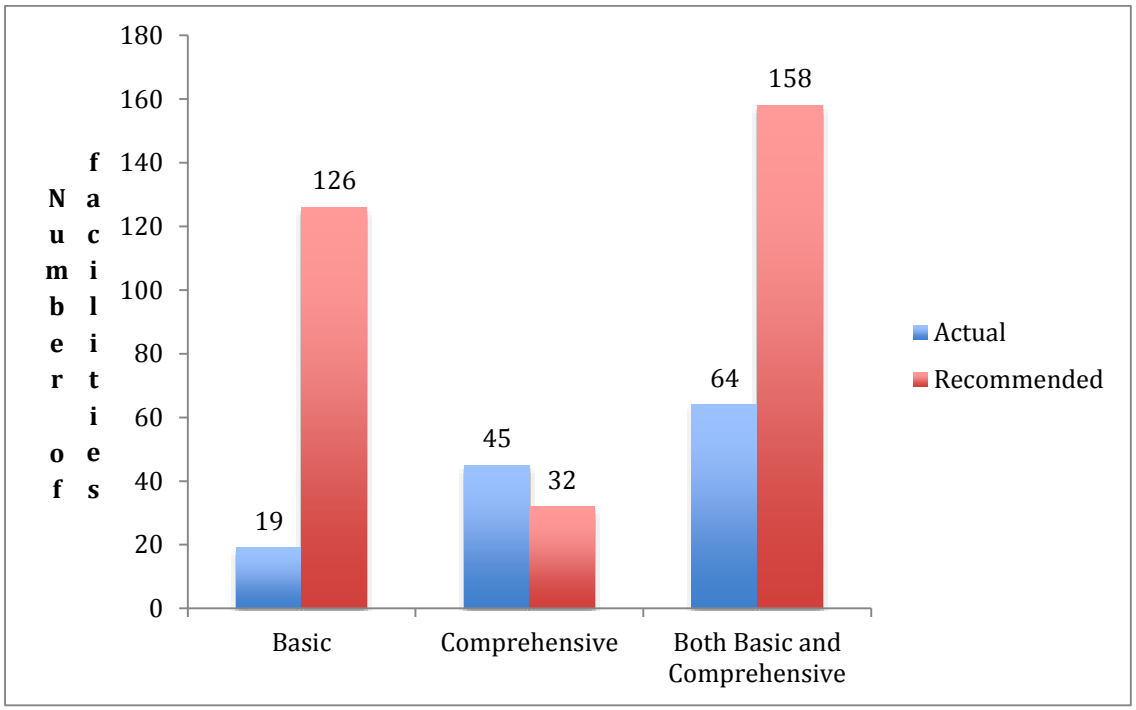
Table 3.01: Signal functions used to identify basic and comprehensive EmONC services

Basic services	**Comprehensive services**
(1) Administration of parenteral antibiotics	(1 - 7) Basic services
(2) Administration of uterotonics (for example, parenteral oxytocin)	(8) Perform surgery (for example, caesarean section)
(3) Administration of parenteral anticonvulsants for preeclampsia and eclampsia (for example, magnesium sulphate)	(9) Perform blood transfusion
(4) Manual removal of placenta	
(5) Removal of retained products of conception (for example, manual vacuum extraction; dilatation and curettage)	
(6) Performance of assisted vaginal delivery for example, vacuum extraction)	
(7) Performance of neonatal resuscitation (for example, with bag and mask)	

UN guidelines recommend at least five 5 EmONC facilities (including at least one comprehensive facility) for every 500,000 population (refer to Table 3.01A in Appendix A and in Fig. 3.01 below). Applying these standards to Malawi's 2014 projected population of 15,805,239, there should have been 158 EmONC facilities: 126 basic EmONC facilities and at least 32 comprehensive EmONC facilities. In this assessment, 64 EmONC facilities: 45 comprehensive and 19 basic EmONC facilities were found. While, there is a deficit of 107 basic EmONC facilities, the minimum number of comprehensive EmONC facilities is exceeded by 13.

Gaps in the availability of EmONC facilities vary by district (see Table 3.01A and "Map B12 for Indicators 1 and 2," in Appendix B). They are widest in Lilongwe (14) and Blantyre (10). In terms of the minimum recommendations of the UN Handbook, all districts had the recommended number of CEmONC facilities except Kasungu (1), Ntchisi (1) and Phalombe (1). Note that significant reduction in maternal and newborn mortality will only occur when there is universal and equitable access to quality care.

Fig. 3.01: Comparison of the actual numbers of EmONC facilities with United Nations targets (per 500,000 population)



Note: numbers are based on weighted frequencies; unweighted n = 365

Tables 3.02 and 3.03 below show the availability of facilities by EmONC status, by District and facility type and by sector and location respectively. Of all 87 hospitals, 45 (52 percent) were comprehensive, 28 (32 percent) were partially functioning, and 14 (16 percent) were non-EmONC.

Of the 464 health centres, 19 (4 percent) were basic, 148 (32 percent) were partially functioning, and 297 (64 percent) were non-EmONC. Of the 45 hospitals that were comprehensive, 28 (62 percent) belonged to Government while 17 (38 percent) were CHAM facilities and out of 19 facilities that were basic, all of them (100 percent) were Government facilities.

Table 3.02: Distribution of weighted facilities by EmONC status by district and facility type

	Hospitals				Health Centres			
	Comp	Partially functioning	Non functioning	Total	Basic	Partially functioning	Non functioning	Total
	N	n	n		N	n	n	
Malawi	45	28	14	87	19	148	297	464
Location								
Urban	29	8	4	41	3	3	10	16

Rural	16	20	10	46	15	145	286	446
District								
Chitipa	1	0	0	1	0	6	2	8
Karonga	1	0	3	4	0	3	8	11
Nkhata Bay	1	1	0	2	0	6	10	16
Rumphi	0	2	3	5	0	0	10	10
Mzimba North	2	1	0	3	2	0	18	20
Mzimba South	2	2	0	4	0	9	15	24
Likoma	1	0	0	1	0	0	1	1
Kasungu	1	2	1	4	2	4	9	14
Nkhotakota	2	0	2	4	0	2	12	14
Ntchisi	0	1	0	1	0	4	5	9
Dowa	2	2	0	4	0	10	7	17
Salima	1	0	0	1	0	4	11	14
Lilongwe	7	3	4	14	3	17	14	34
Mchinji	1	3	0	4	2	4	4	9
Dedza	1	1	0	2	2	5	20	26
Ntcheu	1	0	0	1	2	12	14	27
Mangochi	3	1	0	4	2	10	17	29
Machinga	1	0	0	1	0	7	10	17
Zomba	3	1	1	5	2	10	13	25
Chiradzulo	2	0	0	2	0	2	7	9
Blantyre	2	4	0	6	0	7	16	23
Mwanza	1	0	0	1	0	2	2	3
Thyolo	2	0	0	2	0	3	21	24
Mulanje	1	1	0	2	0	5	14	19
Chikhwawa	2	1	0	3	0	5	16	21
Nsanje	2	0	0	2	0	2	10	12
Phalombe	0	1	0	1	2	5	5	11
Balaka	1	0	0	1	2	5	3	10
Neno	1	1	0	2	0	2	5	7
Sector								
Govt	28	8	9	45	19	122	194	334
Private for Profit	0	6	1	7	0	0	21	21
CHAM	17	16	4	37	0	27	83	110

Note: unweighted n=365

For a complete list of the facilities in each district, showing their EmONC classification and signal function performance, please see Table3.03A in Appendix A.

These figures reference a period of three months. It is possible (especially for lower-level facilities) that some signal functions were not performed simply because caseloads were low, and not because the facilities had no capacity. Therefore, by extending the reference period

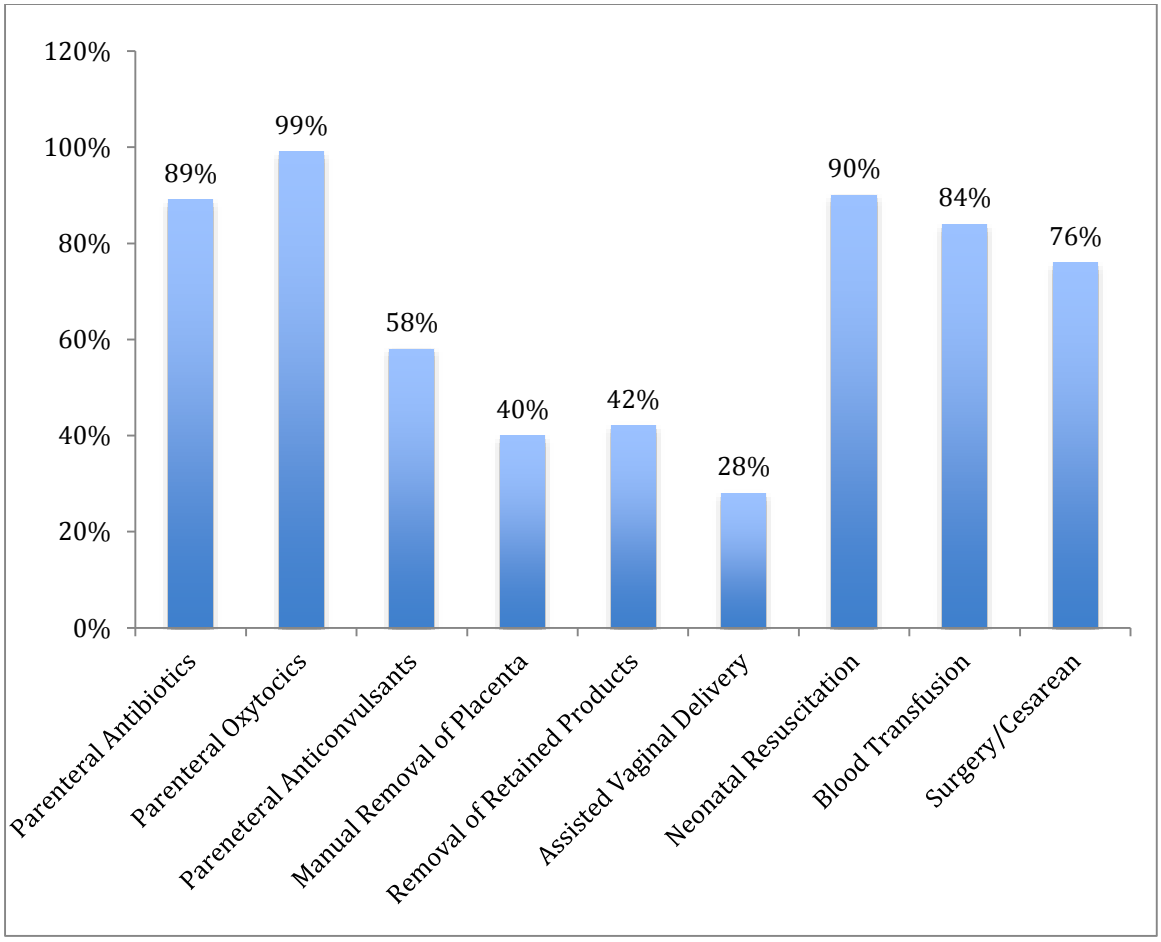
for such facilities to 12 months, their coverage of signal functions may be greater. Table 3.02A in the Appendix shows that when the reference period is extended to 12 months, there is a 70 percent increase in EmONC facilities: 22 percent increase in Comprehensive EmONC facilities and 179 percent increase in Basic EmONC facilities. The greatest increase in EmONC facilities is in Chitipa and Nkhata Bay (300%) and Karonga, Salima and Ntcheu (200%).

Performance of signal functions

The performance of signal functions was based on self-reports of the maternity in-charge and verification in registers and case notes when the in-charge wasn't sure. Figure 3.02 below gives the national performance of signal functions while Table 3.03 gives the breakdown of signal functions that were performed in the last three months by type of facility, district, sector and location.

Ninety-nine percent of facilities provided parenteral oxytocics, while 90 percent of facilities provided neonatal resuscitation and 89 percent provided parenteral antibiotics. The signal functions least performed were assisted vaginal delivery (28%), manual removal of placenta (40%), removal of retained products of conception (42%) and parenteral anticonvulsants (58%). Health centres are not expected to provide blood transfusion and surgery and these signal functions were performed in 84% and 76% of hospitals respectively (Table 3.03). Note that in Fig. 3.02, percentages for blood transfusion and obstetric surgery have also been calculated for hospitals only.

Fig. 3.02: Percent of facilities that performed each signal function in the last 3 months



Note: the percentage of facilities that performed blood transfusion or surgery is based on hospitals only.

Table 3.03 below shows that the signal function with the lowest performance i.e. assisted vaginal delivery, was performed in only 7 percent of the facilities in Salima, 8 percent of facilities in Chikhwawa and 10 percent of facilities in Ntchisi and Blantyre.

Table 3.03 also shows that while at least 75 percent of hospitals performed all the signal functions, health centres had the lowest performance of signal functions.

Tables 3.04A and 3.05A present numbers and percentages of health centres and hospitals respectively, that DID NOT perform each signal function among facilities lacking 1, 2 or 3 signal functions.

Table 3.03: Percentage of facilities that performed each signal function in the last three months, by district, type of facility and sector (among facilities that performed deliveries)

	Total number of weighted facilities that do deliveries	Parenteral Antibiotics	Parenteral Oxytocics	Parenteral Anticonvulsants	Manual Removal of Placenta	Removal of Retained Products of conception	Assisted Vaginal Delivery	New born Resuscitation	Blood Transfusion*	Surgery/ Caesarean*
Malawi	**551**	**89%**	**99%**	**58%**	**40%**	**42%**	**28%**	**90%**	**84%**	**76%**
District										
Chitipa	9	100%	100%	33%	44%	100%	67%	100%	100%	100%
Karonga	15	87%	100%	47%	47%	60%	13%	87%	50%	25%
Nkhata Bay	18	100%	100%	67%	44%	44%	28%	100%	100%	50%
Rumphi	15	100%	100%	53%	0%	27%	13%	87%	40%	40%
Mzimba North	23	78%	100%	48%	43%	22%	17%	87%	100%	100%
Mzimba South	28	100%	100%	64%	29%	32%	32%	100%	100%	50%
Likoma Island	2	100%	100%	50%	50%	50%	50%	100%	100%	100%
Kasungu	18	89%	100%	33%	39%	78%	44%	83%	75%	75%
Nkhotakota	18	100%	100%	61%	28%	44%	17%	100%	100%	50%
Ntchisi	10	100%	100%	60%	70%	10%	10%	100%	100%	100%
Dowa	21	100%	100%	67%	62%	52%	29%	100%	100%	75%
Salima	15	100%	100%	40%	33%	40%	7%	87%	100%	100%
Lilongwe	48	94%	98%	69%	58%	54%	52%	90%	57%	79%
Mchinji	13	100%	100%	69%	62%	77%	62%	85%	100%	25%
Dedza	28	61%	89%	46%	32%	25%	29%	82%	100%	100%
Ntcheu	28	82%	100%	57%	57%	46%	32%	89%	100%	100%
Mangochi	33	70%	100%	70%	36%	55%	33%	85%	100%	100%
Machinga	18	72%	89%	83%	44%	56%	17%	100%	100%	100%
Zomba	30	100%	100%	90%	40%	33%	30%	97%	60%	60%
Chiradzulo	11	100%	100%	36%	55%	36%	36%	100%	100%	100%

	Total number of weighted facilities that do deliveries	Parenteral Antibiotics	Parenteral Oxytocics	Parenteral Anticonvulsants	Manual Removal of Placenta	Removal of Retained Products of conception	Assisted Vaginal Delivery	New born Resuscitation	Blood Transfusion*	Surgery/ Caesarean*
Blantyre	29	86%	100%	69%	38%	45%	10%	93%	83%	100%
Mwanza	4	100%	100%	25%	25%	75%	100%	100%	100%	100%
Thyolo	26	77%	100%	27%	35%	8%	19%	77%	100%	100%
Mulanje	21	90%	100%	57%	19%	10%	24%	90%	100%	100%
Chikhwawa	24	83%	92%	42%	25%	29%	8%	63%	100%	100%
Nsanje	14	86%	100%	29%	14%	29%	14%	86%	100%	100%
Phalombe	12	100%	100%	75%	33%	58%	17%	100%	100%	100%
Balaka	11	100%	100%	100%	36%	55%	27%	100%	100%	100%
Neno	9	100%	100%	44%	33%	33%	22%	78%	100%	100%
Type of facility										
Hospital	87	100%	100%	89%	76%	92%	79%	99%	84%	76%
Health centre	464	87%	98%	53%	32%	32%	18%	88%	1%	0%
Sector										
Government	379	100%	99%	59%	42%	44%	31%	93%	80%	73%
Private for Profit	26	100%	85%	19%	12%	27%	4%	65%	100%	100%
CHAM	147	100%	99%	63%	36%	35%	24%	86%	92%	76%
Location										
Urban	57	100%	100%	79%	70%	74%	68%	93%	88%	95%
Rural	494	100%	98%	56%	36%	37%	23%	90%	83%	59%

**Only hospitals are included in the denominator for this column, as health centres are not expected to provide blood transfusion and surgery; unweighted n=365*

Provision of parenteral antibiotics

Nationally, 490 out of 551 facilities (89 percent) provided parenteral antibiotics. These were least provided in Dedza (61%), Mangochi (70%), Machinga (72%), Thyolo (77%) and Mzimba North (78%). In 16 out of 28 districts, all facilities (100%) provided parenteral antibiotics (Table 3.03).

Provision of uterotonic drugs

Oxytocin is the drug of choice for augmentation of labour and for active management of the third stage of labour. It was administered in 543 out of 551 facilities (99 percent) and it was the only drug used in almost all of facilities. Only Blantyre District had 97 percent of facilities using oxytocin only while 3 percent of facilities used both Oxytocin and Ergometrine. Table 3.04, below, offers a more detailed view of the patterns of use.

Table 3.04: Administration of uterotonic drugs in the last 3 months, by type of medication, district and type of facility

	Total number of weighted facilities that performed deliveries	Total number of weighted facilities that administered oxytocics in last 3 months	Among weighted facilities that administered parenteral oxytocics in the last 3 months, percent that used:	
			Oxytocin only	Both oxytocin and ergometrine
	N	**n**	**%**	**%**
Malawi	**551**	**543**	**98%**	**2%**
District				
Chitipa	9	9	100%	0%
Karonga	15	15	100%	0%
Nkhata Bay	18	18	100%	0%
Rumphi	15	15	100%	0%
Mzimba North	23	23	100%	0%
Mzimba South	28	28	100%	0%
Likoma	2	2	100%	0%
Kasungu	18	18	100%	0%
Nkhotakota	18	18	100%	0%
Ntchisi	10	10	100%	0%
Dowa	21	21	100%	0%
Salima	15	15	100%	0%
Lilongwe	48	47	100%	0%
Mchinji	13	13	100%	0%
Dedza	28	25	100%	0%
Ntcheu	28	28	100%	0%
Mangochi	33	33	100%	0%
Machinga	18	16	100%	0%
Zomba	30	30	100%	0%
Chiradzulo	11	11	100%	0%

	Total number of weighted facilities that performed deliveries	Total number of weighted facilities that administered oxytocics in last 3 months	Among weighted facilities that administered parenteral oxytocics in the last 3 months, percent that used:	
			Oxytocin only	Both oxytocin and ergometrine
	N	**n**	**%**	**%**
Blantyre	29	29	97%	3%
Mwanza	4	4	100%	0%
Thyolo	26	26	100%	0%
Mulanje	21	21	100%	0%
Chikhwawa	24	22	100%	0%
Nsanje	14	14	100%	0%
Phalombe	12	12	100%	0%
Balaka	11	11	100%	0%
Neno	9	9	100%	0%
Facility type				
Central hospital	4	4	100%	0%
District hospital	23	23	100%	0%
Comm/ Rural hosp	33	33	100%	0%
Other hospital	27	27	96%	4%
Health centre	464	456	100%	0%

Note: unweighted n=365

Provision of parenteral anticonvulsants

Severe preeclampsia and eclampsia are common morbidities of pregnancy and are a major cause of direct maternal mortality (see Table 3.16 and Fig. 3.05). Eclamptic seizures can be prevented if treated with parenteral anticonvulsants in a timely fashion; the first-line drug of choice is magnesium sulphate.

Only 321 of the 551 weighted facilities (58 percent) conducting deliveries administered parenteral anticonvulsants in the three months preceding the survey. Fifty-nine percent of facilities used magnesium sulphate exclusively while 15% used diazepam exclusively, a drug that is no longer recommended as a first-line drug for severe preeclampsia and eclampsia (Table 3.05).

At least 75 percent of central and district hospitals used magnesium sulphate while only 58 percent of health centres used magnesium sulphate. Table 3.08 provides some insight into the reasons for the limited use of parenteral anticonvulsants.

Table 3.05: Administration of parenteral anticonvulsants in the last three months in facilities conducting deliveries, by type of medication, district and facility type

	Total number of weighted facilities that performed deliveries	Total number of weighted facilities that administered anticonvulsants in the last 3 months	Among weighted facilities that administered anticonvulsants in the last 3 months, percent that used*:		
			Magnesium sulphate only	Diazepam only	Both magnesium sulphate and diazepam
Malawi	**551**	**321**	**59%**	**15%**	**25%**
District					
Chitipa	9	3	0%	0%	100%
Karonga	15	7	38%	38%	25%
Nkhata Bay	18	12	50%	50%	0%
Rumphi	15	8	88%	0%	13%
Mzimba North	23	11	73%	27%	0%
Mzimba South	28	18	94%	0%	6%
Likoma	2	1	100%	0%	0%
Kasungu	18	6	83%	0%	17%
Nkhotakota	18	11	9%	64%	27%
Ntchisi	10	6	71%	29%	0%
Dowa	21	14	73%	13%	13%
Salima	15	6	0%	29%	71%
Lilongwe	48	33	24%	21%	55%
Mchinji	13	9	78%	11%	11%
Dedza	28	13	86%	14%	0%
Ntcheu	28	16	77%	12%	12%
Mangochi	33	23	50%	14%	36%
Machinga	18	15	47%	13%	40%
Zomba	30	27	93%	7%	0%
Chiradzulo	11	4	100%	0%	0%
Blantyre	29	20	20%	10%	70%
Mwanza	4	1	0.0%	0.0%	100.0%
Thyolo	26	7	57.1%	0.0%	42.9%
Mulanje	21	12	41.7%	16.7%	41.7%
Chikhwawa	24	10	100.0%	0.0%	0.0%
Nsanje	14	4	100.0%	0.0%	0.0%
Phalombe	12	9	33%	22%	44%
Balaka	11	11	82%	0%	18%
Neno	9	4	75%	0%	25%
Facility type					
Central hosp	4	4	75%	0%	25%
District hosp	23	23	78%	0%	22%
Comm/Rural hosp	33	21	55%	10%	35%
Other hosp	27	29	62%	0%	38%
Health centre	464	244	58%	18%	24%

**Row percentages may not add up to 100% due to rounding; unweighted n= 365*

Removal of retained products of conception

In Table 3.06, only 230 out of 551 facilities (42percent) performed removal of retained products of conception; 88 percent of these facilities used manual vacuum aspiration (MVA). Thirty-one percent used dilation and curettage (D&C) or dilatation and evacuation (D&E). Eight percent of facilities used misoprostol. Almost all central, district and other hospitals performed removal of retained products while only 85 percent of rural/community hospitals and 32 percent of health centres performed this procedure.

Table 3.06: Performance of removal of retained products of conception in the last 3 months by facilities conducting deliveries, by method and district

	Total number of weighted facilities that performed deliveries	Total number of weighted facilities that removed retained products in last 3 months	Among those that removed retained products in last 3 months, percent that used[1]:		
			Manual vacuum aspiration	Dilation & curettage or dilation & evacuation	Misoprostol
Malawi	**551**	**230**	**88%**	**31%**	**8%**
District					
Chitipa	9	9	100%	11%	22%
Karonga	15	9	100%	11%	0%
Nkhata Bay	18	8	100%	13%	0%
Rumphi	15	4	50%	50%	0%
Mzimba North	23	5	80%	60%	0%
Mzimba South	28	9	56%	44%	0%
Likoma	2	1	100%	100%	0%
Kasungu	18	14	100%	14%	7%
Nkhotakota	18	8	100%	44%	0%
Ntchisi	10	1	100%	100%	100%
Dowa	21	11	91%	36%	0%
Salima	15	6	100%	17%	0%
Lilongwe	48	26	85%	42%	8%
Mchinji	13	10	100%	20%	10%
Dedza	28	7	86%	29%	14%
Ntcheu	28	13	100%	8%	8%
Mangochi	33	18	94%	22%	0%
Machinga	18	10	100%	30%	20%
Zomba	30	10	80%	30%	10%
Chiradzulo	11	4	50%	50%	0%
Blantyre	29	13	69%	46%	23%
Mwanza	4	3	100%	33%	0%
Thyolo	26	2	0%	100%	0%
Mulanje	21	2	100%	50%	0%
Chikhwawa	24	7	57%	43%	0%
Nsanje	14	4	100%	50%	50%
Phalombe	12	7	100%	14%	14%
Balaka	11	6	100%	17%	0%

Neno	9	3	100%	33%	33%
Facility type					
Central hospital	4	4	75%	100%	50%
District hospital	23	22	73%	100%	18%
Community /Rural hospital	33	28	82%	64%	7%
Other hospital	27	26	50%	89%	27%
Health centre	464	147	99%	2%	2%
[1] *Multiple responses are possible; unweighted n= 365*					

Provision of assisted vaginal delivery

Assisted vaginal delivery (AVD) was performed by only 154 out of 551 facilities (28 percent) (refer to Table 3.07); making it the least commonly performed signal function. Only 18 percent of health centres performed assisted vaginal delivery compared to 79 percent of hospitals. All facilities that performed this procedure used vacuum extractors exclusively.

Table 3.07: Performance of assisted vaginal delivery in the last three months in facilities conducting deliveries, by method and district

	Total number of weighted facilities that performed deliveries	Total number of weighted facilities that performed assisted vaginal delivery in last 3 months	Weighted facilities that performed assisted vaginal delivery in last 3 months, percent that used:
			Vacuum extractor only
Malawi	**551**	**154**	**100%**
District			
Chitipa	9	6	100%
Karonga	15	2	100%
Nkhata Bay	18	5	100%
Rumphi	15	2	100%
Mzimba North	23	4	100%
Mzimba South	28	9	100%
Likoma	2	1	100%
Kasungu	18	8	100%
Nkhotakota	18	3	100%
Ntchisi	10	1	100%
Dowa	21	6	100%
Salima	15	1	100%
Lilongwe	48	25	100%
Mchinji	13	8	100%
Dedza	28	9	100%
Ntcheu	28	9	100%
Mangochi	33	11	100%
Machinga	18	3	100%

	Total number of weighted facilities that performed deliveries	Total number of weighted facilities that performed assisted vaginal delivery in last 3 months	Weighted facilities that performed assisted vaginal delivery in last 3 months, percent that used:
			Vacuum extractor only
Zomba	30	9	100%
Chiradzulo	11	4	100%
Blantyre	29	3	100%
Mwanza	4	4	100%
Thyolo	26	5	100%
Mulanje	21	5	100%
Chikhwawa	24	2	100%
Nsanje	14	2	100%
Phalombe	12	2	100%
Balaka	11	3	100%
Neno	9	2	100%
Facility type			
Central hospital	4	4	100%
District hospital	23	23	100%
Comm/Rural hosp	33	23	100%
Other hospital	27	19	100%
Health centre	464	84	100%

Note: unweighted n = 365

The performance of AVD obviates the need for some caesarean sections and often means a quicker delivery of the baby.

Reasons for not performing signal functions

Facilities that did not provide signal functions were asked why (Table 3.08). Of the 72 percent of facilities that did not perform AVD in the previous three months, 44 percent lacked supplies, equipment or drugs, 28 percent cited training issues; 24 percent had no indication for performing the procedure and 9 percent lacked human resources.

Forty-two percent of facilities did not provide parenteral anticonvulsants mainly because there was no indication to do so (85%) while 8% were due to policy issues and 2 percent lacked the appropriate drugs.

Of the 59 percent of facilities that did not perform removal of retained products, 44 percent lacked supplies, equipment or drugs while 37 percent failed to do so because of training issues.

'No indication' was the major reason for not performing manual removal of placenta in the 85 percent of facilities that reported no manual removal of placenta. The most common reasons facilities gave for not performing caesarean delivery were lack of supplies, equipment or drugs and policy issues (31%) while the most common reason for not performing blood transfusion was lack of supplies, equipment or drugs (62 percent).

Table 3.08: Percentage of facilities that did not provide the signal functions in the last 3 months and reasons for not providing them, by function (among facilities that perform deliveries)

Signal Function	Percentage of facilities that provided the procedure in the last:		Number of weighted facilities that did not perform the procedure in the last 3 months	Percentage of facilities that responded that the procedure was not provided in the last 3 months due to lack of (multiple responses allowed):					
	12 months	3 months		availability of human resources	training issues	supplies/ equipment/ drugs	management issues	policy issues	no indication
	%	%	N	%	%	%	%	%	%
Parenteral antibiotics	95.4	89	66	6	0	6	0	3	72
Parenteral oxytocics	99.7	99	8	0	0	0	20	19	21
Parenteral anticonvulsants	73.4	58	221	0	2	2	2	8	85
Manual removal of placenta	61.0	39	314	3	8	3	0	5	85
Removal of retained products	46.8	41	318	1	37	44	4	14	22
Assisted vaginal delivery	35.3	28	381	9	28	44	14	12	24
Neonatal resuscitation	94.1	90	54	3	3	12	0	10	66
Blood transfusion[1]	83.0	82	16	0	5	62	5	33	5
Surgery (caesarean)[1]	76.0	76	21	13	6	31	13	31	13
[1] Only hospitals are included (n = 87); unweighted n = 365									

Facility readiness to provide signal functions

Apart from understanding the performance of health facilities for each signal function, it is good to look at performance compared to facility readiness to perform a signal function. Cognizant to this, Figure 3.03, below, shows the percent of all facilities that were 'ready' to provide each signal function. Facility readiness is defined as having at least one person on staff who can provide the signal function and having the minimum required drugs, equipment and supplies functioning and available at the time of the survey (see Table 3.06A for definitions of required drugs, equipment and supplies). Information on performance of signal functions, readiness on human resources, and readiness in equipment/drugs/supplies come from Module 5, Module 2, and Module 3, respectively.

Of all the signal functions, assisted vaginal delivery was the least performed (28%) Basic signal function while only 36% of facilities had both equipment/supplies and human resources. The main reason for not performing assisted vaginal delivery as stipulated in this report was lack of equipment/drugs (44%), followed by training issues (28%) and no indication (24%). Similarly, removal of retained products of conception was performed in 42% of facilities even if only 12% of facilities possessed equipment and drugs to perform the signal function. This shows a huge gap in the availability of equipment and supplies and suggests that the removal of retained products is occurring in substandard conditions. Similarly, blood transfusions appear to be taking place without the required drugs, equipment and supplies.

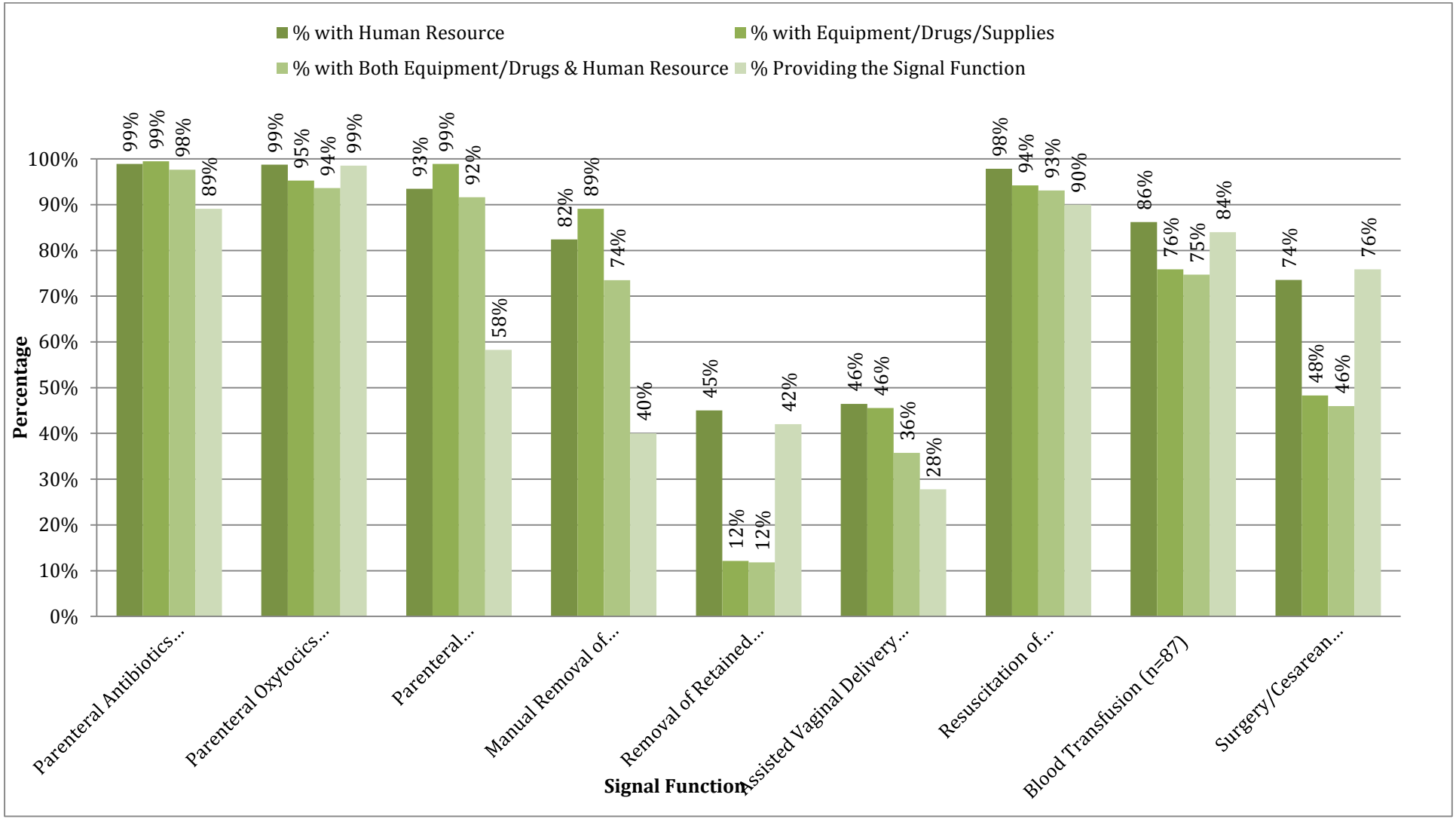
The stair-step pattern, observed for assisted vaginal delivery, was also observed for parenteral antibiotics. In the case of antibiotics, almost all facilities (99%) have the human resources available to provide the signal function and the minimum required drugs available (99%), i.e. facilities are ready to provide parenteral antibiotics (98%). In line with the readiness, quite a large proportion (89%) of facilities performed this signal function in the last three months. A similar pattern is seen for readiness and performance of resuscitation of a newborn with bag and mask. The patterns further suggest that the signal functions are performed in an environment with trained staff and minimum required drugs.

Facility readiness in providing parenteral anticonvulsants and manual removal of placenta have the same pattern of low performance of signal functions while the facilities are ready to provide them in terms of availability of both trained staff and minimum required drugs/equipment (92% and 74%, respectively). In terms of parenteral uterotonics, almost all of the facilities have trained staff to perform the signal function (99%) and a little lower than the proportion of facilities that perform parenteral uterotonics do have drugs/supplies in stock. This further explains that there is no significant difference/gap in facilities readiness and actual performance of performing parenteral uteorotonics – oxytocin, a drug of choice.

Nearly three-quarters of hospitals have someone on staff to perform cesarean surgery; far fewer have the minimum drugs, equipment and supplies (48%). Additionally, these resources are not efficiently distributed, leaving just 46% of hospitals ready to provide surgery. Despite

this, 76% of hospitals reported providing cesarean surgery recently, suggesting that some hospitals are providing surgery without trained staff (most likely without staff to provide anesthesia) and without the minimum required drugs, equipment and supplies to perform cesarean surgery.

Figure 3.03: Percentage of facilities that are ready to provide each signal function, 2014 Malawi EmONC Assessment

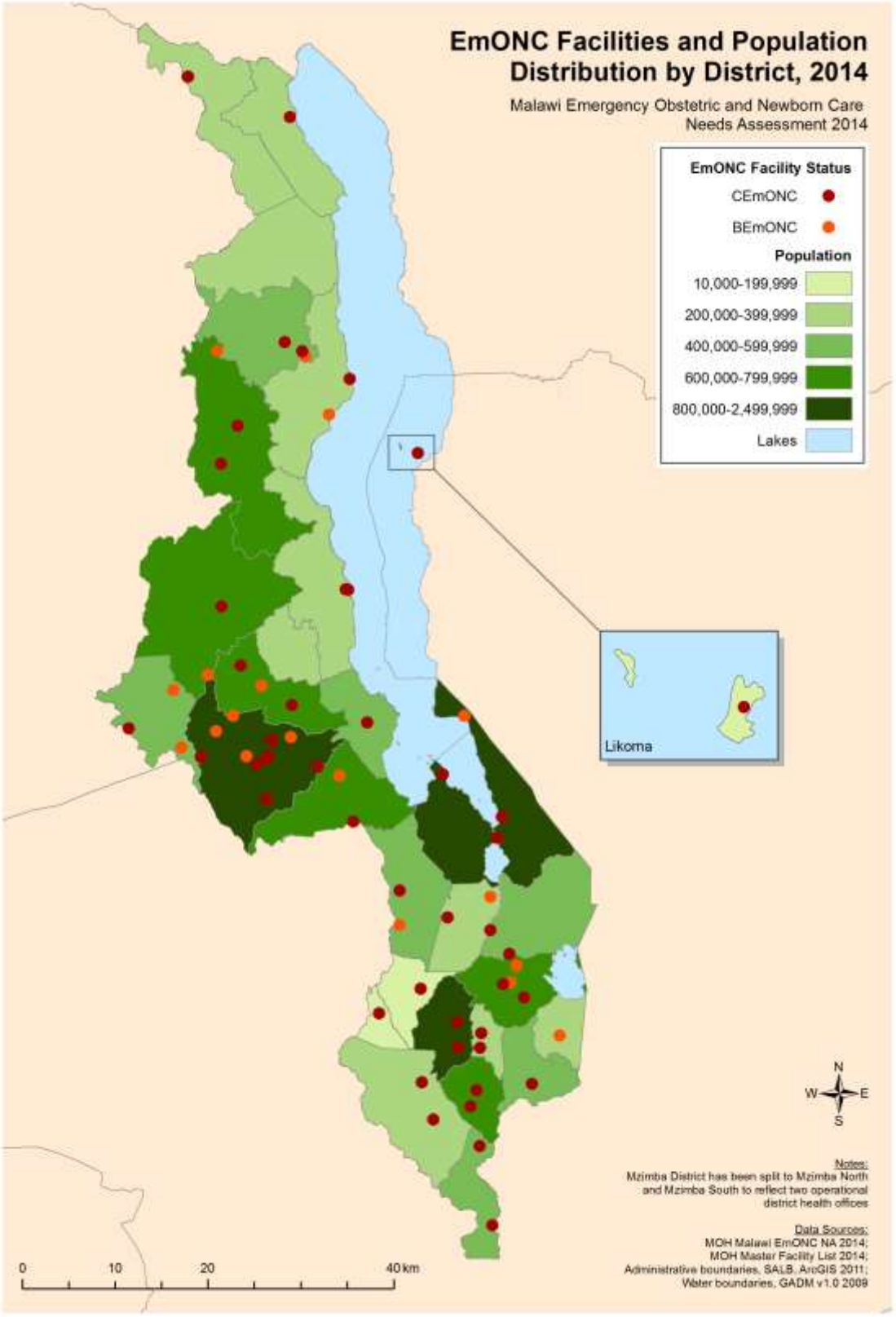


3.02 Indicator 2: Geographic distribution of EmONC facilities

This indicator is calculated in the same way as the first one, but takes into consideration geographic distribution of facilities. Fig. 3.04 below shows at a glance, Malawi's distribution of EmONC facilities nationally and by district. It shows the location of basic and comprehensive EmONC facilities and population distribution in each district. Map B1 in Appendix B shows the distribution of basic, comprehensive, partially functioning and non-EmONC facilities.

Data on the geographic distribution of facilities help programme managers and planners to address equity in access to services. To ensure equitable access, all districts should have the minimum acceptable numbers of EmONC facilities (that is, at least five facilities — including at least one comprehensive facility — per 500,000 population). Table 3.01A in Appendix A and Maps B2 & B3, for indicators 1 and 2 in Appendix B, show that only 3 districts in Malawi (i.e. Likoma, Mwanza and Neno) meet this recommended minimum. The biggest gap is observed in Lilongwe (gap of 14) and Blantyre (gap of 10) districts.

Fig. 3.04: Geographical distribution of EmONC facilities and population density in Malawi



3.03 Indicator 3: Proportion of births in facilities

The proportion of births attended in a health facility is an important indicator because as the proportion grows more pregnant women are exposed to potentially better care than is available outside health facilities. In Malawi, "unskilled attendants" sometimes conduct institutional deliveries. Trained traditional birth attendants (TTBAs) are not skilled attendants.

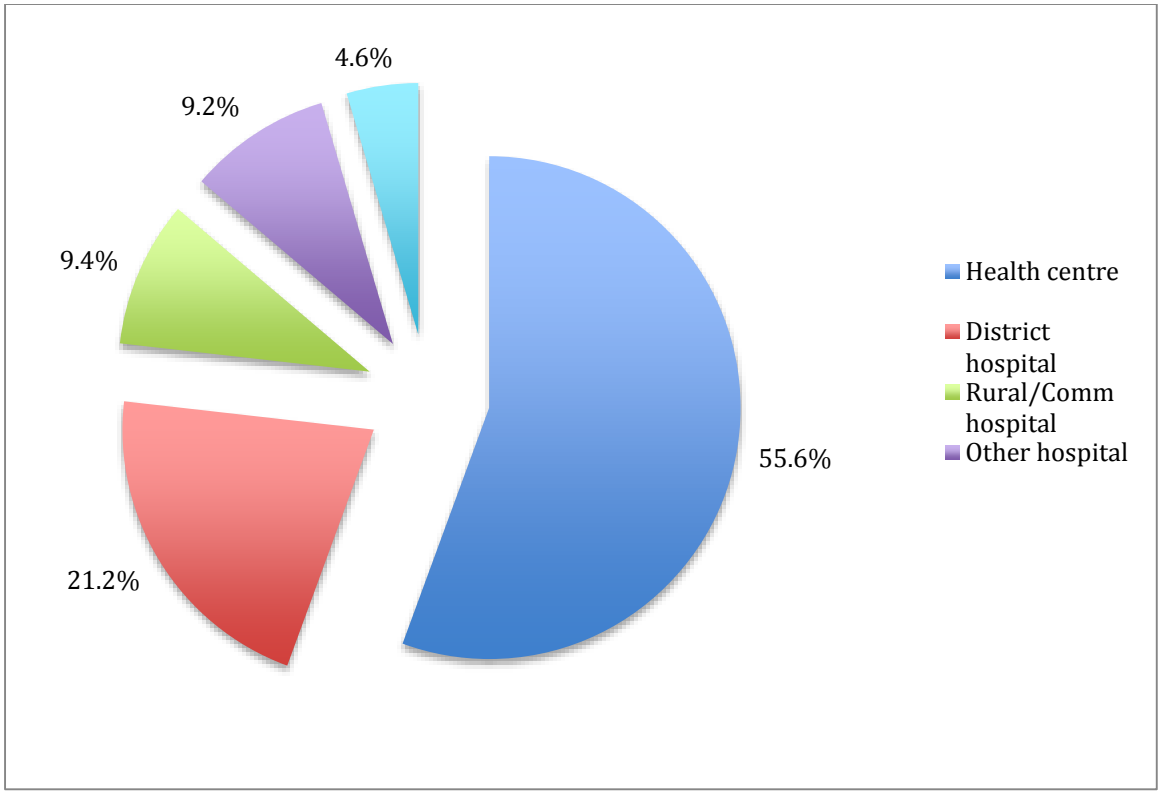
The number of expected births in Malawi in 2014 was estimated from the national crude birth rate (CBR) applied to district population figures and summed to get the national estimate. The number of births attended in all facilities over the 12-month period preceding the survey was obtained by collecting data using Module 4 from all facilities that conducted deliveries. See Table 3.11 below and Maps B4 & B5 (for Indicator 3), in Appendix B.

The national distribution of institutional deliveries in 2014-15 shows the use of health facilities at each level for obstetric services. These figures offer perspective on the discussion to follow on the capacity of facilities to respond to emergency maternal and neonatal needs. Most deliveries were attended in health centres (55.6 percent), followed by district hospitals (21.2 percent), Rural/Community Hospitals (9.4 percent), other hospitals (9.2 percent), and central hospitals (4.6 percent) (Table 3.09 and Fig 3.05). This distribution conforms to the principles of primary health care that recommends that most care be provided at the first level of care and only those with complications or those needing specialized care are sent to the secondary and tertiary levels of care.

Table 3.09: Number (weighted) and percentage of institutional births, by type of facility

Facility providing delivery	Number of institutional births	Percentage of total institutional births
Central Hospital	21,721	4.6
District Hospital	100,869	21.2
Other Hospital	43,821	9.2
Rural/Community Hospital	44,829	9.4
Health Centre	265,034	55.6
Total	476,272	100

Fig 3.05: Distribution of institutional births, by type of facility

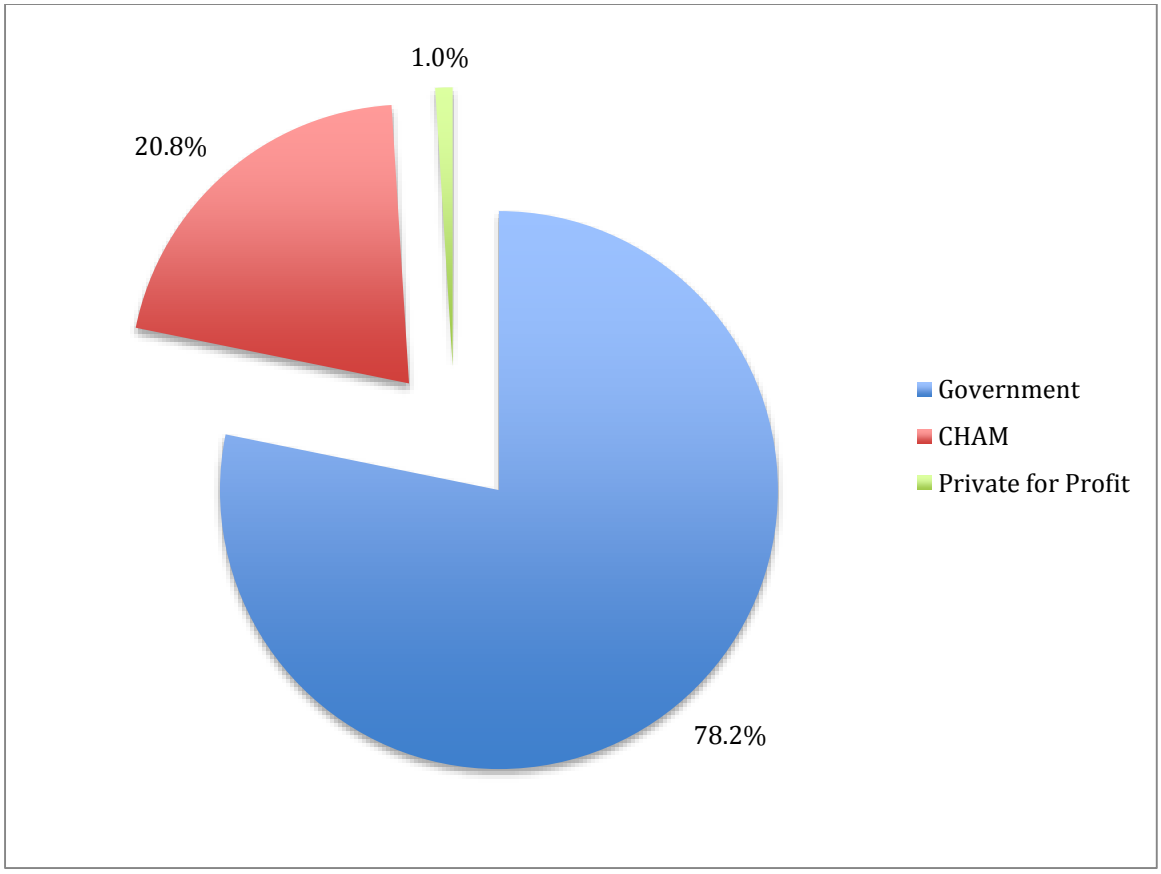


Most deliveries were attended in government facilities (78 percent) followed by CHAM facilities (21 percent). Private for profit facilities only attended 1 percent of deliveries (Table 3.10 and Fig 3.06).

Table 3.10: Number (weighted) and percentage of institutional births, by type of operating agency

Sector providing delivery	Number of institutional births	Percentage of total institutional births
Government	372,487	78.2
Private for Profit	4,924	1.0
CHAM	98,861	20.8
Total	476,272	100

Fig 3.06: Distribution of institutional births, by sector



A comparison of the number of expected births with the number of births attended in all facilities shows that 60 percent of births occurred in health facilities and 24 percent of births took place in EmONC facilities. The district figures for utilisation range from 41 percent for Nsanje district to 116 percent for Mwanza district. The share of institutional births in EmONC facilities ranges from 0 percent in Rumphi and Ntchisi districts to 80 percent in Mwanza district. The higher rates for Mwanza may reflect cross-border provision of services with neighbouring Mozambique.

Table 3.11: Percentage of expected births attended in all facilities and EmONC facilities, by district (EmONC Indicator 3)

	Population[1,]	Number of expected births (CBR*pop)[2]	All facilities			EmONC facilities	
			Weighted number of births attended in facilities	Percent of expected births		Weighted number of births attended in facilities	Percent of expected births
Malawi	**15,805,239**	**790,262**	**476,272**	**60%**		**190,305**	**24%**
District							

Chitipa	211,170	10,559	6260	59%		2,837	27%
Karonga	327,084	16,354	9663	59%		3,369	21%
Nkhata Bay	260,583	13,029	6587	51%		1,880	14%
Rumphi	203,053	10,153	7905	78%		0	0%
Mzimba North	474,450	23,723	15466	65%		9,973	42%
Mzimba South	603,846	30,192	17141	57%		5,877	19%
Likoma	10,441	522	452	87%		375	72%
Kasungu	794,991	39,750	17606	44%		8,736	22%
Nkhotakota	367,776	18,389	9548	52%		5,132	28%
Ntchisi	276,481	13,824	10330	75%		0	0%
Dowa	732,343	36,617	19723	54%		4,431	12%
Salima	407,148	20,357	15392	76%		5,916	29%
Lilongwe	2,400,234	120,012	57981	48%		36,159	30%
Mchinji	569,085	28,454	20727	73%		9,108	32%
Dedza	718,747	35,937	21611	60%		7,686	21%
Ntcheu	557,433	27,872	21911	79%		9,347	34%
Mangochi	982,058	49,103	29674	60%		12,456	25%
Machinga	589,709	29,485	26135	89%		5,269	18%
Zomba	779,259	38,963	27371	70%		10,454	27%
Chiradzulo	314,059	15,703	9882	63%		4,547	29%
Blantyre	1,239,648	61,982	26045	42%		12,350	20%
Mwanza	102,571	5,129	5945	116%		4,086	80%
Thyolo	633,019	31,651	17944	57%		6,808	22%
Mulanje	564,975	28,249	19911	70%		4,691	17%
Chikhwawa	364,281	18,214	14929	82%		5,099	28%
Nsanje	518,287	25,914	10602	41%		4,172	16%
Phalombe	274,797	13,740	12236	89%		2,847	21%
Balaka	383,887	19,194	13102	68%		6,014	31%
Neno	143,824	7,191	4195	58%		686	10%
[1]Source of Population Estimates: National Statistical Office: 2014 Projected populations							
[2]Crude birth rate = 50 per 1000 population, Source: MOH (HMIS data)							

Note that health facilities (especially hospitals) tend to receive some of their patients from out-of-district; the national estimate is therefore more stable than district estimates. Nevertheless, district estimates provide a baseline for planning by district health officers.

3.04 Indicator 4: Met need for EmONC

It is estimated that 15 percent of pregnancies experience direct obstetric complications. Met need for EmONC is computed by the number of obstetric complications treated in EmONC facilities as a proportion of the number of expected complications. The expected number of complications in the 12-month period under review was 118,539. Of these only 60,041 (51 percent) were seen at all facilities and 29,758 (25 percent) seen at EmONC facilities.

By district, met need at all facilities ranged from 27 percent in Nkhata Bay to 86 percent in Mzimba North. Met need at EmONC facilities ranged from 0 percent in Rumphi and Ntchisi districts to 66 percent in Mzimba North. See Table 3.12, below, and Maps B6 & B7 (for Indicator 4), in Appendix B.

The higher the met-need the higher the potential for more appropriate treatment for women with complications and therefore the lower the maternal and newborn mortality.

Table 3.12: Percentage of women with expected major direct obstetric complications treated in all facilities and in EmONC facilities, by district and by operating agency

	Expected births[1]	Expected complications[2]	All Facilities			EmONC Facilities	
			Weighted number of women with direct complications treated in facility	Met need		Weighted number of women with direct complications treated in facility	Met need
Malawi	**790,262**	**118,539**	**60,041**	**51%**		**29,758**	**25%**
District							
Chitipa	10,559	1,584	650	41%		477	30%
Karonga	16,354	2,453	1199	49%		492	20%
Nkhata Bay	13,029	1,954	532	27%		185	9%
Rumphi	10,153	1,523	874	57%		0	0%
Mzimba North	23,723	3,558	3054	86%		2348	66%
Mzimba South	30,192	4,529	1946	43%		1491	33%
Likoma	522	78	47	60%		34	43%
Kasungu	39,750	5,962	1755	29%		1319	22%
Nkhotakota	18,389	2,758	1469	53%		911	33%
Ntchisi	13,824	2,074	715	34%		0	0%
Dowa	36,617	5,493	2670	49%		990	18%
Salima	20,357	3,054	1728	57%		806	26%
Lilongwe	120,012	18,002	8180	45%		5315	30%
Mchinji	28,454	4,268	2672	63%		1711	40%
Dedza	35,937	5,391	2487	46%		625	12%
Ntcheu	27,872	4,181	2291	55%		1239	30%
Mangochi	49,103	7,365	3512	48%		1954	27%
Machinga	29,485	4,423	1453	33%		428	10%
Zomba	38,963	5,844	3588	61%		1531	26%
Chiradzulo	15,703	2,355	1600	68%		344	15%
Blantyre	61,982	9,297	6419	69%		3279	35%
Mwanza	5,129	769	486	63%		409	53%
Thyolo	31,651	4,748	1833	39%		960	20%
Mulanje	28,249	4,237	2019	48%		378	9%

Chikhwawa	18,214	2,732	1476	54%		382	14%
Nsanje	25,914	3,887	1697	44%		742	19%
Phalombe	13,740	2,061	1349	65%		141	7%
Balaka	19,194	2,879	1772	62%		1201	42%
Neno	7,191	1,079	568	53%		65	6%
*[1] Expected births are calculated as (population) * (crude birth rate)*							
[2]Expected complications are calculated as 15% of the number of expected births							

3.05 Indicator 5: Caesarean deliveries as a proportion of all births

The UN Handbook suggested that if obstetric coverage of a population is adequate, caesarean delivery rates should range between 5 and 15 percent. Taking the 790,262 expected births as the denominator and a total of 31,118 caesarean deliveries as the numerator, the population-based caesarean delivery rate in all facilities was 4 percent. The rate in EmONC facilities was 3 percent.

The district caesarean delivery rates in all facilities ranged from 2 percent in Mchinji and Zomba to 11 percent in Likoma district. The range at EmONC facilities was 0 percent in Rumphi and Ntchisi districts to 11 percent in Likoma district. See Table 3.13, below, and Map B8 (for Indicator 5), in Appendix B.

Table 3.13: Percentage of all expected births by caesarean section in all facilities and in EmONC facilities, by district (EmONC Indicator 5) and by operating agency

	Expected births[1]	All Facilities			EmONC Facilities	
		Weighted number of caesareans	Percent of expected births by caesarean		Weighted number of caesareans	Percent of expected births by caesarean
Malawi	**790,262**	**31,118**	**4%**		**26,733**	**3%**
District						
Chitipa	10,559	337	3%		337	3%
Karonga	16,354	425	3%		425	3%
Nkhata Bay	13,029	443	3%		443	3%
Rumphi	10,153	820	8%		0	0%
Mzimba North	23,723	1677	7%		1397	6%
Mzimba South	30,192	1298	4%		1298	4%
Likoma	522	57	11%		57	11%
Kasungu	39,750	1050	3%		850	2%
Nkhotakota	18,389	883	5%		883	5%
Ntchisi	13,824	594	4%		0	0%
Dowa	36,617	1047	3%		931	3%
Salima	20,357	904	4%		904	4%
Lilongwe	120,012	4825	4%		4646	4%
Mchinji	28,454	653	2%		653	2%

Dedza	35,937	959	3%		705	2%
Ntcheu	27,872	1779	6%		1779	6%
Mangochi	49,103	1729	3%		1487	3%
Machinga	29,485	794	3%		794	3%
Zomba	38,963	869	2%		869	2%
Chiradzulo	15,703	820	5%		820	5%
Blantyre	61,982	3676	6%		3104	5%
Mwanza	5,129	451	9%		451	9%
Thyolo	31,651	1043	3%		1043	3%
Mulanje	28,249	1114	4%		674	2%
Chikhwawa	18,214	517	3%		422	2%
Nsanje	25,914	747	3%		747	2%
Phalombe	13,740	406	3%		0	0%
Balaka	19,194	989	5%		989	5%
Neno	7,191	212	3%		25	0%
[1]*Expected births are calculated as (population) * (crude birth rate)*						

Caesarean performance by public and private facilities

The population-based caesarean rate is the preferred indicator, but institutional rates could also be informative. However, because hospitals and other facilities that provide major obstetric surgery differ in terms of their patient mix, whether they are a referral centre, and the proximity of other hospitals, no evidence-based standards exist to indicate the most appropriate institutional caesarean section rate. Table 3.14 shows that 11.7 percent of the deliveries in the private-for-profit sector were resolved by caesarean section, in comparison with 6.4 percent of deliveries in government facilities and 6.7 percent in CHAM facilities.

Table 3.14: Caesarean delivery as a proportion of institutional deliveries by type of operating agency

Sector providing delivery	Total institutional deliveries weighted	Weighted number of caesarean sections	Percentage of caesarean sections
Government	372,487	23,900	6.4%
Private for Profit	4,924	576	11.7%
CHAM	98,861	6,642	6.7%
Total	476,272	31,118	6.5%

3.06 Indicator 6: Direct obstetric case fatality rate

A direct maternal death arises from a cause directly related to the pregnancy or its management. The direct obstetric case fatality rate (DOCFR) is the proportion of obstetric

complications that led directly to maternal death. This measure gives an indication of the quality of care and the ability of facilities to handle obstetric emergencies. The reliability of this indicator depends on the quality of record keeping for maternal complications and maternal deaths. Some facilities were better at keeping records of maternal complications while others were better at keeping maternal mortality records. DOCFR estimates from this assessment have to be treated with caution.

It is recommended that facilities keep this rate at less than 1 percent. Nationally, the DOCFR was 1 percent in all facilities with a range of 0-2 percent. Twelve out of 28 districts recorded a rate of 0 percent while Likoma and Chikwawa recorded a rate of 2 percent (see Table 3.15, below, and Map B9, for Indicator 6, in Appendix B).

Table 3.15: Direct obstetric case fatality rate (DOCFR) in all facilities by district (EmONC Indicator 6)

	All Facilities				EmONC Facilities		
	Weighted number of women with direct complications[1]	Weighted number of maternal deaths by direct cause[1]	DOCFR[2]		Weighted number of women with direct complications[1]	Weighted number of maternal deaths by direct cause[1]	DOCFR[2]
Malawi	60,041	361	1%		29,758	275	1%
District							
Chitipa	650	8	1%		477	5	1%
Karonga	1199	16	1%		492	13	3%
Nkhata Bay	532	6	1%		185	6	3%
Rumphi	874	10	1%		0	0	
Mzimba North	3054	18	1%		2348	13	1%
Mzimba South	1946	22	1%		1491	3	0%
Likoma	47	1	2%		34	1	3%
Kasungu	1755	18	1%		1319	18	1%
Nkhotakota	1469	7	0%		911	7	1%
Ntchisi	715	7	1%		0	0	
Dowa	2670	7	0%		990	7	1%
Salima	1728	10	1%		806	8	1%
Lilongwe	8180	58	1%		5315	43	1%
Mchinji	2672	7	0%		1711	7	0%
Dedza	2487	15	1%		625	12	2%
Ntcheu	2291	8	0%		1239	8	1%
Mangochi	3512	6	0%		1954	6	0%
Machinga	1453	20	1%		428	17	4%
Zomba	3588	32	1%		1531	30	2%
Chiradzulo	1600	6	0%		344	6	2%
Blantyre	6419	19	0%		3279	17	1%
Mwanza	486	0	0%		409	0	0%

Thyolo	1833	14	1%		960	14	1%
Mulanje	2019	5	0%		378	5	1%
Chikhwawa	1476	24	2%		382	18	5%
Nsanje	1697	9	1%		742	9	1%
Phalombe	1349	3	0%		141	0	0%
Balaka	1772	5	0%		1201	2	0%
Neno	568	0	0%		65	0	0%

[1]Direct complications and direct causes of maternal death include: APH, PPH, obstructed/prolonged labour, ectopic pregnancy, severe abortion complications, retained placenta, ruptured uterus, postpartum sepsis, severe pre-eclampsia/eclampsia. Excludes "other" direct complications, indirect or unknown causes of death. Non-severe abortion complications do not appear in the numerator.

[2]DOCFR (direct obstetric case fatality rate) = (number of maternal deaths by direct causes)/(number of women with direct complications)

As shown in Tables 3.16 and 3.17 below, the weighted number of identified maternal deaths (of known cause) due to direct causes totalled 396. Post-partum haemorrhage (PPH) accounted for 92 maternal deaths during this period (23 percent of the deaths due to direct complications). This was the leading cause of maternal death that emerged from the survey. The second leading cause of maternal deaths was post-partum sepsis accounting for 75 deaths (19 percent) and the third leading cause was preeclampsia/eclampsia accounting for 16 percent of maternal deaths. Ruptured uterus accounted for 13 percent of maternal deaths and was the fourth leading cause of death.

Table 3.16 also shows the likelihood that a complication would be a cause of maternal death. Ruptured uterus had the highest cause-specific case-fatality rate. This complication caused the deaths of 9.9 percent of the women who experienced it. The next highest cause-specific case fatality rate was postpartum sepsis, at 8.3 percent.

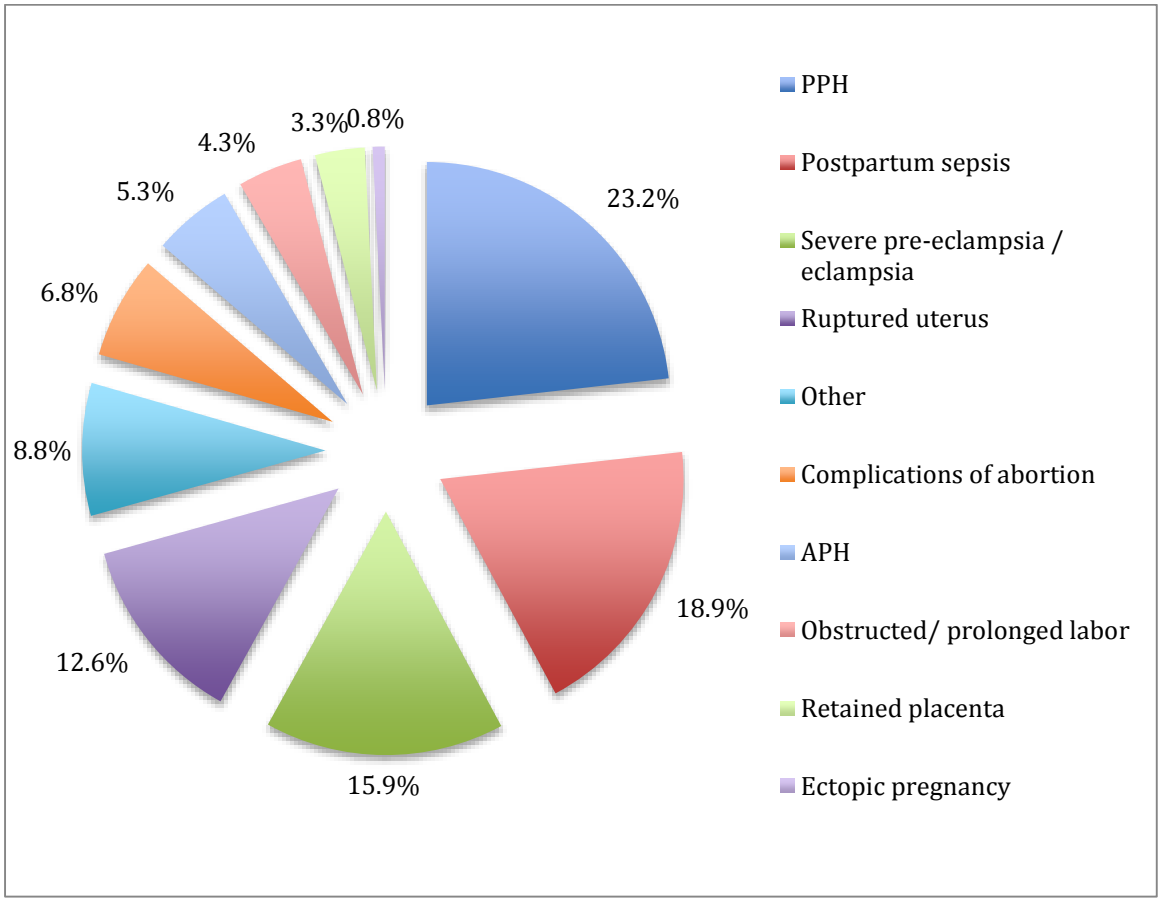
Table 3.16: Percentage distribution of maternal deaths due to direct obstetric causes in all facilities

Direct obstetric complications	Weighted number of women with direct complications[1]	Weighted number of maternal deaths by direct cause	Percent maternal deaths	Cause-specific case fatality rate
Ruptured uterus	507	50	12.6%	9.9%
Postpartum sepsis	901	75	18.9%	8.3%
Severe pre-eclampsia / eclampsia	3590	63	15.9%	1.8%
Complications of abortion	3459	27	6.8%	0.8%
APH	2729	21	5.3%	0.8%
Obstructed/ prolonged labour	20232	17	4.3%	0.1%
PPH	6954	92	23.2%	1.3%

Retained placenta	738	13	3.3%	1.8%
Ectopic pregnancy	666	3	0.8%	0.5%
Other	20266	35	8.8%	0.2%
Total Direct cause	60,042	396	100%	
Women with less severe abortion complications are not included. If a woman died of abortion, by definition she died of severe complications.				

Fig. 3.07 shows the distribution of the major direct causes of maternal death in Malawi. As indicated above, post-partum haemorrhage, post-partum sepsis, severe preeclampsia/eclampsia and ruptured uterus were the leading direct causes of maternal deaths.

Fig. 3.07: Distribution of institutional maternal deaths due to direct obstetric causes



3.07 Indicator 7: Intrapartum and very early neonatal mortality rate

The objective of this indicator is to measure the quality of intrapartum and early newborn care. Tables 3.17 and 3.18, below, and Map B10, for Indicator 7, in Appendix B, show the district distribution of perinatal deaths. The national intrapartum and very early neonatal mortality rate at all facilities was 20 per 1000 deliveries. Machinga and Zomba recorded the highest mortality rate in all facilities (28 per 1000 deliveries) and the lowest was recorded in Mzimba North and Blantyre (11 per 1000 deliveries).

Table 3.17: Intrapartum and very early neonatal death rate in all facilities, by district (EmONC Indicator 7)

	All Facilities				
	Weighted number of institutional deliveries	Weighted number of stillbirths	Weighted number of intrapartum deaths	Weighted number of very early neonatal deaths[1]	Intrapartum + very early neonatal death rate (per 1000 deliveries)[2]
Malawi	**476,272**	**8,035**	**4,403**	**5,028**	**20**
District					
Chitipa	6260	83	46	92	22
Karonga	9663	183	104	112	22
Nkhata Bay	6587	93	38	118	24
Rumphi	7905	110	58	127	23
Mzimba North	15466	188	84	79	11
Mzimba South	17141	329	218	215	25
Likoma	452	9	6	4	22
Kasungu	17606	415	241	200	25
Nkhotakota	9548	170	113	77	20
Ntchisi	10330	154	72	85	15
Dowa	19723	426	253	187	22
Salima	15392	277	157	154	20
Lilongwe	57981	885	473	1013	26
Mchinji	20727	385	235	214	22
Dedza	21611	288	154	95	12
Ntcheu	21911	293	165	113	13
Mangochi	29674	463	257	193	15
Machinga	26135	502	301	428	28
Zomba	27371	423	207	565	28
Chiradzulo	9882	182	103	88	19
Blantyre	26045	426	163	121	11
Mwanza	5945	111	67	43	18
Thyolo	17944	308	175	105	16
Mulanje	19911	264	137	123	13
Chikhwawa	14929	242	136	155	19
Nsanje	10602	188	100	89	18
Phalombe	12236	334	161	100	21
Balaka	13102	232	136	93	17
Neno	4195	72	43	41	20

[1]Very early neonatal death was defined as a death occurring within 24 hours after delivery
*[2]Intrapartum and very early neonatal death rate per 1000 births = (intrapartum + very early neonatal deaths)/number of institutional deaths*1000*

The national intrapartum and very early neonatal mortality rate at EmONC facilities was 28 per 1000 deliveries. Machinga recorded the highest mortality rate in all facilities (68 per 1000 deliveries) and the lowest was recorded in Phalombe (8 per 1000 deliveries).

Table 3.18: Intrapartum and very early neonatal death rate in EmONC facilities, by district (EmONC Indicator 7)

	EmONC Facilities				
	Weighted number of institutional deliveries	Weighted number of stillbirths	Weighted number of intrapartum deaths	Weighted number of very early neonatal deaths[1]	Intrapartum + very early neonatal death rate (per 1000 deliveries)[2]
Malawi	**190,305**	**4,124**	**2,293**	**3,121**	**28**
District					
Chitipa	2,837	58	35	71	37
Karonga	3,369	73	33	47	24
Nkhata Bay	1,880	47	22	74	51
Rumphi	0	0	0	0	
Mzimba North	9,973	142	53	55	11
Mzimba South	5,877	194	129	183	53
Likoma	375	8	6	3	24
Kasungu	8,736	251	141	120	30
Nkhotakota	5,132	98	71	36	21
Ntchisi	0	0	0	0	0
Dowa	4,431	138	81	46	29
Salima	5,916	191	110	122	39
Lilongwe	36,159	580	301	880	33
Mchinji	9,108	235	146	151	32
Dedza	7,686	132	85	20	14
Ntcheu	9,347	152	81	58	15
Mangochi	12,456	201	99	104	16
Machinga	5,269	181	139	221	68
Zomba	10,454	261	137	503	61
Chiradzulo	4,547	117	69	68	30
Blantyre	12,350	276	115	32	12
Mwanza	4,086	78	49	20	17
Thyolo	6,808	184	105	59	24
Mulanje	4,691	94	43	53	20
Chikhwawa	5,099	112	57	60	23
Nsanje	4,172	125	67	58	30
Phalombe	2,847	30	17	6	8
Balaka	6,014	160	98	66	27
Neno	686	6	4	6	15

[1] *Very early neonatal death was defined as a death occurring within 24 hours after delivery*

[2] *Intrapartum and very early neonatal death rate = (intrapartum + v. early neonatal deaths)/(number of deliveries)*

3.08 Indicator 8: Proportion of maternal deaths due to indirect causes

Indirect causes of death are pre-existing or other diseases that are aggravated by the physiological effects of pregnancy. There were a total of 175 maternal deaths due to indirect

causes translating into 30 percent of the total of 585 maternal deaths (See Tables 3.19 and 3.20, below, and the Indicator Map B11 for Indicator 8, in Appendix B). Mwanza and Chiradzulo registered the highest proportion of deaths in all facilities due to indirect causes, 100 percent and 67 percent respectively.

Table 3.19: Percentage of maternal deaths due to indirect causes in all facilities and EmONC facilities, by district (EmONC Indicator 8)

	All Facilities				EmONC Facilities		
	Number of maternal deaths due to indirect cause[1]	All maternal deaths[2] (weighted)	Percent of all maternal deaths due to indirect cause		Number of maternal deaths due to indirect cause[1]	All maternal deaths[2] (weighted)	Percent of all maternal deaths due to indirect cause
Malawi	**175**	**585**	**30%**		**146**	**458**	**32%**
District							
Chitipa	5	13	38%		5	10	50%
Karonga	6	22	27%		6	19	32%
Nkhata Bay	5	12	42%		5	12	42%
Rumphi	1	12	8%		0	0	0%
Mzimba North	3	24	13%		3	18	17%
Mzimba South	0	22	0%		0	3	0%
Likoma	0	1	0%		0	1	0%
Kasungu	10	28	36%		10	28	36%
Nkhotakota	6	13	46%		6	13	46%
Ntchisi	3	12	25%		0	0	0%
Dowa	2	12	17%		0	10	0%
Salima	6	16	38%		6	14	43%
Lilongwe	45	115	39%		34	82	41%
Mchinji	3	13	23%		3	13	23%

Dedza	5	21	24%		5	18	28%
Ntcheu	3	11	27%		3	11	27%
Mangochi	0	6	0%		0	6	0%
Machinga	8	28	29%		8	25	32%
Zomba	17	54	31%		17	52	33%
Chiradzulo	12	18	67%		12	18	67%
Blantyre	12	33	36%		11	30	37%
Mwanza	2	2	100%		2	2	100%
Thyolo	4	19	21%		4	19	21%
Mulanje	2	14	14%		0	12	0%
Chikhwawa	9	35	26%		2	21	10%
Nsanje	2	17	12%		2	17	12%
Phalombe	2	5	40%		0	0	0%
Balaka	2	7	29%		2	4	50%
Neno	0	0	0%		0	0	0%

[1]Includes maternal deaths due to malaria, anaemia, HIV-AIDS related and other indirect causes.

[2]Includes all recorded maternal deaths in facilities regardless of cause (also includes maternal deaths due to unknown cause)

It is worth noting that in many countries in East-Central and southern Africa, (such as South Africa and Mozambique), the proportion of maternal mortality due to indirect deaths is higher than average due to the high burden of infectious diseases such as HIV infection and malaria.

Table 3.20 below shows that anaemia (12 percent) and other indirect causes (10 percent) were among the leading indirect causes of all maternal deaths.

Table 3.20: Percentage distribution of maternal deaths due to indirect obstetric causes in all facilities

	Weighted number of complications	Percent distribution	Weighted number of deaths	Percent distribution
Total INDIRECT complications/causes	21,819	27%	176	30%
Malaria	7,344	9%	23	4%
HIV/AIDS – related	5,403	7%	13	2%
Anaemia	3,160	4%	73	12%
Hepatitis	2,385	3%	6	1%
Other indirect causes	3,527	4%	61	10%
Undefined causes of death	0	0%	14	2%
Total DIRECT complications/causes	60,042	73%	396	68%
TOTAL	81,860	100%	586	100%

Table 3.21 below presents a summary of the EmONC indicator findings during the EmONC assessments of 2005, 2010 and 2014. We find that while there has been a slight improvement in the availability of EmONC from 2005 to 2014, the rest of the EmONC indicators have improved significantly.

Table 3.21: Changes in EmONC Indicators across the 2005, 2010 and 2014 EmONC assessments

#	EmONC Indicator	2005	2010	2014
1a	Availability of EmONC: Basic EmONC facilities	2	10	19
1b	Availability of EmONC: Comprehensive EmONC facilities	42	42	45
2	Geographic distribution of emergency obstetric care facilities *(at least 5 facilities per 500,000 population; at least one of them Comprehensive EmONC)*	NO district has minimum required number of EmOC facilities	**2** districts (Phalombe and Mwanza) meet recommended minimum (EmONC)	**3** districts (Likoma, Mwanza and Neno) meet recommended minimum (EmONC)
		22 out of 28 districts have Comprehensive EmONC facilities	26 out of 28 districts have Comprehensive EmONC facilities	26 out of 28 districts have Comprehensive EmONC facilities

#	EmONC Indicator	2005	2010	2014
3	Proportion of all births in all facilities	44%	64%	60%
4	Met need for EmONC	29%	50%	51%
5	Caesarean section as a proportion of all births	2.8%	3.8%	3.9%
6	Direct obstetric case fatality rate	3.1%	1%	1%
7	Intrapartum and very early neonatal death rate	27/1000	26.4/1000	19.8/1000
8	Proportion of maternal deaths due to indirect causes	Not calculated	24%	30%

CHAPTER FOUR: Performance of Other Maternal and Newborn Health Services and Procedures

4.01 Overview on the availability of maternal and newborn care services in all facilities

Focused antenatal care, postnatal care, diagnosis and treatment of sexually transmitted infections, family planning and prevention of mother-to-child transmission of HIV

Facility managers and/or maternity in-charges were asked about the services that they provided. Data collectors were not required to verify because they did not have the capacity to ascertain if the full complement of the stated services were on offer. For example, a family planning service in which the facility has an MOU with the government should have the full complement of services. For the purpose of this assessment, provision of any family planning service was accepted as sufficient. Most data in this chapter refer to all facilities irrespective of whether they conduct deliveries or not because some of the services covered here could be performed without offering delivery services.

By self-report, focused antenatal care services (FANC) were performed by 98 percent of all facilities, 97 percent provided postnatal care (PNC), 98 percent provided diagnosis and treatment of sexually transmitted infections (STIs), 86 percent provided family planning services and 98 percent of facilities provided PMTCT (Table 4.01).

Almost all hospitals provided PMTCT, diagnosis and treatment of STIs, and postnatal care. Family planning was provided in all district hospitals, in 3 out of 4 central hospitals, in half of the community/rural hospitals and in 88 percent of the health centres.

Disparities exist in the provision of family planning services by operating agency. While 98 percent of Government facilities and 94 percent of private for profit facilities provided family planning services, only half of CHAM facilities provided this service.

Provision of KMC services and corticosteroids for preterm labour

Corticosteroids for preterm labour were provided in only 21 percent of facilities. Corticosteroids for preterm labour were provided in all central hospitals, 83 percent of district hospitals, in half of community/rural hospitals, in 96 percent of other hospitals and in only 10 percent of health centres.

Ambulatory Kangaroo Mother Care (KMC) was provided in 63 percent of facilities and only 35 percent of facilities provided inpatient KMC. While at least 65 percent of hospitals provided inpatient KMC, only 26 percent of health centres provided this service. Slight disparities exist

in the provision of ambulatory KMC by facility type. While this service was provided in almost all district hospitals, only 60 percent of health centres provided it.

Table 4.01: Percentage of facilities providing selected services, by district, facility type, sector and location, among all facilities

	Focused ANC	Postnatal care	Diagnosis & treatment of STIs	Family planning	PMTCT	KMC (inpatient)	KMC (ambulatory)	Corticosteroids for preterm labour	Total weighted number of facilities
	%	%	%	%	%	%	%	%	n
Malawi	**98%**	**97%**	**98%**	**86%**	**98%**	**35%**	**63%**	**21%**	**557**
District									
Chitipa	100%	100%	100%	100%	100%	31%	100%	31%	9
Karonga	100%	100%	100%	83%	100%	41%	72%	7%	15
Nkhata Bay	100%	100%	91%	100%	100%	14%	20%	6%	18
Rumphi	100%	100%	100%	100%	100%	38%	42%	7%	15
Mzimba North	100%	100%	100%	100%	100%	13%	38%	20%	23
Mzimba South	100%	100%	94%	93%	100%	20%	20%	14%	28
Likoma	100%	100%	100%	100%	100%	100%	100%	50%	2
Kasungu	100%	100%	100%	94%	100%	21%	21%	11%	18
Nkhotakota	100%	100%	100%	94%	100%	36%	100%	26%	18
Ntchisi	100%	100%	100%	100%	100%	10%	28%	10%	10
Dowa	92%	100%	100%	91%	100%	84%	87%	27%	21
Salima	100%	100%	100%	88%	100%	7%	88%	0%	15
Lilongwe	95%	93%	100%	90%	93%	24%	64%	38%	50
Mchinji	100%	100%	100%	77%	86%	31%	51%	37%	13
Dedza	91%	91%	94%	56%	94%	19%	65%	9%	28
Ntcheu	100%	100%	94%	76%	88%	70%	100%	16%	28
Mangochi	100%	100%	100%	61%	100%	25%	32%	30%	33
Machinga	91%	100%	91%	91%	100%	53%	81%	24%	18
Zomba	100%	100%	100%	91%	100%	66%	78%	19%	30
Chiradzulo	100%	100%	100%	91%	100%	18%	58%	42%	11
Blantyre	100%	100%	94%	84%	94%	50%	81%	17%	29

	Focused ANC	Postnatal care	Diagnosis & treatment of STIs	Family planning	PMTCT	KMC (inpatient)	KMC (ambulatory)	Corticosteroids for preterm labour	Total weighted number of facilities
	%	%	%	%	%	%	%	%	n
Mwanza	100%	100%	100%	100%	100%	63%	100%	25%	4
Thyolo	88%	94%	100%	88%	100%	25%	65%	42%	28
Mulanje	100%	100%	100%	92%	100%	10%	71%	10%	21
Chikhwawa	93%	71%	93%	81%	93%	20%	34%	8%	24
Nsanje	100%	100%	100%	81%	100%	27%	63%	14%	14
Phalombe	100%	100%	100%	79%	100%	87%	87%	21%	12
Balaka	100%	100%	100%	70%	100%	55%	85%	24%	11
Neno	100%	100%	100%	84%	100%	35%	100%	18%	11
Facility Type									
Central Hospital	100%	100%	100%	75%	100%	100%	75%	100%	4
District Hospital	96%	96%	100%	100%	100%	100%	96%	83%	23
Community/ Rural Hospital	100%	100%	100%	56%	100%	65%	74%	50%	33
Other Hospital	96%	100%	100%	74%	100%	74%	67%	96%	27
Health Centre	98%	97%	98%	88%	97%	26%	60%	10%	470
Sector									
Government	98%	98%	98%	98%	97%	33%	66%	15%	383
Private for-profit	84%	75%	94%	94%	94%	14%	33%	21%	27
CHAM	98%	100%	99%	51%	99%	43%	60%	35%	147

	Focused ANC	Postnatal care	Diagnosis & treatment of STIs	Family planning	PMTCT	KMC (inpatient)	KMC (ambulatory)	Corticosteroids for preterm labour	Total weighted number of facilities
	%	%	%	%	%	%	%	%	n
Location									
Rural	98%	97%	98%	85%	98%	31%	62%	15%	499
Urban	97%	98%	100%	93%	97%	70%	74%	72%	57
Note: based on unweighted n = 365									

Obstetric surgery and general anaesthesia

Among all hospitals, 83 percent provided obstetric surgery while 77 percent provided general anaesthesia. While all central and district hospitals provided obstetric surgery and general anaesthesia, only 42 percent of community/rural hospitals and 93 percent of other hospitals provided these services. Health centres were not expected to provide obstetric surgery and general anaesthesia (Table 4.02).

Treatment and repair of obstetric fistula

Obstetric fistula can occur when access to care, especially surgical care is limited. It behoves health planners to reduce the incidence of new cases through improved access to care while managing those who have suffered from obstetric fistulas. Comprehensive fistula repair programs incorporate clinical care as well as social outreach programs for the recruitment of patients and their re-integration into societies. In Malawi, there are health facilities that conduct clinical repair of fistulas and there are others that participate only in fistula campaigns.

Health facility in-charges were asked if their facilities provided obstetric fistula repair services. The response captured those who actually provided routine clinical repair and those that only participated in fistula campaigns. Only 23 percent of hospitals in Malawi provided fistula repair services; 3 of the 4 central hospitals, 13 percent of the district hospitals, 26 percent of the other hospitals and 3 percent of community rural hospitals.

Cervical cancer screening

Cervical cancer is a leading cause of mortality among women in developing countries. The early detection and appropriate response during the long precancerous period permits the prevention of cervical cancer. Pap Smear screening is one method that has been used for this purpose. Visual inspection after acetic acid (VIA) is increasingly available and preferable in low cost settings.

During this survey, data collectors asked facility managers if they provided cervical cancer screening. They probed further by giving Pap Smear as an example. The response could have captured all those who provided Pap Smear and other screening procedures.

Cervical cancer screening was available in only a quarter of facilities. This service was available in 74 percent of hospitals and 15 percent of the health centres.

Table 4.02: Percentage of facilities providing selected maternal health services by district, facility type, sector and location,

	Obstetric surgery	General anaesthesia	Repair of fistula	Cervical screening
	Total weighted no. Of Hospitals (n=87)	Total weighted no. Of Hospitals (n=87)	Total weighted no. Of Hospitals (n=87)	Total weighted no. Of facilities (n=557)
	%	**%**	**%**	**%**
Malawi	**83%**	**77%**	**23%**	**25%**
District				
Chitipa	100%	100%	0%	67%
Karonga	25%	25%	0%	40%
Nkhata Bay	50%	50%	0%	22%
Rumphi	40%	40%	0%	13%
Mzimba North	100%	100%	33%	22%
Mzimba South	50%	50%	0%	18%
Likoma Island	100%	100%	0%	0%
Kasungu	75%	75%	25%	11%
Nkhotakota	50%	50%	0%	6%
Ntchisi	100%	100%	0%	30%
Dowa	75%	75%	25%	29%
Salima	100%	100%	0%	7%
Lilongwe	79%	71%	29%	34%
Mchinji	75%	25%	0%	54%
Dedza	100%	100%	0%	43%
Ntcheu	300%	100%	0%	4%
Mangochi	100%	100%	0%	12%
Machinga	100%	100%	0%	6%
Zomba	60%	60%	60%	17%
Chiradzulo	100%	100%	0%	55%
Blantyre	100%	100%	67%	48%
Mwanza	100%	100%	0%	25%
Thyolo	200%	200%	150%	25%
Mulanje	100%	100%	50%	24%
Chikhwawa	100%	100%	33%	17%
Nsanje	100%	100%	0%	50%
Phalombe	100%	100%	100%	17%
Balaka	100%	100%	0%	9%
Neno	100%	100%	0%	36%
Type of facility				
Central hospital	100%	100%	75%	75%
District hospital	100%	100%	13%	100%

Community hospital	42%	42%	3%	52%
Other hospital	93%	89%	26%	78%
Health centre	0%	0%	0%	15%
Sector				
Government	73%	73%	16%	26%
Private for Profit	100%	100%	60%	15%
CHAM	76%	73%	11%	22%
Location				
Rural	59%	57%	9%	19%
Urban	95%	95%	24%	72%

Note: unweighted n = 365

4.02 Provision of delivery-related essential services

This subsection focuses on other services and procedures that maternity services should provide. Therefore the data is based on the 551 facilities that conducted deliveries in the year preceding the survey.

Table 4.03 presents other services and procedures that facilities conducting deliveries should provide. Unit heads were asked if the procedures had been done in the last three months. No clinical observations were done to verify that they actually performed services that they reported to perform.

Table 4.04 shows the percentage of health facilities that reported that they had not provided above services and procedures in the last three months and the reasons why.

Maternity wards ought to provide rapid HIV testing services for pregnant women with unknown HIV status. This service is useful in maternity wards, because women in labour who are found to be HIV-positive can be enrolled into the PMTCT programme to protect their babies, and receive education on young infant feeding.

In 19 percent of hospitals and 24 percent of health centres, rapid HIV testing for mothers with unknown status was not done in the maternity/labour ward in the three months prior to the assessment.

ARVs were administered to mothers during labour in 90 percent of hospitals and 82 percent of health centres. Similarly, all hospitals and 94 percent of health centres provided ARVs to newborns in maternity.

Common reasons given for not providing ARVs to mothers were lack of training (12 percent), management issues (9 percent) and lack of supplies, equipment or drugs (7 percent). Other reasons given were lack of available human resources (5 percent) and policy issues (3 percent). In 75 percent of facilities, there was no indication to give ARVs (Table 4.04).

Premature or low birth weight babies require special care at birth. Data collectors asked unit heads if they provided special care to premature and low birth weight babies. Eighty-four percent of hospitals and 46 percent of health centres provided extra care to premature or low birth weight baby (KMC).The low percentage in health centres might be explained by the fact that lower-level facilities tend to refer mothers experiencing premature labour to higher-level facilities, which are better equipped to care for premature and low birth weight babies.

The most common reason given for not providing special care at birth was lack of supplies, equipment or drugs (31 percent) and lack of training (21 percent). In 31 percent of facilities, there was no indication to provide this service (Table 4.04).

In 76 percent of hospitals and 13 percent of health centres, facilities reported that corticosteroids were provided to pregnant mothers at risk of preterm labour. The most common reasons for not providing corticosteroids to pregnant mothers was lack of supplies, equipment or drugs (64 percent) and lack of training (20 percent). In 21 percent of facilities, there was no indication to provide this service.

Parenteral antibiotics to the newborn were offered in 95 percent of hospitals and 85 percent of health centres.

In the three months prior to the assessment, short and long term family planning methods were not offered in 28 percent of hospitals and16 percent of health centres; permanent or surgical family planning methods were not offered in 33 percent of hospitals and 60 percent of health centres. Permanent family planning methods were therefore offered mainly in hospitals.

A deeper evaluation of access to family planning services, demand for services and preference for certain commodities was beyond the scope of this assessment.

Table 4.03: Percentage of facilities that performed selected delivery-related procedures in the last 3 months, by facility type (among facilities that do deliveries)

Other essential services	Percentage of facilities that performed the procedure in the last 3 months	
	Hospitals	Health Centres
	(n=87)	(n=464)
Active management of third stage of labour	100%	100%
Use of Partograph	99%	95%
Breech Delivery	92%	73%
Rapid HIV testing in maternity ward	81%	76%
ARV to mothers during labour	90%	82%
ARV to newborns in maternity ward	100%	94%
Extra care to premature or LBW baby (KMC)	84%	46%
Episiotomy	95%	55%
Short and long term FP Methods	72%	84%
Surgical / permanent FP	67%	40%

Corticosteroids to pregnant mothers at risk of pre-term labour	76%	13%
Parenteral antibiotics for newborns	95%	85%
Note: based on an unweighted n = 365		

Table 4.04: Percentage of facilities responding that they did not provide the service in the last 3 months and reasons given

Other essential services	Percentage of facilities that performed the procedure in the last: 3 months	Number of facilities that did not provide the service in the last 3 months	Percentage of facilities that responded that the service was not provided in the last 3 months due to (multiple responses allowed):					
			availability of human resources	training issues	supplies/equipment/drugs	management issues	policy issues	no indication
	%	n	%	%	%	%	%	%
Active management of third stage of labour	99.70%	2	0%	0%	0%	0%	0%	0%
Partograph	95.60%	24	7%	7%	75%	7%	0%	4%
Breech Delivery	75.80%	133	0%	4%	0%	0%	4%	90%
Rapid HIV testing in maternity ward	77.00%	126	10%	32%	13%	7%	8%	40%
ARV to mothers during delivery	82.80%	94	5%	12%	7%	9%	3%	75%
ARV to newborns in maternity ward	94.50%	30	11%	17%	17%	0%	6%	66%
Extra care to premature or LBW baby (KMC)	51.70%	265	3%	21%	31%	9%	11%	31%
Episiotomy	61.60%	211	1%	3%	3%	1%	5%	86%
Short and long term FP Methods	82.20%	98	5%	6%	4%	15%	70%	4%
Surgical / permanent FP	44.10%	307	20%	31%	17%	10%	54%	6%
Corticosteroids to pregnant mothers	23.10%	423	4%	20%	64%	4%	12%	21%
Parenteral antibiotics for newborns	87.00%	72	5%	3%	7%	5%	5%	70%

CHAPTER FIVE: Facility Infrastructure and Referral for Maternal and Newborn Emergencies

The availability of infrastructure is important for the delivery of quality maternal and newborn care services. The first part of this chapter focuses on facility infrastructure. The second part focuses on referral for maternal and newborn emergencies.

5.01 Bed complement of health facilities

Table 5.01 shows the ratio of maternity and delivery beds per 1000 deliveries. The combined bed complement for all 557 (weighted) health facilities was 21,407; of these 7,984 were maternity beds, 1,404 were delivery beds and 465 were KMC beds. The government sector had the highest number of obstetric beds — a reflection of the fact that more health facilities, rural and urban, were managed by the government than by any other sector. The CHAM sector had the second highest number of obstetric beds overall.

Ratio of beds to 1,000 deliveries

International standards stipulate 30 to 32 maternity and delivery beds for every 1000 deliveries for a first-level referral facility, such as a district hospital.[14] The assessment found the ratio nationally to be 20 for all facilities, which is below the international standard.

The ratio in Likoma (46) was the highest among the districts, thus exceeding the international standard for first-level facilities while the ratio in Machinga (11) was the lowest. When data were analysed by facility type, central hospitals had the highest ratio (30), while district hospitals had the lowest ratio at 13. When data were analysed by sector, the private for profit sector had the highest ratio at 45 while the Government sector has the lowest ratio at 17. Facilities in rural areas had a lower ratio of maternity and delivery beds (8) compared to those in urban areas (44).

These ratios were calculated using the number of institutional deliveries as the denominator (in conformity with the formula for international standards), not the number of expected births. Because of this, some facilities may appear to have more beds than is recommended when in fact they simply have low number of deliveries. Where this distortion is suspected, using expected births as the denominator would be more appropriate. This is clearly illustrated in Table 5.02, where the denominator is expected births. The national and district

[14]Essential elements of obstetric care at first referral level. Geneva, Switzerland: World Health Organization, 1991.

ratios were much lower than those depicted in Table 5.01 and way below international recommendations.

Table 5.01: Ratios of maternity beds and delivery beds to 1000 deliveries by district, facility type, operating agency, and location

	Total weighted number of facilities*	Weighted number of institutional deliveries		Weighted number of:					Ratio of maternity beds to 1000 deliveries [1]	Ratio of couches to 1000 deliveries	Ratio of maternity beds plus delivery couches to 1000 deliveries
				All beds	Maternity beds	Kangaroo beds	Delivery beds				
Malawi	**557**	**476,272**		**21,407**	**7,984**	**465**	**1,404**		**17**	**3**	**20**
Facility Type											
Central Hospital	4	21,721		3004	600	36	44		28	2	30
District Hospital	23	100,869		5362	1159	96	135		11	1	13
Rural/ Community Hosp	33	44,829		3912	897	84	112		20	2	23
Other Hospital	27	43,821		2241	715	49	105		16	2	19
Health Centre	470	265,032		6888	4613	200	1008		17	4	21
Sector											
Government	383	372,487		13611	5209	244	977		14	3	17
Private for-Profit	27	4,924		396	177	8	44		36	9	45
CHAM	147	98,861		7400	2598	213	383		26	4	30
Location											
Rural	499	321,716		10153	2368	164	277		7	1	8
Urban	57	154,556		11253	5616	301	1128		36	7	44
District											
Chitipa	9	6,260		266	96	8	24		15	4	19
Karonga	15	9,663		552	176	6	34		18	4	22
Rumphi	18	6,587		286	185	4	41		28	6	34
Nkhata Bay	15	7,905		630	276	15	39		35	5	40
Mzimba North	23	15,466		917	354	16	57		23	4	27

	Total weighted number of facilities*	Weighted number of institutional deliveries		Weighted number of:					Ratio of maternity beds to 1000 deliveries [1]	Ratio of couches to 1000 deliveries	Ratio of maternity beds plus delivery couches to 1000 deliveries
				All beds	Maternity beds	Kangaroo beds	Delivery beds				
Mzimba South	28	17,141		986	335	15	65		20	4	23
Likoma	2	452		48	18	0	3		40	7	46
Kasungu	18	17,606		498	227	10	38		13	2	15
Nkhotakota	18	9,548		797	274	6	34		29	4	32
Ntchisi	10	10,330		340	131	4	27		13	3	15
Dowa	21	19,723		739	205	22	54		10	3	13
Salima	15	15,392		316	156	4	32		10	2	12
Lilongwe	50	57,981		3263	916	46	145		16	3	18
Mchinji	13	20,727		649	298	15	34		14	2	16
Dedza	28	21,611		1018	430	16	69		20	3	23
Ntcheu	28	21,911		930	388	112	66		18	3	21
Mangochi	33	29,674		1074	461	15	77		16	3	18
Machinga	18	26,135		509	252	16	47		10	2	11
Zomba	30	27,371		1174	435	21	75		16	3	19
Chiradzulo	11	9,882		682	196	7	36		20	4	23
Blantyre	29	26,045		1751	558	31	88		21	3	25
Mwanza	4	5,945		269	64	4	12		11	2	13
Thyolo	28	17,944		859	348	13	60		19	3	23
Mulanje	21	19,911		807	295	12	64		15	3	18
Chikhwawa	24	14,929		604	230	8	51		15	3	19
Nsanje	14	10,602		568	189	10	35		18	3	21
Phalombe	12	12,236		194	158	18	35		13	3	16
Balaka	11	13,102		433	225	11	41		17	3	20
Neno	11	4,195		249	108	2	20		26	5	31

1. According to the Essential elements of obstetric care at first referral level (WHO, 1991) there should be 24 beds per 1000 deliveries in the maternity ward (for both prenatal and postnatal patients). The labour and delivery room should have 6-8 beds. Overall, therefore, the standard would be approximately 30-32 beds for every 1000 deliveries at a facility that would be considered 'first referral level.' This is the equivalent to a district level hospital for about 100,000 population.

Table 5.02: Ratios of maternity beds and delivery beds to 1000 expected deliveries by district, among all facilities

	Total weighted number of facilities	Weighted number of expected births		Weighted number of:					Ratio of maternity beds to 1000 deliveries [1]	Ratio of couches to 1000 deliveries	Ratio of maternity beds plus delivery couches to 1000 deliveries
				All beds	Maternity beds	Kangaroo beds	Delivery beds				
Malawi	**557**	**790,262**		**21,402**	**7,980**	**464**	**1,403**		**10**	**2**	**12**
District											
Chitipa	9	10,559		262	92	7	22		9	2	11
Karonga	15	16,354		552	176	6	34		11	2	13
Rumphi	18	13,029		286	185	4	41		14	3	17
Nkhata Bay	15	10,153		630	276	15	39		27	4	31
Mzimba North	23	23,723		917	354	16	57		15	2	17
Mzimba South	28	30,192		986	335	15	65		11	2	13
Likoma	2	522		48	18	0	3		34	6	40
Kasungu	18	39,750		498	227	10	38		6	1	7
Nkhotakota	18	18,389		797	274	6	34		15	2	17
Ntchisi	10	13,824		340	131	4	27		9	2	11
Dowa	21	36,617		739	205	22	54		6	1	7
Salima	15	20,357		316	156	4	32		8	2	9
Lilongwe	50	120,012		3,263	916	46	145		8	1	9
Mchinji	13	28,454		649	298	15	34		10	1	12
Dedza	28	35,937		1,018	430	16	69		12	2	14
Ntcheu	28	27,872		930	388	112	66		14	2	16
Mangochi	33	49,103		1,074	461	15	77		9	2	11
Machinga	18	29,485		509	252	16	47		9	2	10
Zomba	30	38,963		1,174	435	21	75		11	2	13
Chiradzulo	11	15,703		682	196	7	36		12	2	15
Blantyre	29	61,982		1,751	558	31	88		9	1	10

	Total weighted number of facilities	Weighted number of expected births		Weighted number of:					Ratio of maternity beds to 1000 deliveries [1]	Ratio of couches to 1000 deliveries	Ratio of maternity beds plus delivery couches to 1000 deliveries
				All beds	Maternity beds	Kangaroo beds	Delivery beds				
Mwanza	4	5,129		269	64	4	12		12	2	15
Thyolo	28	31,651		859	348	13	60		11	2	13
Mulanje	21	28,249		807	295	12	64		10	2	13
Chikhwawa	24	18,214		604	230	8	51		13	3	15
Nsanje	14	25,914		568	189	10	35		7	1	9
Phalombe	12	13,740		194	158	18	35		11	3	14
Balaka	11	19,194		433	225	11	41		12	2	14
Neno	11	7,191		249	108	2	20		15	3	18

5.02 Availability of electricity

Utilities not only promote quality of care in health delivery settings but are also essential to the operation of equipment whose failure places patients and service providers at varying degrees of risk. The assessment sought to find out whether all 557 (weighted) health facilities had these basic amenities.

To assess a facility's access to electricity, data collectors determined the facility's primary source of electricity (if any) and noted whether electricity was available and functioning at the time of the visit.

Nationally, 13 percent of facilities had no source of electricity. Of the remaining facilities with a source of electricity, 65 percent relied on power lines (the grid), 22 percent relied on solar and 0.4 percent relied on generators as their primary source of electricity. Of those facilities with a source of electricity, 96 percent had functioning electricity at time of the visit by fieldworkers (Table 5.03).

A total of 36 percent of facilities in Ntchisi and 35 percent of facilities in Thyolo had no source of power. Fifteen percent of health centres had no source of electricity. A total of 14 percent of facilities in rural areas had no source of electricity.

Table 5.03: Percentage distribution of facilities, according to their primary source of electricity, by district, facility type, sector and location

	Total weighted number of facilities	Weighted number of facilities with any source	Facilities without electricity	Primary sources of electricity				Power lines (grid) and generator	electricity functioning at time of interview
				Power lines (grid) only	Generator only	Solar only			
	n	N	%	%	%	%		%	%
Malawi	**557**	**485**	**13%**	**65%**	**0.4%**	**22%**		**20%**	**96%**
District									
Chitipa	9	8	33%	44%	0%	22%		20%	100%
Karonga	15	13	20%	80%	0%	0%		17%	83%
Rumphi	18	16	11%	56%	0%	33%		13%	81%
Nkhata Bay	15	13	0%	87%	0%	13%		13%	100%
Mzimba North	23	20	9%	48%	0%	44%		29%	86%
Mzimba South	28	24	24%	45%	0%	31%		14%	100%
Likoma	2	2	0%	100%	0%	0%		50%	100%
Kasungu	18	16	22%	50%	0%	28%		20%	100%
Nkhotakota	18	16	28%	56%	0%	17%		15%	100%
Ntchisi	10	9	36%	46%	0%	18%		17%	100%
Dowa	21	18	24%	67%	0%	10%		31%	88%
Salima	15	13	0%	75%	0%	25%		7%	100%
Lilongwe	50	44	14%	56%	0%	30%		33%	100%
Mchinji	13	11	0%	100%	0%	0%		8%	100%
Dedza	28	24	7%	46%	0%	46%		15%	100%
Ntcheu	28	24	11%	54%	0%	36%		12%	88%
Mangochi	33	29	6%	58%	6%	30%		23%	90%
Machinga	18	16	17%	44%	0%	39%		7%	100%
Zomba	30	26	10%	62%	0%	28%		19%	100%
Chiradzulo	11	10	0%	100%	0%	0%		18%	100%
Blantyre	29	25	7%	80%	0%	13%		36%	100%

	Total weighted number of facilities	Weighted number of facilities with any source	Facilities without electricity	Primary sources of electricity				Power lines (grid) and generator	electricity functioning at time of interview
				Power lines (grid) only	Generator only	Solar only			
	n	N	%	%	%	%		%	%
Mwanza	4	3	0%	100%	0%	0%		25%	100%
Thyolo	28	24	35%	59%	0%	7%		21%	90%
Mulanje	21	18	0%	91%	0%	10%		10%	91%
Chikhwawa	24	21	16%	68%	0%	16%		19%	91%
Nsanje	14	12	0%	100%	0%	0%		14%	100%
Phalombe	12	10	0%	75%	0%	25%		8%	100%
Balaka	11	10	0%	100%	0%	0%		27%	100%
Neno	11	10	18%	82%	0%	0%		22%	100%
Sector									
Govt	383	333	15%	61%	0%	25%		14%	95%
Private for-profit	27	23	7%	93%	0%	0%		27%	100%
CHAM	147	128	10%	72%	1%	17%		30%	95%
Facility Type									
Central Hosp	4	3	0%	100%	0%	0%		100%	100%
District Hosp	23	20	0%	100%	0%	0%		96%	100%
Rural/ Comm Hosp	33	29	0%	94%	0%	6%		50%	100%
Other Hosp	27	23	0%	100%	0%	0%		96%	100%
Health Centre	470	409	15%	59%	0.4%	25%		6%	95%
Location									
Rural	499	434	14%	61%	0.4%	24%		79%	95%
Urban	57	50	0%	100%	0%	0%		11%	100%

5.03 Availability of water

Water is a key amenity for the running of any health facility. It is used for infection control and for drinking and cooking. Fieldworkers asked for the primary source of water as distinct from the mode of delivery of the water. For example, water from the river that is stored in an overhead tank and pumped out through taps is still considered river water. In other words, piped water is reserved for water that is processed at a treatment plant and piped through to a health facility while a hand pump is a protected source of water that requires a bucket or other means to fetch it for use in the facility.

Table 5.04 shows the primary source of water by district and facility type. Nationally, 6 percent of all facilities had no source of water. Out the 94 percent that had a source of water, 64 percent had piped water, 30 percent relied on borehole, 0.6 percent relied on a well while 0.3 percent relied on river water as their primary source of water.

A total of 28 percent of facilities in Mchinji and 29 percent in Chikhwawa had no source of water.

A total of 7 percent of health centres had no source of water and 6 percent of facilities in rural areas had no source of water.

Table 5.04: Percentage distribution of facilities surveyed, according to their primary source of water, by district, facility type and location

	No water	Primary source of water				Total weighted number of facilities
		Piped water	Borehole	Well	River	
	%	%	%	%	%	
Malawi	**6%**	**64%**	**30%**	**0.6%**	**0.3%**	**557**
District						
Chitipa	0%	63%	38%	0%	0%	9
Karonga	17%	41%	42%	0%	0%	15
Nkhata Bay	0%	64%	27%	9%	0%	18
Rumphi	0%	71%	18%	0%	11%	15
Mzimba North	0%	35%	65%	0%	0%	23
Mzimba South	0%	35%	65%	0%	0%	28
Likoma	0%	100%	0%	0%	0%	2
Kasungu	19%	26%	54%	0%	0%	18
Nkhotakota	0%	56%	44%	0%	0%	18
Ntchisi	0%	64%	36%	0%	0%	10
Dowa	0%	84%	16%	0%	0%	21
Salima	0%	65%	35%	0%	0%	15
Lilongwe	7%	66%	27%	0%	0%	50
Mchinji	28%	72%	0%	0%	0%	13
Dedza	6%	71%	23%	0%	0%	28
Ntcheu	12%	76%	12%	0%	0%	28
Mangochi	0%	79%	21%	0%	0%	33

	No water	Primary source of water				Total weighted number of facilities
		Piped water	Borehole	Well	River	
	%	%	%	%	%	
Machinga	9%	43%	47%	0%	0%	18
Zomba	6%	89%	6%	0%	0%	30
Chiradzulo	0%	35%	66%	0%	0%	11
Blantyre	0%	70%	24%	6%	0%	29
Mwanza	0%	100%	0%	0%	0%	4
Thyolo	12%	77%	12%	0%	0%	28
Mulanje	0%	84%	17%	0%	0%	21
Chikhwawa	29%	34%	37%	0%	0%	24
Nsanje	0%	63%	37%	0%	0%	14
Phalombe	0%	74%	26%	0%	0%	12
Balaka	0%	70%	30%	0%	0%	11
Neno	0%	75%	26%	0%	0%	11
Sector						
Government	8%	59%	33%	1%	0%	383
Private for-profit	0%	81%	19%	0%	0%	27
CHAM	1%	74%	23%	0%	1%	147
Facility Type						
Central Hosp	0%	100%	0%	0%	0%	4
District Hosp	0%	100%	0%	0%	0%	23
Rural/ Comm Hosp	3%	82%	15%	0%	0%	33
Other Hospital	0%	100%	0%	0%	0%	27
Health Centre	7%	58%	34%	1%	0%	470
Location						
Rural	6%	60%	33%	1%	0%	499
Urban	0%	100%	0%	0%	0%	57

5.04 Availability of selected infrastructure in maternities

In the maternity section of facilities, fieldworkers asked the in-charge for the availability of amenities. They asked for running water and not the source of the water and asked for a toilet that could be used by patients, staff and visitors. They were not required to verify the standards of any of these amenities.

Table 5.05 gives the percentage of maternity wards with selected infrastructure. A total of 74 percent of facilities in Malawi had running water in the maternity while 82 percent had functioning toilet in the maternity. A total of 83 percent of facilities had curtains or means of

providing patient privacy while 71 percent of facilities had a sluice room. Health centres were less likely to have selected infrastructure compared to hospitals.

Table 5.05: Percentage of facilities that have selected infrastructure in the maternity ward[1], by type of facility

	Hospitals (n=87)	Health Centres (n=464)	Total (n=551)
	%	%	%
Infrastructure			
Sufficient light source to perform tasks during the day	100%	95%	96%
Sufficient light source to perform tasks at night	93%	76%	79%
Means of ventilation	97%	91%	92%
Running water	92%	71%	74%
Functioning toilet	98%	80%	82%
Heating/heating arrangements	56%	19%	25%
Curtains/means of providing patient privacy	94%	81%	83%
Sluice room	92%	67%	71%

[1]For hospitals, the maternity area was likely to be a specific room and these questions were related to the infrastructure of that specific room. Health centres may not have had a specific room devoted for a maternity ward and these questions were therefore related to whether the facility, in general, had the infrastructure. Note: unweighted n = 365

5.05 Communication and transportation

Communication and transportation are important for the functioning of a referral system. Nationally, 99 percent of facilities reported that they had at least one functioning mode of communication on site. Ninety percent of facilities reported having functioning mobile phone owned by the facility or individual. Fifteen percent of facilities reported having functioning two-way radio.

A total of 47 percent of facilities reported that staff had individual cell phone with airtime provided by the institution. Only 12 percent of facilities reported having a policy to reimburse staff who used their cell phones for work-related calls. Across the facility types, all hospitals and 97 percent of health centres had at least one functioning mode of communication on site (Table 5.06).

Table 5.06: Percentage of facilities with a functional mode of communication, by district, facility type, sector and location

	On-site communication							Functioning public telephone in vicinity	Total weighted number of facilities
	Functioning land telephone in maternity or elsewhere in facility	Functioning Cell phone (owned by facility or individual)	Individual Cell phone with airtime provided by institution	Functioning two way radio	At least one functioning mode of communication on-site	Facilities with policy of reimbursing staff who use own airtime			
	%	%	%	%	%	%		%	n
Malawi	**18%**	**90%**	**47%**	**15%**	**99%**	**12%**		**8%**	**557**
District									
Chitipa	50%	88%	38%	0%	100%	0%		19%	9
Karonga	34%	79%	24%	0%	90%	7%		24%	15
Nkhata Bay	6%	100%	14%	0%	100%	0%		6%	18
Rumphi	29%	100%	18%	0%	100%	0%		11%	15
Mzimba North	20%	100%	84%	0%	100%	9%		13%	23
Mzimba South	28%	84%	16%	0%	100%	0%		10%	28
Likoma	0%	100%	100%	0%	100%	100%		0%	2
Kasungu	11%	75%	50%	0%	90%	31%		6%	18
Nkhotakota	21%	100%	100%	10%	100%	6%		0%	18
Ntchisi	10%	100%	100%	100%	100%	0%		0%	10
Dowa	13%	92%	42%	8%	100%	16%		13%	21
Salima	18%	93%	58%	0%	100%	12%		0%	15
Lilongwe	27%	93%	22%	2%	97%	27%		9%	50
Mchinji	8%	37%	55%	0%	100%	0%		0%	13
Dedza	7%	77%	52%	42%	100%	38%		0%	28
Ntcheu	4%	94%	70%	28%	100%	14%		4%	28
Mangochi	11%	85%	60%	0%	95%	27%		0%	33
Machinga	6%	91%	85%	0%	100%	11%		0%	18
Zomba	23%	89%	37%	9%	100%	6%		7%	30
Chiradzulo	9%	84%	66%	0%	100%	24%		9%	11

	On-site communication							Functioning public telephone in vicinity	Total weighted number of facilities
	Functioning land telephone in maternity or elsewhere in facility	Functioning Cell phone (owned by facility or individual)	Individual Cell phone with airtime provided by institution	Functioning two way radio	At least one functioning mode of communication on-site	Facilities with policy of reimbursing staff who use own airtime			
	%	%	%	%	%	%		%	n
Blantyre	29%	94%	59%	50%	100%	9%		26%	29
Mwanza	25%	63%	0%	100%	100%	0%		25%	4
Thyolo	7%	94%	23%	15%	100%	0%		4%	28
Mulanje	10%	100%	18%	38%	100%	5%		26%	21
Chikhwawa	27%	100%	29%	29%	100%	9%		8%	24
Nsanje	27%	93%	68%	44%	100%	18%		0%	14
Phalombe	8%	87%	52%	0%	100%	13%		8%	12
Balaka	24%	100%	39%	39%	100%	9%		0%	11
Neno	9%	84%	58%	9%	100%	0%		0%	11
Facility Type									
Central Hosp	100%	100%	50%	0%	100%	0%		100%	4
District Hosp	91%	78%	39%	35%	100%	5%		35%	23
Rural/Com Hosp	24%	100%	32%	0%	100%	22%		12%	33
Other Hospital	78%	96%	33%	22%	100%	22%		41%	27
Health Centre	9%	89%	49%	15%	97%	13%		4%	470
Sector									
Government	15%	89%	51%	16%	99%	9%		8%	383
Private for-profit	34%	100%	27%	41%	100%	26%		11%	27
CHAM	22%	90%	40%	10%	99%	23%		6%	147
Location									
Rural	12%	90%	47%	15%	99%	13%		5%	499
Urban	71%	91%	40%	21%	100%	20%		35%	57

Nationally, 33 percent of facilities had a functioning motor vehicle ambulance while only 6 percent had a functioning motorcycle ambulance. Likoma district reported having no functioning motor vehicle or motorcycle ambulance while only 6 percent of facilities in Machinga reported having a functioning motor vehicle ambulance.

All central and district hospitals and 74 percent of rural/community hospitals reported having a functioning motor vehicle ambulance. Only 23 percent of health centres reported having a functioning motor vehicle ambulance while only 4 percent of health centres reported having a functioning motorcycle ambulance (Table 5.07).

Table 5.07: Percentage of facilities conducting deliveries with a functional mode of ambulance transport, by district, facility type, sector and location

	Functioning motor vehicle ambulance	Functioning motorcycle ambulance	Total weighted number of facilities
	%	%	N
Malawi	**33%**	**6%**	**557**
District			
Chitipa	44%	0%	9
Karonga	31%	0%	15
Rumphi	11%	18%	18
Nkhata Bay	24%	0%	15
Mzimba North	28%	7%	23
Mzimba South	27%	0%	28
Likoma	0%	0%	2
Kasungu	36%	0%	18
Nkhotakota	26%	11%	18
Ntchisi	10%	18%	10
Dowa	31%	8%	21
Salima	18%	0%	15
Lilongwe	29%	5%	50
Mchinji	31%	15%	13
Dedza	54%	17%	28
Ntcheu	28%	4%	28
Mangochi	38%	0%	33
Machinga	6%	6%	18
Zomba	32%	6%	30
Chiradzulo	67%	9%	11
Blantyre	32%	0%	29
Mwanza	25%	0%	4
Thyolo	36%	0%	28
Mulanje	67%	0%	21
Chikhwawa	20%	0%	24
Nsanje	39%	19%	14
Phalombe	66%	13%	12
Balaka	39%	9%	11

	Functioning motor vehicle ambulance	Functioning motorcycle ambulance	Total weighted number of facilities
	%	%	N
Neno	51%	9%	11
Facility Type			
Central Hospital	100%	0%	4
District Hospital	100%	30%	23
Rural/ Community Hospital	74%	6%	33
Other Hospital	82%	7%	27
Health Centre	23%	4%	470
Sector			
Government	26%	6%	383
Private for-Profit	39%	0%	27
CHAM	50%	5%	147
Location			
Rural	77%	5%	499
Urban	23%	12%	57

Referral for maternal and newborn emergencies

Most complications of pregnancy are unpredictable but can be safely and successfully managed if there is prompt access to emergency obstetric care. This sort of care is typically not available in health centre; women have to be referred to higher levels of care.

To assess referrals related to obstetric and newborn emergencies, data collectors interviewed providers likely to be knowledgeable about the referral system: the transport officer, hospital administrator, or a person in charge (the head of a department, a midwife, or a public health nurse in charge). The questions covered the facility's availability - 24 hours a day, seven days a week - to deal with emergencies, management and policies on patients referred out of the facility, management and policies on referrals coming into the facility and the facility's capacity for communication and transportation.

5.05 Availability for obstetric and newborn care 24 hours a day, 7 days a week

Availability for obstetric and newborn care was operationalized as the availability of personnel (skilled or unskilled) to attend to anyone who came for help. Presumably the unskilled would be able to direct patients to where definitive treatment could be obtained.

Among facilities that performed deliveries, 95 percent reported 24-hour-a-day, seven-days-a-week (24/7) coverage for obstetric and newborn care. In other words, there were some

facilities that did not attend to any maternal or newborn care even if they were open for other services (Table 5.07).

Facilities in Chikhwawa (63 percent) and Chiradzulo and Neno (82 percent) reported the lowest 24/7 coverage for obstetric and newborn care. While hospitals reported almost 100 percent coverage for obstetric and newborn care services, health centres reported 95 percent coverage.

Seventy percent of facilities in the private sector reported 24/7 coverage while those in Government and CHAM sector reported 95 percent 24/7 coverage respectively.

All facilities in urban areas reported 24/7 coverage for obstetric and newborn care as compared to 95 percent of facilities in rural areas (Table 5.08).

Table 5.08: Percentage of facilities providing obstetric and newborn care 24 hours a day, seven days a week, by district, facility type, operating agency and location

	Provide obstetric and newborn care 24/7	Provide obstetric and newborn care 24/7	Total weighted number of facilities
	n	%	
Malawi	**529**	**95%**	**551**
District			
Chitipa	9	100%	9
Karonga	15	100%	15
Rumphi	18	100%	18
Nkhata Bay	15	100%	15
Mzimba North	23	100%	23
Mzimba South	28	100%	28
Likoma	2	100%	2
Kasungu	16	89%	18
Nkhotakota	18	100%	18
Ntchisi	10	100%	10
Dowa	21	100%	21
Salima	15	100%	15
Lilongwe	47	94%	50
Mchinji	13	100%	13
Dedza	28	100%	28
Ntcheu	28	100%	28
Mangochi	33	100%	33
Machinga	16	89%	18
Zomba	28	93%	30
Chiradzulo	9	82%	11
Blantyre	27	93%	29
Mwanza	4	100%	4

Thyolo	25	89%	28
Mulanje	21	100%	21
Chikhwawa	15	63%	24
Nsanje	14	100%	14
Phalombe	11	92%	12
Balaka	11	100%	11
Neno	9	82%	11
Facility Type			
Central Hospital	4	100%	4
District Hospital	23	100%	23
Rural/ Comm Hosp	33	100%	33
Other Hospital	26	96%	27
Health Centre	444	95%	470
Sector			
Government	371	97%	383
Private for-Profit	19	70%	27
CHAM	141	96%	147
Location			
Rural	472	95%	499
Urban	57	100%	57

Median distance (Km) to nearest facility with obstetric surgery

Facility managers based the distance between facilities without obstetric surgical services to another with surgery using usual modes of travel on self-reports. Facilities that had obstetric surgery services were considered to be 0 distance from obstetric surgery services. Note that the facility with obstetric surgery services does not have to be in the same district as the responding facility.

Nationally, 18 hospitals and 470 health centres had no operation theatre and the median distances to the nearest facility with obstetric surgery were 46 Km and 34 Km respectively. Two hospitals and 14 health centres in Nkhotakota had no operation theatre and the median distances to the nearest facility with obstetric surgery were 85 Km and 58 Km respectively. Similarly, two hospitals and 24 health centres in Mzimba South had no operation theatre and the median distances to the nearest facility with obstetric surgery were 81 Km and 61 Km respectively (Table 5.09).

Table 5.09: Median distance (Km) to nearest facility with obstetric surgery, by district, facility type, sector and location (among facilities without OT)

	Hospital		Health centre	
	Distance from facility to referral centre	Weighted number of hospitals	Distance from facility to referral centre	Weighted number of health centres
Malawi	**46**	**18**	**34**	470
District				
Chitipa		0	45	8
Karonga	51.5	2	55	11
Nkhata Bay		0	33.5	16
Rumphi	40	3	42.5	10
Mzimba North		0	65	20
Mzimba South	80.5	2	60.5	24
Likoma Island		0	14	1
Kasungu	62	1	65	14
Nkhotakota	85	2	57.5	14
Ntchisi		0	19.5	9
Dowa	24	1	28.5	17
Salima		0	20	14
Lilongwe	16	3	19	36
Mchinji	28	3	47	9
Dedza		0	27.5	26
Ntcheu		0	36.5	27
Mangochi		0	41.5	29
Machinga		0	85	17
Zomba	15	1	35	25
Chiradzulo		0	20	9
Blantyre		0	40	23
Mwanza		0	35.5	3
Thyolo		0	21	26
Mulanje		0	27.5	19
Chikhwawa		0	12	21
Nsanje		0	35	12
Phalombe		0	30	11
Balaka		0	38	10
Neno		0	16	9
Type of facility				
Central Hospital				
District Hospital				
Other Hospital	12.5	2		
Community/Rural Hospital	56	16		
Health Centre			34	470

	Hospital		Health centre	
	Distance from facility to referral centre	Weighted number of hospitals	Distance from facility to referral centre	Weighted number of health centres
Type of operating agency				
Government	40	9	38	338
Private for Profit			12	22
CHAM	52	9	25	110
Location				
Rural	56	16	35	453
Urban	12.5	2	5	16

Note: based on unweighted n = 365

Out of all 87 hospitals that were surveyed, 18 had no capacity to perform obstetric surgery. Out of these, 6 of them (32 percent) were located at a median distance of less than 25 Km to the nearest facility with obstetric surgery while 3 (16 percent) were located between 26 and 50 Km to the nearest facility with obstetric surgery while the remaining 9 facilities (50 percent) were located more than 50 Km to the nearest facility with obstetric surgery (Table 5.10).

Table 5.10: Number of hospitals by distance (Km) to nearest facility with obstetric surgery, by district, sector and location

	Weighted number of Hospitals						
	Have OT (0 km)	0-25 km	26-50 km	51-75 km	76-100 km	101 + km	Total without OT
Malawi	66	6	3	6	2	1	18
District							
Chitipa	1	-	-	-	-	1	0
Karonga	1	-	1	-	1	-	2
Nkhata Bay	1	-	-	-	-	-	0
Rumphi	2	1	1	1	-	-	3
Mzimba North	3	-	-	-	-	-	0
Mzimba South	2	-	-	1	1	-	2
Likoma	1	-	-	-	-	-	0
Kasungu	3	-	-	1	-	-	1
Nkhotakota	2	-	-	1	-	1	2
Ntchisi	1	-	-	-	-	-	0
Dowa	3	1	-	-	-	-	1
Salima	1	-	-	-	-	-	0
Lilongwe	11	2	-	1	-	-	3
Mchinji	1	1	1	1	-	-	3
Dedza	2	-	-	-	-	-	0
Ntcheu	1	-	-	-	-	-	0
Mangochi	4	-	-	-	-	-	0
Machinga	1	-	-	-	-	-	0

Zomba	3	1	-	-	-	-	1
Chiradzulo	2	-	-	-	-	-	0
Blantyre	6	-	-	-	-	-	0
Mwanza	1	-	-	-	-	-	0
Thyolo	2	-	-	-	-	-	0
Mulanje	2	-	-	-	-	-	0
Chikhwawa	3	-	-	-	-	-	0
Nsanje	2	-	-	-	-	-	0
Phalombe	1	-	-	-	-	-	0
Balaka	1	-	-	-	-	-	0
Neno	2	-	-	-	-	-	0
Sector							
Government	33	4	1	2	1	2	9
Private for Profit	5	-	-	-	-	-	0
CHAM	28	2	2	4	1	-	9
Location							
Rural	27	4	3	6	2	1	16
Urban	39	2	-	-	-	-	2

All 470 health centres had no capacity to perform obstetric surgery. Out of these, 147 of them (31 percent) were located at a median distance of less than 25 Km to the nearest facility with obstetric surgery while 132 (28 percent) were located between 26-50 Km to the nearest facility with obstetric surgery while the remaining 100 facilities (21 percent) were located more than 50 Km to the nearest facility with obstetric surgery (Table 5.11).

Table 5.11: Number of health centres by distance (Km) to nearest facility with obstetric surgery, by district, sector and location

	Weighted number of Health Centres						
	Have OT (0 Km)	0 - 25Km	26 - 50Km	51 - 75Km	76 - 100Km	101+ Km	Total health centres without OT
Malawi	**0**	**147**	**132**	**62**	**22**	**16**	470
District							
Chitipa	0	0	5	2	0	2	8
Karonga	0	2	3	5	2	0	11
Nkhata Bay	0	2	2	0	0	0	16
Rumphi	0	2	3	2	0	0	10
Mzimba North	0	5	2	0	7	0	20
Mzimba South	0	3	7	5	2	7	24
Likoma Island	0	1	0	0	0	0	1
Kasungu	0	0	5	9	0	0	14
Nkhotakota	0	4	2	5	4	0	14
Ntchisi	0	5	2	0	0	0	9

Dowa	0	5	7	3	2	0	17
Salima	0	14	0	0	0	0	14
Lilongwe	0	19	10	2	0	0	36
Mchinji	0	0	9	0	0	0	9
Dedza	0	10	5	5	0	0	26
Ntcheu	0	7	7	3	0	0	27
Mangochi	0	9	9	5	3	2	29
Machinga	0	0	2	5	2	5	17
Zomba	0	5	8	2	0	0	25
Chiradzulo	0	7	2	0	0	0	9
Blantyre	0	4	7	0	0	0	23
Mwanza	0	2	0	2	0	0	3
Thyolo		7	2	2	0	0	26
Mulanje	0	7	3	3	0	0	19
Chikhwawa	0	12	7	0	0	0	21
Nsanje	0	2	9	0	0	0	12
Phalombe	0	5	5	0	0	0	11
Balaka	0	3	5	2	0	0	10
Neno	0	5	4	0	0	0	9
Sector							
Government	0	91	99	50	19	13	338
Private for Profit	0	12	0	2	0	2	22
CHAM	0	41	30	8	2	0	110
Location							
Rural	0	135	129	61	20	15	453
Urban	0	9	0	0	0	0	16

Median time (minutes) to nearest facility with obstetric surgery

Facility managers based the time taken between facilities without obstetric surgical services to another with surgery using usual modes of travel on reports. Out of 21 hospitals without capacity to perform obstetric surgery, the median time to the nearest facility with obstetric surgery was 35 minutes while out of 470 health centres without capacity to perform obstetric surgery, the median time to the nearest facility with obstetric surgery was 45 minutes (Table 5.12).

The median time to the nearest facility with obstetric surgery for health centres in rural areas was 45 minutes while the median time for facilities in urban areas was 15 minutes.

Table 5.12: Median time (minutes) to nearest facility with obstetric surgery, by district, sector and location

	Median time (minutes)	Weighted number of hospitals	Median time (minutes)	Weighted number of health centres
Malawi	35	21	45	470
Chitipa	.	0	[105]	8
Karonga	[45]	3	90	11
Nkhata Bay	[30]	1	75	16
Rumphi	[30]	3	45	10
Mzimba North	.	0	37.5	20
Mzimba South	[95]	2	60	24
Likoma Island	.	0	[60]	1
Kasungu	[40]	1	75	14
Nkhotakota	[103]	2	60	14
Ntchisi	.	0	[30]	9
Dowa	[30]	1	50	17
Salima	.	0	20	14
Lilongwe	[65]	3	30	36
Mchinji	[20]	3	[30]	9
Dedza	.	0	40	26
Ntcheu	.	0	30	27
Mangochi	.	0	60	29
Machinga	.	0	120	17
Zomba	[20]	2	42.5	25
Chiradzulo	.	0	[40]	9
Blantyre	.	0	35	23
Mwanza	.	0	[53]	3
Thyolo	.	0	99	26
Mulanje	.	0	42.5	19
Chikhwawa	.	0	20	21
Nsanje	.	0	30	12
Phalombe	.	0	35	11
Balaka	.	0	52.5	10
Neno	.	0	[45]	9
Sector				
Government	30	12	45	338
Private for Profit	.	0	15	22
CHAM	[42.5]	9	45	110
Location				
Rural	40	19	45	453
Urban	[10]	2	15	16

CHAPTER SIX: Human Resources

6.01 Meeting targets for human resources

Overall staffing

Module 2 was used to collect data on human resources and the data were drawn from responses by the heads of facilities to questions posed by data collectors about the numbers of staff currently working in the facilities.

In the public sector, the Department of Human Resource Management of MoH provided a schedule of established offices effective, 1st July 2011 which was used as the source of data for estimating the staffing requirements for the major categories of health personnel.

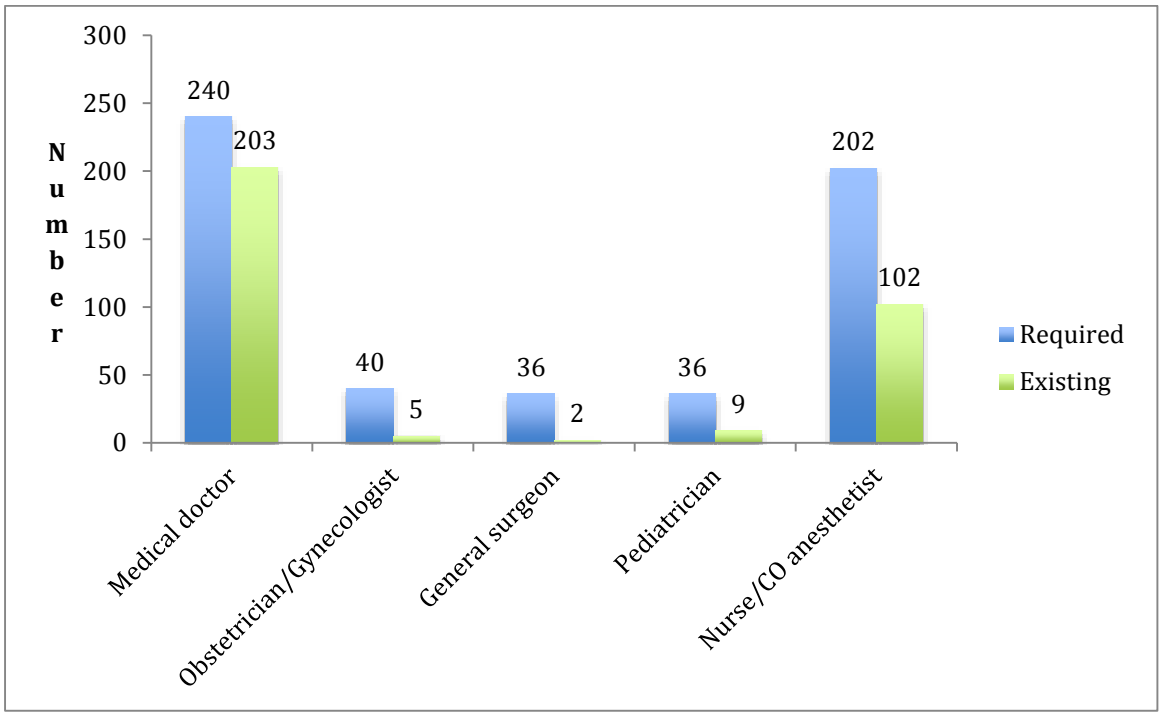
Verification of the qualification of health personnel was beyond the scope of this assessment. Data collectors simply documented what they were told by facility managers. In view of this, cadre definition and distribution was taken as described by facility managers. Note also that where a health professional works in more than one health facility he/she will be double counted. This may slightly overestimate the supply of health workers.

Staffing pattern in public health facilities

Figures 6.01a and 6.01b, below and Table 6.01A in the Appendix present total staffing requirements of selected cadres of public sector health workers in Malawi. Shortages were observed across all cadres and the absolute shortfall in numbers between supply and need as established by the 2011 staffing norms were highest for enrolled nurses/nurse midwife technicians (7,077) and clinical officers (1,443). Other significant differences were with medical assistants (602), registered nurse/midwives (360), laboratory technicians (317) and anaesthetists (100).

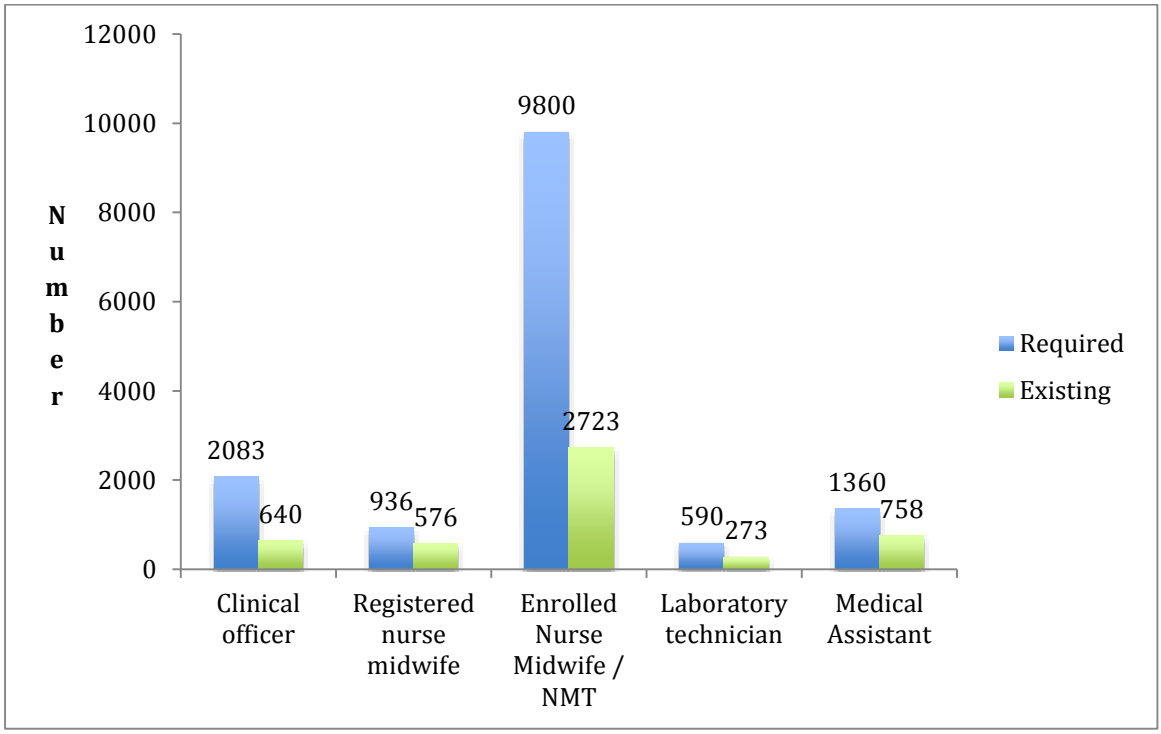
The operational definition of an anaesthetist as anyone who puts a patient under anaesthesia is applicable here. This means that the response captured anaesthesiologists (medical doctors with further training in anaesthesia) and nurse/clinical officer-anaesthetists (nurses/clinical officers with further training in anaesthesia).

Fig. 6.01a: Existing and required staff in public health facilities of selected cadres



Note: existing staff based on weighted numbers

Fig. 6.01b: Existing and required staff in public health facilities of selected cadres



Note: existing staff based on weighted numbers

Fig. 6.02a and Fig. 6.02b present staffing requirements of selected cadres at the 4 central hospitals (hospital data received a weight of one, and therefore, the numbers are the same as the unweighted). The data seems to suggest that in terms of absolute numbers, the supply of medical doctors, laboratory technicians, anaesthetists and medical assistants at central hospitals is in excess of what is required by 67, 29, 17 and 7 respectively. The data for medical doctors may have included 'intern doctors' on training and may therefore not reflect the filled positions for medical doctors in the central hospitals. Furthermore, there is no establishment for medical assistants at central hospitals.

However, in central hospitals, shortages are observed across the remaning cadres and signifcicantly so for enrolled nurse midwives/nurse midwife technicians (gap of 486) and registered nurse midwives (gap of 133).

Fig. 6.02a: Staffing requirements of selected cadres at Central Hospitals

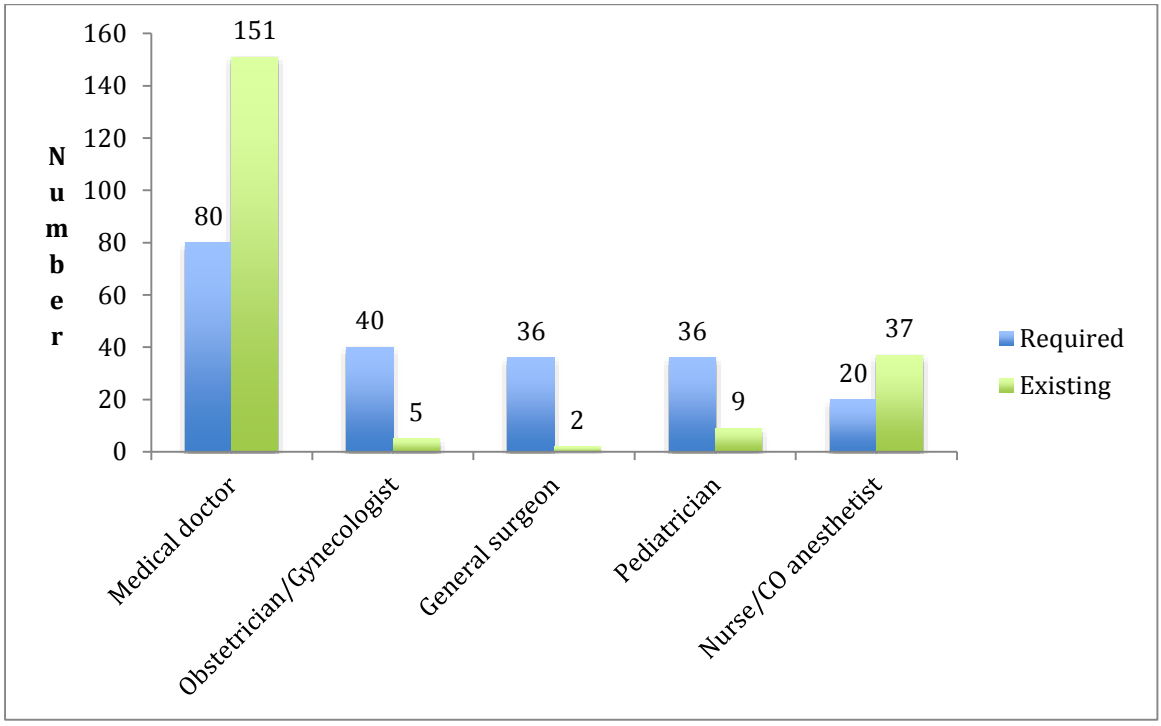


Fig. 6.02b: Staffing requirements of selected cadres at Central Hospitals

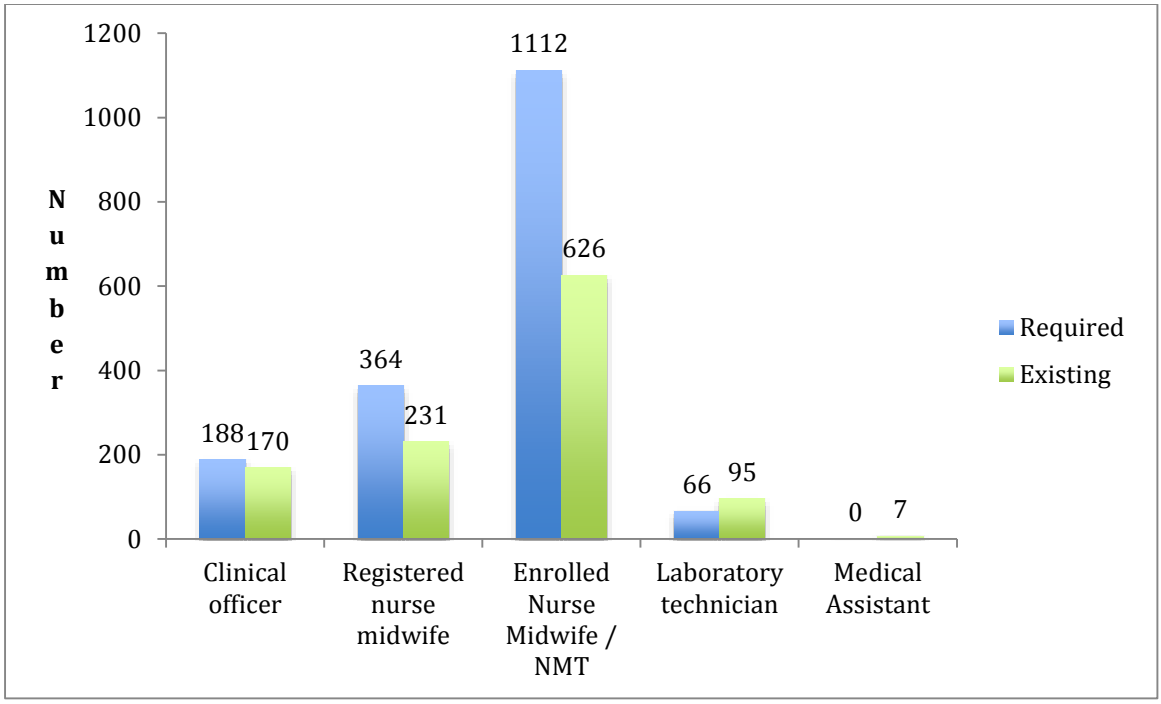


Fig. 6.03 presents staffing requirements in public health facilities of selected cadres at district hospitals. The data show that in terms of absolute numbers, there were gaps in all cadres: Enrolled nurse midwife/nurse midwife technicians (gap of 1,679), clinical officers (735), medical assistants (345), registered nurse/midwives (288), anaesthetists (122), medical doctors (106) and laboratory technicians (30).

Fig. 6.03: Staffing requirements in public health facilities of selected cadres at District hospitals

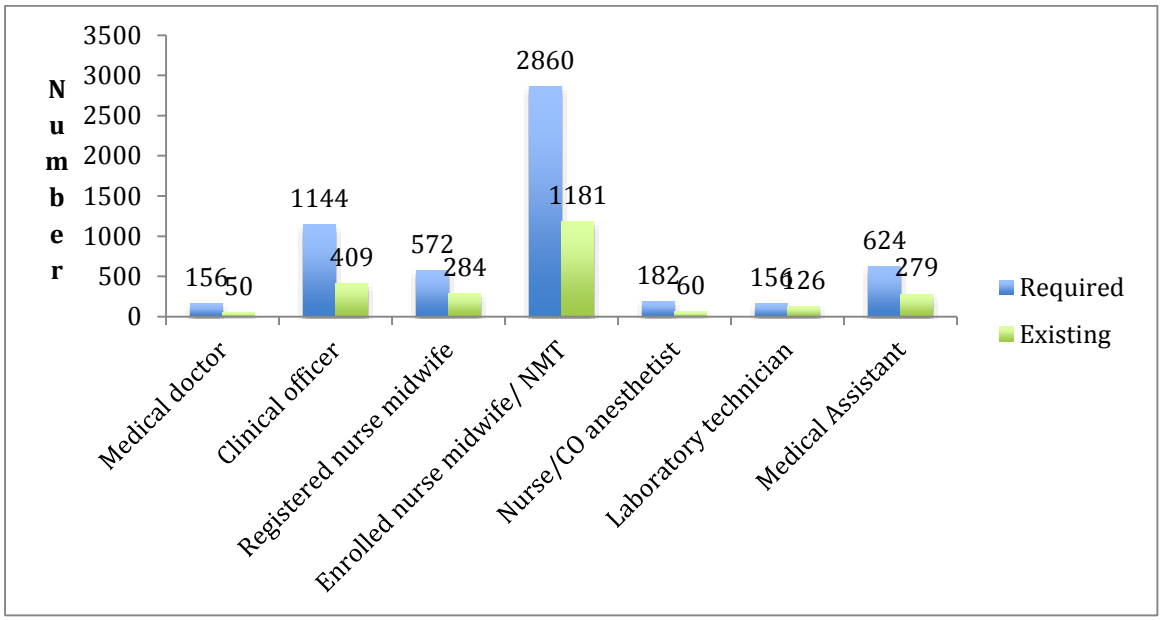


Fig. 6.04 presents staffing requirements in public health facilities of selected cadres at rural/ community hospitals. The data show that in terms of absolute numbers, the widest gap was for enrolled nurses/nurse midwife technicians (313), followed by clinical officers (53) medical assistants (26) and laboratory technicians (12). There were no staffing requirements for medical doctors and anaesthetists in rural/community hospitals.

Fig. 6.04: Staffing requirements in public health facilities, of selected cadres at Rural/Community Hospitals

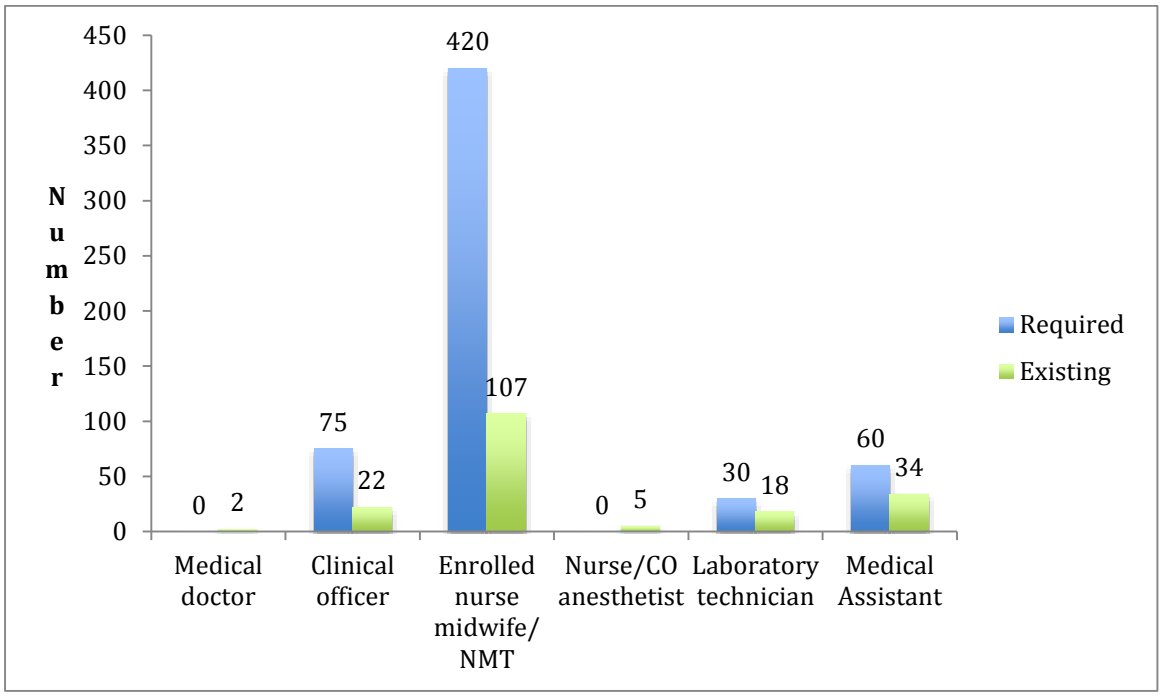
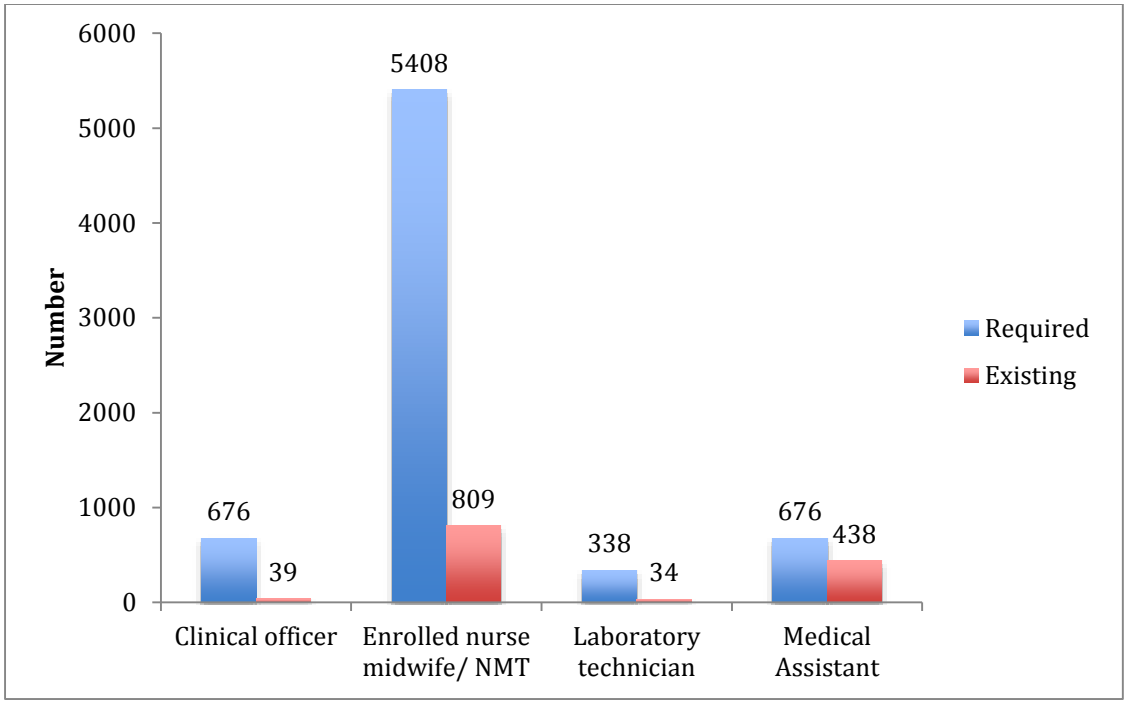


Fig. 6.05 presents staffing requirements in public health facilities of selected cadres at health centres. The weighted data show that in terms of absolute numbers, the widest gap was for enrolled nurses (4,599), followed by clinical officers (637), laboratory technicians (304) and medical assistants (238).

Fig. 6.05: Staffing requirements in public sector of selected cadres at health centres



Staffing pattern in non-public sector facilities

Table 6.01 below presents the current staffing pattern in non-public health facilities. In CHAM facilities, there were in total, 4 obstetricians/gynaecologists, 1paediatrician, 5 general surgeons and 50anaesthetists. There were also 25 medical officers, 175 clinical officers, 115 registered nurse midwives, 1,108enrolled nurse midwives/Nurse midwife technicians, 91 laboratory technicians and 155 medical assistants distributed across 110 health centres, 18 rural community hospitals and 19 other hospitals.

Table 6.01: Existing staff in non-public sector for selected health worker cadres, by facility type

Health worker cadre	CHAM				Private for profit	
	Type of facility (weighted)				Type of facility (weighted)	
	Other Hospital	Rural/Com Hospital	Health Centre		Other hospital	Health centre
Number of facilities	**19**	**18**	**110**		**5**	**22**
Medical doctors/officers	21	4	0		16	4
Obstetrician/ Gynaecologist	4	0	0		6	0
General Surgeon	5	0	0		5	0
Paediatrician	1	0	0		4	0
Clinical Officer	118	40	17		7	21
Registered Nurse	31	2	2		12	0

Registered Nurse Midwife	85	20	10		17	9
Community midwives	4	3	3		0	2
Enrolled nurse midwife/Nurse midwife Technician	506	212	390		112	76
Anaesthesiologist	1	0	0		2	0
Nurse/CO anaesthetist	36	13	0		2	0
Laboratory Technologist/Technicians	57	17	17		20	10
Medical Assistant	58	21	76		0	17

Table 6.03A in Appendix A presents the number of health workers that were on the job at the time of the survey, expressed as a ratio per 200,000 population. Nationally, for every 200,000 population, there were 0.2 obstetrician/gynaecologists, 0.2 general surgeons, 0.2 pediatricians, 3 medical doctors, 11 clinical officers, 10 registered nurse midwives, 52 enrolled nurse midwife/Nurse midwife technicians, 2 anaesthetists, 5 laboratory technicians and 12 medical assistants.

International recommendations are not very clear on standard staffing ratios for some of these cadres.

6.02 Health worker cadres and recent posting

Table 6.02 below presents the absolute numbers of health workers by cadre who either left, were transferred out or were posted to the various levels of facility in the 12 months preceding the survey. Nationally, there was a net loss of staff of 271 and the medical assistant cadre experienced the largest net loss of staff (-47) followed by the clinical officer cadre (-43), the enrolled nurse midwife cadre (-41) and medical doctor (-31). The only cadres that did not suffer losses nationally, were laboratory technicians (+17), registered nurses (+16), obstetrician/gynecologist (+1) and anaesthesiologist (+1). Similar patterns of attrition levels were noticed when data were analyzed by facility type (Tables 6.04A to 6.08A in Appendix A).

Table 6.02: Total number of selected health worker cadres currently working, who left, or were transferred out and who were posted in the last 12 months in Malawi

Health worker cadre	All facilities (weighted numbers)				
	Currently working	In the last 12 months:			
		staff left	staff transferred out	staff posted	net gain/ loss
Total	**7869**	**1012**	**388**	**1129**	**-271**
Medical doctor	247	62	32	63	-31
Obstetrician/Gynaecologist	16	2	0	3	1
General surgeon	12	3	0	1	-2

Paediatrician	14	5	0	1	-4
Clinical officer	782	102	15	74	-43
Registered nurse	190	11	3	30	16
Registered nurse midwife	696	92	20	95	-17
Community midwife	42	4	10	6	-8
Enrolled nurse midwife	2840	220	86	265	-41
Anaesthesiologist	4	0	0	1	1
Nurse/Clinical officer anaesthetist	156	17	4	16	-5
Laboratory technologist/ technician	344	21	4	42	17
Medical Assistant	413	72	39	64	-47

6.03 Distribution pattern of health worker cadres by facility type

Distribution of midwives and medical assistants in health centres

Table 6.03 below presents the number and percentage of health centres with at least 2 midwives and 2 medical assistants. The data indicate that 23 percent of health centres in Malawi have at least 2 midwives and 2 medical assistants.

All health centres in Mchinji and at least three quarters of health centres in Chitipa, Ntchisi, Chiradzulo and Nsanje have at least 2 midwives and 2 medical assistants. On the other hand, none of the health centres in 5 districts (i.e. Karonga, Nkhata Bay, Rumphi, Likoma and Neno) have at least 2 midwives and 2 medical assistants.

Table 6.03: Number and percentage of health centres with at least two midwives and two medical assistants currently working, by district

	Total weighted number of health centres	Number with at least 2 midwives and 2 medical assistants	Percent with at least 2 midwives and 2 medical assistants
	n	n	%
Malawi	**472**	**108**	**23%**
District			
Chitipa	8	6	75%
Karonga	11	0	0%
Nkhata Bay	16	0	0%
Rumphi	10	0	0%
Mzimba North	20	2	10%
Mzimba South	24	2	8%
Likoma Island	1	0	0%
Kasungu	14	4	29%
Nkhotakota	14	4	29%
Ntchisi	9	7	78%
Dowa	17	2	12%
Salima	14	4	29%
Lilongwe	36	5	14%
Mchinji	9	9	100%
Dedza	26	5	19%
Ntcheu	27	12	44%
Mangochi	29	3	10%
Machinga	17	2	12%
Zomba	25	2	8%
Chiradzulo	9	7	78%
Blantyre	23	4	17%
Mwanza	4	2	50%

Thyolo	26	3	12%
Mulanje	19	2	11%
Chikhwawa	22	4	18%
Nsanje	12	9	75%
Phalombe	11	6	55%
Balaka	10	2	20%
Neno	9	0	0%

6.04 Availability of health workers

Labour, delivery and obstetric emergencies can occur at any time, facilities have to be open 24/7 with staff who can attend to patients promptly. Because health centres refer patients to hospitals for emergency care, hospitals need health workers in many cadres who can provide emergency services, including caesarean delivery. Health worker cadres whose presence is critical to the management of obstetric emergencies are obstetrician/gynaecologists, medical officers, clinical officers, midwives, anaesthetists, and paediatricians for the care of the newborn. Tables 6.09A and 6.12A in Appendix A present the overall availability of different cadres in hospitals — that is, whether each cadre was on duty or on call Monday through Friday and Saturday through Sunday, day and night.

Obstetrician/gynaecologists were found in 14 percent of all hospitals, paediatricians were found in 8 percent of all hospitals, medical doctors were found in 59 percent of hospitals while anaesthetists were working in 68 percent of hospitals, clinical officers were working in 91 percent of hospitals while registered nurse midwives were working in 76 percent of hospitals (Table 6.09A).

On duty

Monday through Friday, 67percent of hospitals had obstetrician/gynaecologists on duty during the day; 8 percent had them on duty at night. On weekends, 17percent of hospitals had obstetrician/gynaecologists on duty during the day and 8 percent had them on duty at night.

Monday through Friday, 80 percent of hospitals had medical doctors on duty during the day and 12 percent of hospitals had them on duty at night. On weekends, 16 percent of hospitals had medical doctors on duty during the day and 10 percent had them on duty at night.

Monday through Friday, 95 percent of hospitals had anaesthetists on duty during the day and in 24 percent of the hospitals at night. On weekends, 26percent of hospitals had anaesthetists on duty during the day and 17 percent had them on duty at night.

The pattern is that more facilities had staff on duty during the day than at night both during the week and on weekends.

On call

Monday through Friday, Obstetrician/gynaecologists were on call at 92 percent of hospitals at night. Over the weekend, these specialists were on call in at least 75 percent of hospitals during the day and at night.

Monday through Friday, 73 percent of hospitals had a medical officer on call at night. On weekends, 67 percent of hospitals had a medical officer on call during the day and 73 percent had them on call at night.

Monday through Friday, 74 percent of hospitals had anaesthetists on call at night. On weekends, anaesthetists were on call in at least 70 percent of hospitals during the day and at night.

Generally, throughout the week hospitals were better staffed with health care providers on duty to manage obstetric emergencies during the day than at night. They depend on cadres of staff on call for coverage at night.

6.05 Facilities that provide EmONC signal functions by health worker cadre

In some countries, midwives are trained and expected to provide all basic emergency obstetric and newborn care signal functions and also to provide blood transfusion. Medical doctors are trained to provide all basic and comprehensive signal functions. Tables 6.13A-6.16A in Appendix A present the percentages of hospitals and health centres that provide EmONC signal functions by health worker cadre. The medical doctor cadre was the health worker cadre present in almost all hospitals to provide EmONC signal functions.

Medical doctors provided almost all basic and comprehensive signal functions. In health centres, primarily the midwife handles all basic signal functions, including assisted vaginal delivery with vacuum extractor and removal of retained products with MVA.

Table 6.17A in Appendix A presents the percentages of hospitals and health centres that provide other essential services or procedures, by health worker cadre.

6.06 Ratio of midwives to 1000 deliveries in a year

The number of midwives attending per 1000 deliveries gives an indication of the workload they bear. A benchmark sometimes used to plan a midwifery workforce is that one midwife should attend an average of 175 births per year.[15] This is more easily conceptualized as a requirement of six midwives per 1000 births a year. Table 6.02 shows the number of midwives for every 1000 institutional deliveries per district. The

[15]The State of the World's Midwifery 2011. New York: United Nations Population Fund, 2011.

actual number of midwives attending deliveries may be smaller, because this assessment recorded all midwives working in a facility in antenatal, delivery, and postnatal phases of care — not just those attending deliveries. These figures were calculated using the number of institutional deliveries conducted at a facility within the 12-month assessment period.

All the districts except Ntchisi and Machinga had more than six midwives per 1000 institutional births. Likoma had the highest number of midwives attending 1000 deliveries (27), followed by Blantyre (23) and Mzimba North (20).

When expected births were used as a denominator, (other than number of births attended), only half of the districts met the recommended minimum number of 6 midwives per 1000 deliveries (Table 6.04).

Table 6.04: Number of midwives per 1,000 deliveries, (by institutional and expected births) by district.

	Number of expected births (CBR*pop)	Weighted number of births attended in all facilities	Weighted number of midwives in all facilities	Weighted number of midwives per 1000 institutional deliveries	Weighted number of midwives per 1000 expected births
Malawi	**790,262**	**476,272**	**4999**	**10.5**	**6.3**
District					
Chitipa	10,559	6260	59	9.4	5.6
Karonga	16,354	9663	90	9.3	5.5
Nkhata Bay	13,029	6587	81	12.3	6.2
Rumphi	10,153	7905	74	9.4	7.3
Mzimba North	23,723	15466	304	19.7	12.8
Mzimba South	30,192	17141	157	9.2	5.2
Likoma	522	452	12	26.5	23.0
Kasungu	39,750	17606	116	6.6	2.9
Nkhotakota	18,389	9548	149	15.6	8.1
Ntchisi	13,824	10330	53	5.1	3.8
Dowa	36,617	19723	127	6.4	3.5
Salima	20,357	15392	116	7.5	5.7
Lilongwe	120,012	57981	729	12.6	6.1
Mchinji	28,454	20727	154	7.4	5.4
Dedza	35,937	21611	165	7.6	4.6
Ntcheu	27,872	21911	236	10.8	8.5
Mangochi	49,103	29674	210	7.1	4.3
Machinga	29,485	26135	152	5.8	5.2

	Number of expected births (CBR*pop)	Weighted number of births attended in all facilities	Weighted number of midwives in all facilities	Weighted number of midwives per 1000 institutional deliveries	Weighted number of midwives per 1000 expected births
Zomba	38,963	27371	379	13.8	9.7
Chiradzulo	15,703	9882	144	14.6	9.2
Blantyre	61,982	26045	587	22.5	9.5
Mwanza	5,129	5945	60	10.1	11.7
Thyolo	31,651	17944	153	8.5	4.8
Mulanje	28,249	19911	144	7.2	5.1
Chikhwawa	18,214	14929	166	11.1	9.1
Nsanje	25,914	10602	126	11.9	4.9
Phalombe	13,740	12236	75	6.1	5.5
Balaka	19,194	13102	122	9.3	6.4
Neno	7,191	4195	59	14.1	8.2

CHAPTER SEVEN: Provider Knowledge and Competency for Maternal and Newborn Care

It is difficult to measure performance in real world situations through a test of knowledge because performance on a test might correspond more to test-taking skills than knowledge. Furthermore, the performance of health workers on a test may not reflect how they would perform when faced by real patients. Nevertheless, the Health Provider Knowledge and Competency Module uses several clinical scenarios and vignettes of commondaily provider experiences in maternal and newborn health services to ascertain areas with gaps in the knowledge and practice of providers. Clinical observations were not done because data collectors of a different skillset and considerable time would be needed to overcome the tendency for providers to behave differently when they are being watched (Hawthorne effect).

Interviewer-led questionnaires were administered to a single provider in health facilities that offered maternity services. The respondent was the provider who conducted the most deliveries in the month prior to the assessment and who was on duty at the time of the visit by data collectors.

After explaining the purpose of the assessment, data collectors sought the provider's consent to join the study, emphasizing that the interview was not a test, was voluntary, and would be kept confidential, with no names recorded. If the provider agreed to the interview, they were required to sign a consent form and then the data collector proceeded to conduct it. Data collectors were instructed to prompt interviewees for more answers but not to communicate possible responses to questions to interviewees. Data under this chapter is unweighted. A provider who attended the most deliveries in the last month prior to the survey and present at the time of the survey was selected in the facilities that provided delivery services.

As already discussed in the preceding chapter on human resources, verification of the qualification of health personnel was beyond the scope of this assessment. In view of this, cadre definition and distribution was taken as described by facility managers and respondents.

At the 362 facilities that had offered delivery services in the year prior to the assessment, 357 providers consented to be interviewed (Table 7.01). Midwives, regardless of the cadre had carried out the greatest number of deliveries, and thus they contributed 96 percent of responses.

The mean number of deliveries in the month prior to the interview by responding registered nurse midwives was 30, for enrolled nurse midwives was 26, for community nurse midwives was 24 and for medical assistants was 5.

In all subsequent tables, medical doctors and enrolled nurses/nurse technician midwives were dropped from the analysis in this section because they were too few and because medical doctors were not primarily assigned to take deliveries. The number of providers whose responses were analyzed totaled 355. The analysis therefore focuses on the responses of 25 registered nurse/midwives, 299 enrolled nurse midwives, 14 medical assistants and 17community nurse/ midwives.

Table 7.01: Percentage distribution of health providers interviewed and mean number of deliveries, by health worker cadre (n=357)[1]

	Providers Interviewed		Mean number of deliveries attended in past month
	n	%	
Health worker cadre			
Medical doctor (general practitioner)	1	0.28%	20
Registered nurse/Midwife	25	7.00%	30
Enrolled nurse/ Midwife	299	83.75%	26
Enrolled Nurse/Nurse Midwife Tech	1	0.28%	37
Medical Assistant	14	3.92%	5
Community midwife	17	4.76%	24
Total	357	100%	25
[1]There were no responses from 5 facilities providing deliveries			

7.01 Pregnancy and delivery care

Questions were asked about basic care in the antenatal, labour, and delivery periods. Table 7.02 summarizes the performance of various health cadres in responding to all nine basic maternity care questions and scenarios. Tables 7.01A to 7.03A in Appendix A gives full details of the questions and possible responses.

The results indicate a mean score of 3.1 on a 6-point scale for all respondents on knowledge of FANC, which suggests insufficient knowledge about primary aspects of FANC; enrolled nurse/midwives scored highest with a mean score of 3.2 followed by registered nurse/midwives with a mean score of 3.0. Community midwives scored the least (2.5).

The mean score of 2.8 out of 8 was achieved in relation to knowledge of high-risk pregnancy suggesting insufficient knowledge across all cadres. The highest score was

achieved by enrolled nurse/midwives (2.9) while medical assistants scored lowest (1.9)

The highest mean score of 3.2 on a 4-point scale was achieved by medical assistants in response to the question on the signs of labour in a pregnant woman. Community midwives scored least (2.5).

On responses to the question on what clinical parameters must be monitored when a woman is in labour, registered nurse/midwives scored highest (7.5 out of 9) while medical assistants and community nurse/midwives scored the lowest (6.1 out of 10).

The overall mean score for where to record the information when monitoring a woman in labour was 1.7 out of 4. The highest mean score was only 1.8(registered nurse/midwives) and the lowest was 1.4 (medical assistants).

When cadres were asked to list the steps involved in active management of the third stage of labour (AMTSL), registered nurse/midwives scored highest (2.6 out of 4) and medical assistants lowest (2.2 out of 4).

On the question on how to assess women (diagnosis) who arrive with or develop heavy bleeding after birth — registered nurse/midwives performed best (4.9 out of 7), and community nurse/midwives least (2.9 out of 7).

Similarly, registered nurse/midwives scored highest (5.8 out of 8) amongst all cadres on the question about how to manage women with postpartum haemorrhage (PPH); medical assistants scored lowest (4.7 out of 8).

Medical assistants also scored lowest (2.9 out of 10) in response to the question on the management of retained placenta; registered nurse/midwives had the highest score (4.5 out of 10).

Midwives have a prominent role to play in reducing maternal due to direct obstetric causes; the low scores reported on many of the basic maternal health questions must be of concern to tutors and clinical managers alike. Training in the management of bleeding as well as in recording the progress of labour and FANC could be improved.

Table 7.02: Knowledge scores related to maternity care, by health worker cadre

	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community midwife (n=17)	Total (n=355)
Knowledge of focused antenatal care					
Average score (out of 6)	3.0	3.2	2.7	2.5	3.1
Knowledge of which pregnant women are at risk					
Average score (out of 8)	2.8	2.9	1.9	2.3	2.8
How do you know when a pregnant woman is in labour?					
Average score (out of 4)	2.9	3.1	3.2	2.5	3.1
What do you monitor when a woman is in labour?					
Average score (out of 9)	7.5	6.5	6.1	6.1	6.6
Where do you record this information?					
Average score (out of 4)	1.8	1.7	1.4	1.7	1.7
What are the steps of AMTSL?					
Average score (out of 4)	2.6	2.5	2.2	2.4	2.5
What do you look for when a woman arrives with or develops heavy bleeding after birth?					
Average score (out of 7)	4.9	3.9	3.6	2.9	3.9
What do you do when a woman arrives with or					

develops heavy bleeding after birth?					
Average score (out of 8)	5.8	5.1	4.7	5.1	5.1
What do you do when a woman has given birth and retained the placenta?					
Average score (out of 10)	4.5	4.3	2.9	3.5	4.2

7.02 Newborn care and morbidity

Table 7.03 below shows how cadres scored in their responses to questions about care for newborns. Tables 7.04A in Appendix A presents the questions and scores in more detail.

Delivery not only involves care for the mother but also for the baby. Most newborn deaths occur during the first week of life, and particularly in the first 48 hours.

Collectively, the cadres achieved their highest mean scores for their responses to the question about immediate newborn care: 6.4 out of 11 by registered nurse/midwives, 5.9 for enrolled nurse/midwives and medical assistants and 5.5 for community nurse/midwives. The most common responses by all cadres were "ensure baby is dry" and "baby kept warm (skin to skin)". The step mentioned least was "Evaluate/examine the newborn within the first hour."

With a mean score of 3.3 out of 9, cadres demonstrated inadequate knowledge of the signs and symptoms of infection or sepsis in newborns; scores ranged from 4.1 for medical assistants to 2.4 for community nurse/midwives.

Response to the question on the initial steps to take when newborn sepsis is suspected was poor. The mean scores were 2.7 out of 5 for medical assistants, 2.5 for registered nurse/midwives, 2.3 for enrolled nurse/midwives and 1.8 for community nurse/midwives. Most respondents proposed, "begin antibiotics" and "continue breastfeeding"; "keep airways open" was the least frequently given response.

With regards to care for low birth weight newborns, registered nurse/midwives scored highest, at 3.4 out of 6 and community nurse/midwives lowest at 2.1.

Table 7.03: Knowledge scores related to newborn care and morbidity, by health worker cadre

	Total (n=355)	Registered nurse/Mid	Enrolled nurse/	Medical Assistant (n=14)	Community nurse

		wife (n=25)	Midwife (n=299)		midwife (n=17)
The last time you delivered a baby, what immediate care did you give the newborn?					
Average score (out of 11)	5.9	6.4	5.9	5.9	5.5
Signs & symptoms of newborn infection					
Average score (out of 9)	3.3	3.6	3.3	4.1	2.4
Care for the infected newborn					
Average score (out of 5)	2.3	2.5	2.3	2.7	1.8
Care for the low birth weight newborn					
Average score (out of 6)	2.8	3.4	2.8	2.3	2.1

7.03 Unsafe abortion care and care for victims of rape

Complications arising from unsafe abortion are one of leading causes of maternal morbidity and mortality. The assessment probed respondents' knowledge about diagnosis and management, and counselling of women arriving at facilities with complications from unsafe abortions and also the management of victims of rape (Table 7.04 below and Table 7.05A in Appendix A).

The highest mean score for the question on the complications of unsafe abortion was 3.1 out of 5 for registered nurse/midwives; community nurse/midwives scored the lowest, at 1.8 out of 5.

Regarding what to do for a woman with an unsafe or incomplete abortion, registered nurse/midwives scored highest (4.9 out of 9) whereas community nurse/midwives scored lowest (3 out of 9).

Enrolled nurse/midwives and medical assistants scored highest (3.0 out of 6) on the information they would give women who have had an unsafe or incomplete abortion as compared to community nurse/midwives who scored the least (2).

On the question — "What do you do for the victims of sexual violence?" — The highest mean score was for medical assistants (4.4 out of 8) and the lowest mean score was for community midwife (2.5 out of 8).

Table 7.04: Knowledge scores related to abortion care and care for victims of rape, by health worker cadre

	Total (n=355)	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community midwife (n=17)
What are the complications of unsafe abortion?					
Average score (out of 5)	2.7	3.1	2.7	2.8	1.8
What do you do for a woman with an unsafe or incomplete abortion?					
Average score (out of 9)	4.3	4.9	4.3	4.4	3
What information do you give to women after unsafe or incomplete abortion?					
Average score (out of 6)	2.9	2.9	3.0	3.0	2
What do you do for the victim of sexual violence?					
Average score (out of 8)	3.7	4.1	3.7	4.4	2.5

7.04 Training and recent delivery of services

Interviewers took respondents through a list of services to discover if any of the topics were taught on-the-job or during pre-employment training and also to discover if respondents had provided any of the services in the previous three months. Tables 7.06A to 7.07A in Appendix A, offer an overview of these services and their delivery during the assessment period. More than 90 percent of the providers interviewed said they had been trained in one or more of the following topics:

- Provide FANC
- Use of partograph
- Do AMTSL
- Setting up infusions
- Checking for anaemia
- Administer IM or IV magnesium sulphate
- Suture episiotomy
- Suture vaginal lacerations
- Counsel women for family planning
- Resuscitate newborn with ambu bag and mask

- Manage newborn infection
- Sterile cord cutting and appropriate cord care

The services least frequently reported were perform D&C (8.7 percent), apply forceps (11.0 percent) and suturing cervical lacerations (11.8 percent). Most of those interviewed reported having provided a service they had been trained to do in the previous three months while some also reported providing a service for which they had not been trained.

7.05 Competency in newborn resuscitation

A series of questions in the questionnaire addressed knowledge of newborn resuscitation. The questions were directed at only those who had performed neonatal resuscitation or those who had been trained to do neonatal resuscitation (refer to Table 7.05 below and Table 7.08A in Appendix A).

Providers performed best to the question on care of the newborn without respiratory difficulties (2.1 out of 3). The poorest scores were in response to the question on the management of birth asphyxia (mean score 2.3 out of 6).

Registered nurse/midwives were the cadre most likely to be able to diagnose birth asphyxia (mean score 2.8 out of 4). Perhaps this can be partly explained by the results in Table 7.08A in Appendix A, which show that registered midwives were more likely to have received training in newborn resuscitation, both pre-service and in-service, than the other cadres. Medical assistants were least likely to be able to diagnose birth asphyxia (mean score 2.1 out of 4)

Table 7.05: Knowledge scores related to diagnosis and management of birth asphyxia among those with either training or experience in neonatal resuscitation, by health worker cadre

	Total (n=355)	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community midwife (n=17)
How to diagnose birth asphyxia					
Average score (out of 4)	2.6	2.8	2.7	2.1	2.6
Preliminary steps of neonatal resuscitation					
Average score (out of 6)	3.8	4.1	3.8	3.1	3.6
If resuscitating with bag & mask, what do you do?	3.2	4.1	3.2	2.6	2.9
Average score (out of 5)					

If baby is breathing and no respiratory difficulty, what do you do?	2.1	2.5	2.1	2.1	1.9
Average score (out of 3)					
If baby does not begin to breathe, or if breathing is < 30 per minute, what do you do?	2.3	2.7	2.3	2.1	1.8
Average score (out of 6)					

In summary, the knowledge and competencies of every health provider are crucial for high-quality care. In general, registered nurse/midwives performed better than other cadres; the performance of enrolled nurse midwives and medical assistants were similar for most questions but both tended to perform poorer than registered midwives.

Some critical gaps in the knowledge of maternal and newborn health service providers that need to be addressed were revealed in this assessment. It is important to strengthen the knowledge and skills of providers in the management of obstetric complications, care of the low-birth weight or sick newborns and post abortion care management.

CHAPTER EIGHT: Drugs, Equipment and Supplies

This chapter describes the availability of drugs, equipment, and supplies essential for the delivery of maternal and newborn health services in general and the performance of EmONC signal functions in particular. In addition, data in this chapter is weighted.

8.01 Management of drugs and supplies

All facilities assessed either had a pharmacy or a supply of medicines. All central hospitals, 96 percent of the district and other hospitals and 94 percent of community hospitals reported having up-to-date drug stock cards. Ninety-six percent of health centres reported having up-to-date drug stock cards (Table 8.01).

Around 70 percent of facilities with a pharmacy obtained their medicines, clinical consumables (gloves, syringes etc.) and infection prevention supplies from Central Medical Stores Trust (CMST); Around 23 percent from private sources, and about 6 percent from CHAM.

Table 8.01: Percentage of facilities with a supply of medicines; of these, percentage with drug registers; sources of drugs and supplies, by type of facility

	Central Hospital	District hospital	Community hospital	Other hospital	Health Centre	TOTAL
	%	%	%	%	%	%[1]
Among all facilities	(n=4)	(n=23)	(n=33)	(n=27)	(n=470)	(n=557)
Facility has pharmacy/supply of medicine	100 %	100 %	100%	100%	100%	100%
Among facilities with a pharmacy/supply of Medicine	(n=4)	(n=23)	(n=33)	(n=27)	(n=468)	(n=555)
Drug inventory register/stock card exists	100 %	100 %	100%	96%	100%	100%
Drug inventory register/stock card exists and is up-to-date	100 %	96%	94%	96%	96%	96%
Major source of medicine for facility						
CMST	100 %	100 %	52%	26%	71%	69%
Private pharmacy	0%	0%	45%	70%	20%	23%
CHAM	0%	0%	3%	4%	7%	6%

	Central Hospital	District hospital	Community hospital	Other hospital	Health Centre	TOTAL
	%	%	%	%	%	%[1]
Other	0%	0%	0%	0%	2%	1%
Primary source for gloves, syringes and medical supplies[2]						
CMST	100 %	100 %	52%	19%	72%	70%
Private pharmacy	0%	0%	45%	78%	21%	24%
CHAM	0%	0%	3%	4%	7%	6%
Other	0%	0%	0%	0%	1%	1%
Primary source for infection prevention supplies						
CMST	100 %	100 %	52%	22%	73%	71%
Private pharmacy	0%	0%	45%	74%	19%	23%
CHAM	0%	0%	3%	4%	6%	5%
Other	0%	0%	0%	0%	1%	1%
[1]*Percentages may not add up to 100 due to rounding; estimates based unweighted n = 365*						

When medicines are ordered

In the pharmacy, 67 percent of facilities reported that they ordered on schedule i.e. same time each week/month/quarter; 22 percent ordered whenever stocks reach reorder levels; 5 percent never order but shipments come and 4 percent ordered when they ran out altogether (Table 8.01A).

In the labour and delivery rooms and maternity wards, 56 percent of facilities reported that they ordered on schedule i.e. same time each week/month/quarter; 31 percent ordered whenever stocks reach reorder levels while 11 percent ordered when they ran out altogether.

Among facilities with an operating theatre, 79 percent reported that they ordered on schedule; 18 percent reported ordering medicines whenever stocks reached reorder levels; and 3 percent ordered whenever stocks ran out.

Common causes of delays in delivery of supplies

The common causes of delays in delivery of supplies to hospitals were administrative difficulties (36 percent), inadequate transport (22 percent), stock out at the central store (19 percent) and financial problems (14 percent) (See Table 8.02A in Appendix A).

Similarly, the common causes of delays in delivery of supplies to health centres were administrative difficulties (41 percent), inadequate transport (29 percent), stock out at the central store (18 percent) and financial problems (5 percent).

By sector, the commonest cause of delays in delivery of supplies in Government and CHAM sectors was administrative difficulties and inadequate transport while administrative difficulties were responsible for most delays in the private sector.

Accessibility of pharmacy and reporting of pharmacy-related items

Out of all facilities with a pharmacy or supply of drugs, 82 percent had access to drugs 24 hours a day, every day. All central and district hospitals had 24-hour access to drugs, as compared to 88 percent of community hospitals, 81 percent of other hospitals and 82 percent of health centres (Table 8.02).

All facilities used the first-expire-first-out drug supply management system and all of them had mechanisms to ensure that they would not distribute expired drugs.

Across all levels of the health system, at least 85 percent of health facilities protected their medicines from moisture, heat, and infestation. Hospitals generally reported better storage conditions than health centres. All district hospitals, 3 out of 4 central hospitals, 55 percent of community hospitals, 89 percent of other hospitals and 20 percent of health centres had at least one functioning refrigerator. Required drugs were refrigerated in 97 percent of facilities.

Table 8.02: Percentage of facilities reporting on pharmacy-related items, by type of facility (among facilities with a pharmacy/supply of drugs)

	Central Hospital	District hospital	Community hosp	Other hospital	Health Centres	Total
	(n=4)	(n=23)	(n=33)	(n=27)	(n=468)	(n=555)
	%	%	%	%	%	%
Pharmacy is accessible 24/7	100%	100%	88%	81%	82%	82%
"First-expiry-first-out" system in use	100%	100%	100%	100%	100%	100%
Mechanism in place to ensure expired drugs are not distributed	100%	100%	100%	100%	100%	100%
Drugs are protected from moisture, heat or infestation	100%	96%	97%	93%	85%	87%
Facility has at least 1 functioning refrigerator	75%	100%	55%	89%	20%	29%
Required drugs are refrigerated	100%	100%	100%	100%	95%	97%

Note: estimates based on unweighted n= 365						

Stock-out of some essential drugs

Table 8.03A in Appendix A gives information on the stock-out of three drugs: magnesium sulphate, oxytocin and dexamethasone.

Magnesium sulphate injection

Nationally, 10 percent of facilities reported stock-out of magnesium sulphate in the 12 months prior to the assessment. Out of those facilities reporting stock-out in the last 12 months, it was currently out of stock in 47 percent of facilities; it stocked out within last 1 month in 5 percent of facilities; it stocked out within last 3 months in 11 percent of facilities and it stocked out in more than 6 months in 37 percent of facilities.

Oxytocin

Nationally, 11 percent of facilities reported stock-out of oxytocin in the 12 months prior to the assessment. Out of those facilities reporting stock-out in the last 12 months, it was currently out of stock in 27 percent of facilities; it stocked out within last 1 month in 10 percent of facilities; it stocked out within last 3 months in 25 percent of facilities and it stocked out in more than 6 months in 35 percent of facilities.

Dexamethasone

Nationally, 60 percent of facilities never had dexamethasone in stock while 22 percent of facilities reported stock-out of dexamethasone in the 12 months prior to the assessment. Out of those facilities reporting stock-out in the last 12 months, it was currently out of stock in 53 percent of facilities; it stocked out within last 1 month in 8 percent of facilities; it stocked out within last 3 months in 8 percent of facilities and it stocked out in more than 6 months in 31 percent of facilities.

8.02 Availability of essential medicines

Tables 8.04A to 8.06A in Appendix A offers a snapshot of the proportion of facilities, by type, that stock drugs related to signal function performance of EmONC.

Availability of antibiotics

Nationally, 99 percent of facilities with a pharmacy or supply of drugs stocked antibiotics. Benzathine benzylpenicillin was the antibiotic most commonly stocked (97 percent of facilities); Cefotaxime injection (for newborn) and oral flucloxacllin (for newborn), were the least commonly

stocked antibiotics (stocked by only 5 and 9 percent of facilities respectively). In addition to Benzathine benzylpenicillin, other commonly stocked antibiotics were gentamycin injection (94 percent of facilities) and benzyl penicillin (92 percent of facilities). Health centres most commonly stocked Benzathine benzylpenicillin(97 percent of health centres).

Availability of anticonvulsants/sedatives

Nationally, 99 percent of facilities stocked anticonvulsants/sedatives. Magnesium Sulphate injection was the anticonvulsant most commonly stocked (90 percent of facilities) and the least stocked was phenytoin (13 percent of facilities).

Availability of antihypertensives

Only 35 percent of health facilities stocked antihypertensives. The most common antihypertensive stocked was methyldopa, available in 71 percent of facilities. The least common was nifedipine available in 58 percent of facilities.

Availability of oxytocics/prostaglandins

Nationally, 96 percent of facilities reported having oxytocics or prostaglandins in stock. The most commonly stocked form was oxytocin, available in 98 percent of facilities and the least stocked were ergometrine and prostaglandin E2 (available in only 1 and 12 percent of facilities respectively). Only 12% of facilities stocked misoprostol.

Availability of drugs used in emergencies

Nationally, 96 percent of facilities had some drugs used in emergencies. The most commonly stocked was adrenaline found in 86 percent of facilities and the least stocked was naloxone found in 2 percent of facilities; atropine was found in 30 percent while frusemide was found in 43 percent of facilities.

Table 8.05A presents the percentage of facilities stocking anaesthetics, analgesics, tocolytics, steroids, IV Fluids, antimalarial drugs and ARV drugs. Anaesthetics were stocked in 91 percent of facilities. Lignocaine/Lidocaine was the most commonly stocked anaesthetic, available in all facilities while halothane was only available in 13 percent of facilities;

Analgesics were available in 25 percent of facilities. Pethidine was the most commonly stocked analgesic, available in 80 percent of facilities; tocolytics were stocked in 33 percent of facilities. Indomethacin was the most commonly stocked tocolytic, available in 81 percent of facilities. Steroids were available in 29 percent of facilities and the most commonly stocked steroid was prednisolone, available in 80 percent of facilities.

IV fluids

The availability of five IV fluids was assessed: normal saline, ringer's lactate, dextrose, dextran and glucose (5%, 10%, 40% or 50%). IV Fluids were available in 98 percent of facilities. The most common IV fluid was glucose (96 percent of facilities). Dextran, stocked by 8 percent of facilities, was the least available IV fluid.

Antimalarials and Antiretroviral (ARV) drugs

Ninety-eight percent of facilities stocked antimalarial drugs. The most common was quinine dihydrochloride, found in 98 percent of facilities. Artemisium-based combination therapy (ACT) was available in 87 percent of facilities. Antiretrovirals (ARVs) were found in 98 percent of facilities.

Availability of contraceptives and other drugs

Table 8.03 below, presents the percentage of facilities that had selected contraceptives and other drugs and supplies in stock on the day of the survey. Eighty-five percent of facilities had oral contraceptives in stock, 76 percent had Jadelle, 82 percent had implanon, 86 percent had 3-monthly injectable and 18 percent had IUCDs in stock. Emergency contraception was available in 86 percent of facilities. Male condoms were widely available (94 percent of facilities), while female condoms were available in 85 percent of facilities.

Table 8.03 also presents the percentage of facilities stocking other drugs. Most of the facilities had ferrous sulphate fumarate (80 percent), oral rehydration solution (93 percent), gentian violet paint (89 percent) and tetanus toxoid (86 percent). The least stocked drugs in this category were sodium citrate (3 percent), Heparin (4 percent), anti RhO (D) immunoglobulin (8 percent) and anti-tetanus serum (9 percent).

Vitamin K, an important drug for the newborn was stocked in only 11 percent of facilities. It was available in 3 of 4 central hospitals, 48 percent of district hospitals, 30 percent of community hospitals, 44 percent of other hospitals and in only 6 percent of health centres.

Table 8.03: Percentage of facilities reporting on availability of contraceptives and other drugs by type of facility (among facilities with pharmacy)

	Central hospital	District hospital	Community hospital	Other hospital	Health Centres	Total
	(n=4)	(n=23)	(n=33)	(n=27)	(n=468)	(n=555)
Contraceptives (any)	100%	100%	67%	81%	89%	88%
Combined oral contraceptives	100%	100%	91%	86%	84%	85%
Jadelle	100%	96%	68%	73%	75%	76%
Implanon	100%	96%	77%	73%	82%	82%
3-months injectables	100%	96%	95%	86%	84%	86%

IUCDs	75%	87%	18%	50%	12%	18%
Male condoms	100%	96%	86%	82%	95%	94%
Female condoms	75%	91%	64%	77%	86%	85%
Emergency contraception	100%	100%	77%	77%	86%	86%
Other drugs						
Vitamin K (newborn)	75%	48%	30%	44%	6%	11%
Nystatin (oral) (for newborn)	75%	87%	88%	81%	80%	81%
Oral rehydration solution	75%	100%	100%	93%	92%	93%
Gentian violet paint	100%	100%	97%	89%	88%	89%
Ferrous sulphate or fumerate	100%	100%	97%	96%	76%	80%
Folic acid	75%	78%	58%	70%	29%	35%
Heparin	75%	4%	6%	33%	1%	4%
Magnesium trisillicate	75%	65%	73%	89%	63%	65%
Sodium citrate	25%	0%	3%	11%	2%	3%
Anti-tetanus serum	25%	22%	12%	26%	7%	9%
Tetanus toxoid	100%	83%	88%	93%	86%	86%
Anti Rho (D) Immune Globulin	50%	52%	15%	41%	3%	8%
Insecticide-treated bednets (ITN)	100%	78%	82%	70%	82%	81%

Note: estimates based on unweighted n = 365

8.03 Availability of infrastructure, supplies and medical equipment in labour, delivery and maternity

Materials for infection prevention

The availability of materials for infection prevention is presented in Table 8.04. The majority (more than 80 percent) of health facilities at all levels had soap, antiseptics, surgical and examination gloves, regular trash bin, and a puncture-proof sharps container. Among the disinfectants, chlorhexidine was widely available while ethanol and cidex, were less likely to be available at all levels of the health system. A total of 76 percent of facilities surveyed had a functioning incinerator at the time of the survey.

Table 8.04: Percentage of facilities with the indicated materials for infection prevention in the maternity area, by type of facility (among facilities that do deliveries)

	Central hospital	District hospital	Community hospital	Other hospital	Health Centre	Total
	(n=4)	(n=23)	(n=33)	(n=27)	(n=464)	(n=551)
Basic Items						
Soap	100%	87%	94%	93%	85%	86%
Antiseptics	75%	100 %	97%	96%	83%	85%
Sterile Gloves	100%	96%	100%	93%	87%	88%
Heavy duty gloves	75%	61%	82%	81%	53%	56%
Face mask	75%	100 %	100%	93%	95%	95%
Decontamination container	100%	100 %	97%	100 %	96%	96%
Bleach or bleaching powder	75%	83%	76%	96%	81%	81%
Covered contaminated waste trash bin	75%	91%	97%	100 %	90%	91%
Puncture-proof sharps container	75%	100 %	85%	89%	94%	93%
Autoclave with temperature and pressure gauges	75%	78%	55%	74%	30%	36%
Steam instrument sterilizer/pressure cooker, electric	50%	52%	42%	26%	26%	28%
Sterilization drum	50%	87%	70%	59%	48%	51%
Functioning incinerator	100%	100 %	88%	93%	72%	76%
Liquid spills or trash on the floor	25%	22%	12%	11%	14%	14%
Disinfectants and antiseptics						
Chlorhexidine	75%	100 %	82%	96%	68%	72%
Chlorine base compound	100%	96%	97%	93%	94%	94%
Ethanol	75%	52%	55%	63%	44%	46%
Polyvidone iodine	75%	9%	55%	74%	55%	54%
Cidex	75%	48%	21%	33%	14%	18%

Note: estimates based on unweighted n = 365

Guidelines and protocols

Out of the 551 facilities that offered delivery services, 55 percent had focused antenatal care guidelines, 69 percent had immediate newborn care guidelines, 31 percent had kangaroo mother care guidelines, 54 percent had family planning guidelines, 81 percent had guidelines for management of obstetric and newborn complications, and 62 percent had PMTCT (maternal and newborn dosing) guidelines (Table 8.05). Even though these services and practices are expected to be available in all facilities offering delivery services, only 23 percent of facilities had post-abortion care guidelines while only 31 percent of facilities had post-exposure prophylaxis, KMC and management & referral of sick newborns respectively.

Table 8.05: Percentage of facilities with indicated guidelines and protocols in the maternity ward, by type of facility (among facilities that do deliveries)

	Central hospital	District hospital	Community hospital	Other hospital	Health Centre	Total
	(n=4)	(n=23)	(n=33)	(n=27)	(n=464)	(n=551)
	%	%	%	%	%	%
Guidelines and Protocols						
Management of obstetric and newborn complications	75%	91%	91%	81%	79%	81%
Immediate newborn care	75%	83%	79%	89%	66%	69%
Kangaroo mother care	75%	70%	45%	44%	27%	31%
Focused antenatal care	50%	61%	70%	70%	53%	55%
Prevention of mother-to-child transmission of HIV (PMTCT) (maternal and newborn dosing)	50%	70%	67%	74%	61%	62%
Post-exposure prophylaxis (PEP)	50%	43%	45%	48%	28%	31%
Infection prevention	100%	87%	82%	78%	72%	74%
Post abortion care	50%	39%	30%	26%	21%	23%
Family planning	75%	65%	48%	52%	54%	54%
Management of pre-term labour	75%	74%	45%	59%	37%	40%
Management and referral of sick newborns	50%	35%	45%	41%	29%	31%
Neonatal resuscitation	75%	96%	85%	81%	73%	75%

Note: estimates based on unweighted n = 365

Supplies and equipment for newborns

Tables 8.06A-8.08A in the Appendix give the percentage of facilities with supplies and equipment in the maternity area. Newborn supplies and equipment are essential for the provision of quality newborn care services. Foetal stethoscopes were available in most health facilities (84 percent), thermometers were found in 88 percent of facilities and baby-weighing scales were found in 94 percent of facilities.

The neonatal resuscitation pack consists of essential basic equipment to ensure adequate resuscitation of the newborn: mucus extractor, infant face masks, ambu (ventilatory) bags, suction catheter, infant laryngoscope, endotracheal tubes, disposable uncuffed tracheal tubes, suction aspirator, and mucus trap for suction. While newborn bag and mask were found in 91 percent of facilities, only a quarter of facilities had paediatric examination tables and around half of the facilities had paediatric suction machines.

Basic diagnostic and resuscitation equipment and supplies for other procedures in the maternity area

Table 8.07A presents basic diagnostic and resuscitation equipment and supplies for other procedures in the maternity. Stethoscopes, blood pressure apparatus, pre-packed delivery sets, IV giving sets, IV infusion stands, and IV cannulae were present in more than 80 percent of health facilities. Well-equipped emergency trays were found in 33 percent of facilities while a lockable medication tray was found in 44 percent of facilities. Manual vacuum aspiration sets were found in 62 percent of facilities while vacuum extraction delivery sets were found in 46 percent of facilities.

Autoclave room equipment

The proportion of facilities with sterilization equipment is shown in Table 8.09A. Few facilities (30 percent) had a separate autoclave room. Only 23 percent of health centres had a separate autoclave room. Availability of an autoclave (with temperature and pressure gauges), hot air sterilizer (dry oven), and steam sterilizer was especially low in all facilities (less than 40 percent). Less than 30 percent had kerosene-fuelled steam instrument sterilizer/pressure cooker. Thirty percent of facilities had sterilization drum stand.

8.04 Availability of operating theatre and equipment

Table 8.10A focuses on the availability of operating theatres (OTs) and the availability of complimentary supplies and equipment. In all, 78 percent of hospitals had operating theatres and among those with operating theatre, 20 percent had a separate theatre for obstetric

patients. Seventy-five percent (or 3 out of 4) of the central hospitals, 4 percent of district hospitals, 12 percent of the community hospitals and 19 percent of other hospitals had a separate obstetric OT. Almost all hospitals with OTs had the full complement of basic surgery and abdominal sets.

Facilities with operating theatre that have anaesthesia equipment and supplies

The percentage of hospitals with an operating theatre that had anaesthesia equipment and supplies is shown in Table 8.11A. Overall, more than 70 percent of all facilities with OTs had the full complement of anaesthetic equipment and supplies. Of all anaesthetic items available, face masks, oropharyngeal airways, laryngoscopes with spare bulbs and batteries, endotracheal tubes, suction aspiration apparatus and anaesthetic vaporizers were the most common (90 percent of hospitals with OT).

8.05 Availability of laboratory equipment and supplies for blood transfusion

Table 8.12A presents the availability of laboratories and the availability of laboratory equipment and supplies. Out of all the facilities surveyed, only 37 percent had laboratories. Hospitals were more likely to have laboratories than health centres. Of the facilities with laboratories, only 78 percent had a set of laboratory guidelines.

The availability of basic haemoglobin testing equipment was ascertained, as anaemia and haemorrhage, are common in Malawi. This equipment is needed especially in lower-level facilities, to ensure early detection and prompt treatment of anaemia. Sixty-two percent of health facilities had haemoglobinometers.

Only 35 percent of facilities with laboratory had blood bank refrigerators. While almost all central and district hospitals had blood bank refrigerators, only 63 percent of rural/community hospitals, 78 percent of other hospitals and 6 percent of health centres had these refrigerators.

CHAPTER NINE: Case Reviews

9.01 Partograph review

The partograph has proven its usefulness as a tool to prevent prolonged labour, which is an obstetric complication in itself and can lead to others, such as foetal distress, obstructed labour and fistula. The Ministry of Health in Malawi recommends the use of partograph for all women who report to a health facility early in the first stage of labour (that is, with cervical dilatation of less than 8 centimetres), so that facility staff can monitor and manage the women's progress. Data collectors were instructed to select for review three recent partographs that had been filled out in the 12 months prior to facility visits. The following criteria governed their choices: The women monitored by means of the partographs had to be at term, less than 8 centimetres dilation on first vaginal exam, with vertex presentation and foetal heartbeat present on first exam, and without known obstetric complications (including multiple gestations).

Use of the partograph

All 365 facilities assessed that had performed deliveries in the previous 12 months were considered for this analysis and a total of 1,095 partographs were analysed, and out of these, 261 partographs were from hospitals and 834 were from health centres. Case review data in this chapter were not weighted.

Ninety-seven percent (353) of the 365 facilities in the assessment pool used partographs to manage labour. Ninety-nine percent of these 353 facilities used the composite WHO partograph; 1 percent used other types of partograph or a version from some other source. Use of partographs was more prevalent in hospitals (98 percent) than in health centres (96 percent), see Table 9.01, below. Only 24 percent of facilities using one of WHO's versions of the partograph had a written protocol for it. These written protocols took the form of booklets available to all birth attendants in the facility or posters that were displayed prominently in the labour ward. The absence of a protocol on partograph use in the majority of the facilities assessed suggests that HCW decide for themselves how to use the tool — a practice that can easily result in inappropriate management of labour.

Table 9.01: Use of the partograph among facilities that performed deliveries, by type of facility

	All facilities	Hospitals	Health centres
	%	%	%
	(n=365)	(n=87)	(n=278)
Used the partograph	97	98	96
Of those that used partograph*:	(n=353)	(n=85)	(n=268)
used modified WHO partograph	0	0	1
used simplified WHO partograph	0	0	0
used composite WHO partograph	99	97	99
used another type	1	1	0
Of those using WHO partograph*:	(n=352)	(n=85)	(n=268)
had management protocol	24	37	20
**Multiple responses allowed*			

Quality of use of the WHO partograph

Of the 1,095 partographs that were reviewed, 91 percent had the first dilation correctly charted and so met the inclusion criteria for further analysis of quality of use. The first entry of cervical dilation was more likely to be correct if labour had been monitored in a hospital (Table 9.02). In 93 percent of cases, women delivered before the action line on the partograph. This further shows the usefulness of the partograph in preventing prolonged labour. The fact that 24 percent of the partographs in health centres show deliveries occurring between the alert and action lines is of concern, because the standard recommendation is that women should be referred to a hospital as soon as the graph of their labour progress enters the area between the alert and action lines. It is even of greater concern that 6 percent of women in health centres delivered beyond the action line.

Table 9.02: Partograph assessment by progress of labour and augmentation, by type of facility

	Women with partographs in Hospitals	Women with Partographs in Health Centres or Clinics	Women with Partographs in All facilities
	%	%	%
First dilatation charted correctly on alert line	94	91	91

Among those charted correctly, delivered	(n=245)	(n=756)	(n=1001)
on or left of alert line	61	70	68
between alert and action line	29	24	25
on or beyond action line	11	6	7
used augmentation	2	1	2
Among those who used augmentation	(n=5)	(n=11)	(n=16)
on or left of alert line	20	82	63
used between alert and action lines	40	0	13
used on or beyond action line	40	18	25

Augmentation of labour is recommended only in facilities where caesarean delivery is possible. Given this recommendation, the use of augmentation in 1 percent of cases seen at health centres raises issues about the management of labour in these facilities, unless some of the women completed their labour in facilities that performed caesarean sections. The timing of the use of augmentation in all the facilities highlights the problem of "over-medicalization" of the process of labour. As many as 76 percent of the women who were given augmentation received it before their labour progressed to the action line on the partograph, which is contrary to recommendations and guidelines.

All versions of the partograph incorporate recommendations for the frequency with which examinations are performed on women in labour (Table 9.03). Even though the temperature of the woman in labour is expected to be taken every two hours, 39 percent of women went through labour without a single temperature measurement. Only 59 percent of all women had at least one blood pressure measurement during labour; more than half had their blood pressure taken once every four hours, in accord with international standards of care. Measurement of maternal pulse, which should be done every half hour, was performed less frequently than that. All women had at least one vaginal examination during labour; 39 percent had more than three. Analysis of the data collected suggests that vaginal examinations were carried out more frequently than they should have been.

Fifty-six percent of women had foetal heart observed at least hourly while 75 percent of women had contractions assessed at least hourly.

Table 9.03: Percentage distribution of women with partographs according to the number of times key measurements were taken and recorded, by hours between first exam and delivery

	All partographs	Hours between first exam and delivery			
		0-2.9	3-5.9	6-8.9	9+
	%	%	%	%	%
	(n=1001)[1]	(n=132)	(n=510)	(n=273)	(n=86)
Temperature (standard: every 2 hours)					
0	39	37	41	38	34
1	41	55	41	34	40
2	14	6	15	17	15
3+	6	2	4	11	12
Blood pressure (standard: every 4 hours)					
0	41	42	40	42	33.7
1	28	45	28	22	24.4
2	15	11	14	18	24.4
3+	16	2	18	18	17.4
Maternal pulse (standard: every half hour)					
0	37	39	38	37	28
1	31	44	30	26	31
2	14	14	13	14	20
3	7	2	6	11	9
4+	11	0	14	12	12
Vaginal exams (standard: every 4 hours)					
0	0	0	0	1	1
1	7	12	8	3	1
2	54	85	70	21	14
3+	39	3	21	76	84
Foetal heart rate observed at least hourly	56	53	60	60	58
Contractions assessed at least hourly	75	74	79	72	63
[1]Note: 94 partographs were excluded from all calculations due to missing information					

Foetal outcome

The majority (more than 90 percent) of the babies delivered were live births with normal APGAR scores. A total of 0.5 percent of partographs reviewed had no information on the foetal outcome. Less than 3 percent were stillbirths (Table 9.04).

Table 9.04: Percentage of partographs assessed by progress of labour, type of delivery and foetal outcome in all facilities

Components of management	According to the partograph, the woman delivered		
	During normal active phase (on or left of alert line)	Between alert and action line	On or beyond action line
	%	%	%
Total cases (n=997)[1]	68% (n=676)	25% (n=249)	7% (n=72)
Delivery type			
Caesarean	0.2	0.0	5. 6
vacuum extraction	0.3	0.0	4.2
SVD	99.4	98.8	84.7
Other (breech)	0.0	0.4	0.0
Augmented labour	1.3	0.8	7.0
Outcome for the baby			
live births	99.7	97.6	90.3
Stillbirth	0.3	2.4	2. 8
[1]*Four partographs with no information were excluded from the analysis*			

9.02 Caesarean review

The objective of the caesarean delivery review was to understand the principal clinical indications or causes for caesarean sections, to evaluate aspects of the quality of record- keeping, and, to the extent possible, to evaluate the quality of the procedure. Data collectors were asked to identify the three most recent caesarean deliveries performed in the last 12 months, where the woman and newborn had already been discharged. Data collectors retrieved patient records for these women and completed the caesarean reviews based on information contained in the records. Case review data were not weighted.

Sixty-four facilities (74 percent of hospitals) provided patient records for women who had received a caesarean delivery. All facilities provided the three case histories requested. While all central and district hospitals provided charts for review, only 85 percent of other hospitals and

42 percent of Rural/Community hospitals did so. Among facilities with cases, 52 percent came from the public sector, 6 percent from the private, for-profit sector, and the remaining 42 percent came from CHAM facilities. Women who lived in urban and rural areas were well represented in these case reviews (Table 9.05).

Seventy percent of the facilities performing caesarean sections were comprehensive EmONC facilities (having performed all nine of the signal functions in the previous three months) and 28 percent were partially functioning (having performed in the previous three months seven or eight signal functions while 2 percent were from non-functioning EmONC facilities.

Table 9.05: Percentage distribution of hospitals where caesarean deliveries were reviewed, according to number of cases reviewed, type of facility, sector, and EmONC classification (n=64)

	n	%
Number of caesareans reviewed		
1 Chart	0	0%
2 Charts	0	0%
3 Charts	64	100%
Type of facility		
Central Hospital	4	100%
District Hospital	23	100%
Rural/Community Hospital	14	42%
Other Hospitals	23	85%
Sector		
Government	33	52%
Private for-profit	4	6%
CHAM	27	42%
Location		
Urban	37	58%
Rural	27	42%
EmONC classification		
Non-functional	1	2%
Partially functioning	18	28%
Fully Functional	45	70%

In these 64 facilities, 192 caesarean deliveries were reviewed. The mean age of women whose caesareans were reviewed was 25 years, and the average parity was 2. Most of the women had not been referred, presumably self-referred (Table 9.06, below).

Table 9.06: Percentage distribution of women whose caesarean deliveries were reviewed according to age, parity, residence, and referral status (n=192)

Characteristics	%
Age (in years)	
<20	22%
20-24	34%
25-29	21%
30-34	11%
35-39	8%
≥40	3%
Unknown	1%
Average age (in years)[1]	25 years
Parity	
0	14%
1	32%
2-3	35%
4-5	11%
≥ 6	5%
Unknown	4%
Average parity	2
Referral status	
Referred	30%
Not referred	70%

[1]Cases where age or parity was unknown were not included in the averages.

Table 9.07 shows that almost two-thirds of the indications for caesareans were related to maternal complications and the remainder were related to complications affecting the foetus. Documentation of indications was reasonably complete – this was missing in the charts of only 1 percent of the women. The most common indications for caesarean delivery across all sectors were cephalo-pelvic disproportion (CPD)/ prolonged labour (40 percent), foetal distress (17 percent) and previous scar (15 percent). In the private, for-profit sector, previous scar was the indication for 31 percent of caesareans reviewed, but in other sectors it was the indication for 13 percent of caesareans reviewed.

Less than a fifth of caesareans were classified as elective and almost three-quarters were emergency. Documentation on whether caesareans were elective or emergency was rather poor; 11 percent of all cases reviewed lacked that information.

In all facilities, partographs were used in at least 70 percent of cases reviewed. For 2 percent of all caesareans data collectors were not able to determine whether a partograph had been used.

Table 9.07: Percentage distribution of women whose caesarean deliveries were reviewed according to the indication for surgery, type of caesarean, type of anaesthesia, type of clinician, and use of partograph among emergency caesareans, by sector

	All Cases	Cases in Public Sector	Cases in Private for-profit	Cases in CHAM
	%	%	%	%
Among all women whose caesareans were reviewed	(n=192)	(n=99)	(n=13)	(n=80)
Indication for caesarean:				
Maternal Indications				
CPD/Prolonged labour	40%	41%	8%	43%
Placenta previa/APH	1%			1%
Placenta abruption	1%	1%		
Failed induction	1%	1%		1%
Previous scar	15%	13%	31%	13%
Eclampsia/Severepre-eclampsia	6%	2%	8%	10%
Foetal Indications:				
Foetal distress	17%	20%	8%	13%
Breech with footling	6%	7%		4%
Multiple gestation	1%	1%	8%	
Cord prolapse	1%	2%		
Other	12%	11%	31%	16%
No information	1%		8%	
Type of caesarean delivery				
Emergency	72%	8%	23%	69%
Elective	17%	11%	77%	15%
No information	11%	8%		16%
Among women whose caesarean was an emergency	(n=138)	(n=80)	(n=3)	(n=55)
Partograph used	72%	79%	33%	64%
Partograph not used	26%	19%	67%	35%
No information	2%	3%	0%	2%

Whether a caesarean had been an emergency or elective procedure varied by indication. High rates of emergency caesareans were found among women with CPD, previous scar, foetal distress and severe pre-eclampsia/eclampsia. High elective rates were found among women with

a previous scar or in the group of "other" women composed of older primigravidae, women scheduled for tubal ligation, and other procedures (Table 9.08).

Table 9.08: Number of women whose caesareans were reviewed and their indications by type of caesarean and whether partograph was used

	Type of Caesarean				Partograph Used		
Indication for caesarean:	Emergency	Elective	No information	Total	Yes	No	No information
	n=138	n=33	n=21	n=192	n=117	n=68	n=7
Maternal Indications	74	31	11		51	59	6
CPD/Prolonged labour	64	2	10	76	66	9	1
Placenta previa/APH	1			1		1	
Placenta abruptio	0			0		1	
Maternal distress	1			1			
Failed induction	1	1		2		2	
Previous scar	13	13	1	27	10	15	2
Eclampsia/Severep re-eclampsia	9		2	11	6	5	
No information	0			0			
Foetal Indications:							
Foetal distress	28		3	31	24	5	2
Breech with footling	6	3	2	11	4	7	
Cord prolapse	2			2	1	1	
Multiple gestation	0	1		1		1	
Other	13	12	3	28	6	20	2
No information		1		1		1	

Table 9.01A in Appendix A examines the differences by sector in the time lapse between diagnosis and surgery. Unfortunately, the time of diagnosis and time of surgery were missing in almost half of all case files. For 83 cases where there was adequate documentation on time lapse, the data show that in at least 60 percent of cases, caesarean section was performed more than an hour after making initial diagnosis, which is of concern as some indications such as post-partum haemorrhage may warrant surgery to be performed immediately if the lives of both the mother and baby are to be saved.

The data show that women spent an average of 4.5 days in the hospital after a caesarean delivery. The length of stay was more likely to vary with the presence of infection than by type of a

caesarean. Usually, the expectation is that presence of wound infection prolongs hospital stay, however, the study finding was contrary to this expectation. Women with cord prolapse, placenta praevia and those with previous scar remained hospitalized longer than women with other complications.

9.03 Maternal death review

Data collectors were asked to identify in facility registers maternal deaths that had occurred over the previous 12 months (see Table 9.09, below). A maternal death is defined as the death of a woman during pregnancy or within 42 days of the completion of pregnancy from any cause related to or aggravated by the pregnancy or its management. For the three most recent deaths, data collectors asked for clinical records such as the patient chart, the partograph, and any other information that might provide information about the factors contributing to institutional maternal deaths.

A total of 79 facilities provided records for at least one maternal death and data collectors reviewed files on 143 deaths (death review data were not weighted). (Not all facilities provided records for all three deaths, either because three deaths had not occurred at the facility or because they were unable to locate the patient records). Eighty-seven percent of the deaths took place in hospitals while the remainder was in health centres.

Table 9.09: Number of facilities where maternal deaths were reviewed and number of maternal deaths reviewed, by facility type

	Hospitals	Health Centres	Total
	n	n	n
Number of health facilities where maternal death was reviewed	63	16	79
Total number of deaths reviewed	124	19	143

Seventy-one percent of deaths reviewed were due to direct obstetric causes, 22 percent were due to indirect causes, and in 7 percent of cases, cause of death was not recorded (Table 9.10). The most common direct causes were haemorrhage, severe preeclampsia/eclampsia and prolonged/obstructed labour. This is consistent from the data that emerged from the facility case summaries, where 23 percent percent of maternal deaths were attributable to postpartum haemorrhage, 16 percent to severe preeclampsia/eclampsia and 4 percent to prolonged/obstructed labour (Table 3.16 in Chapter 3).

Table 9.10: Numeric and percentage distribution of women whose deaths were reviewed according to primary cause of death[1]

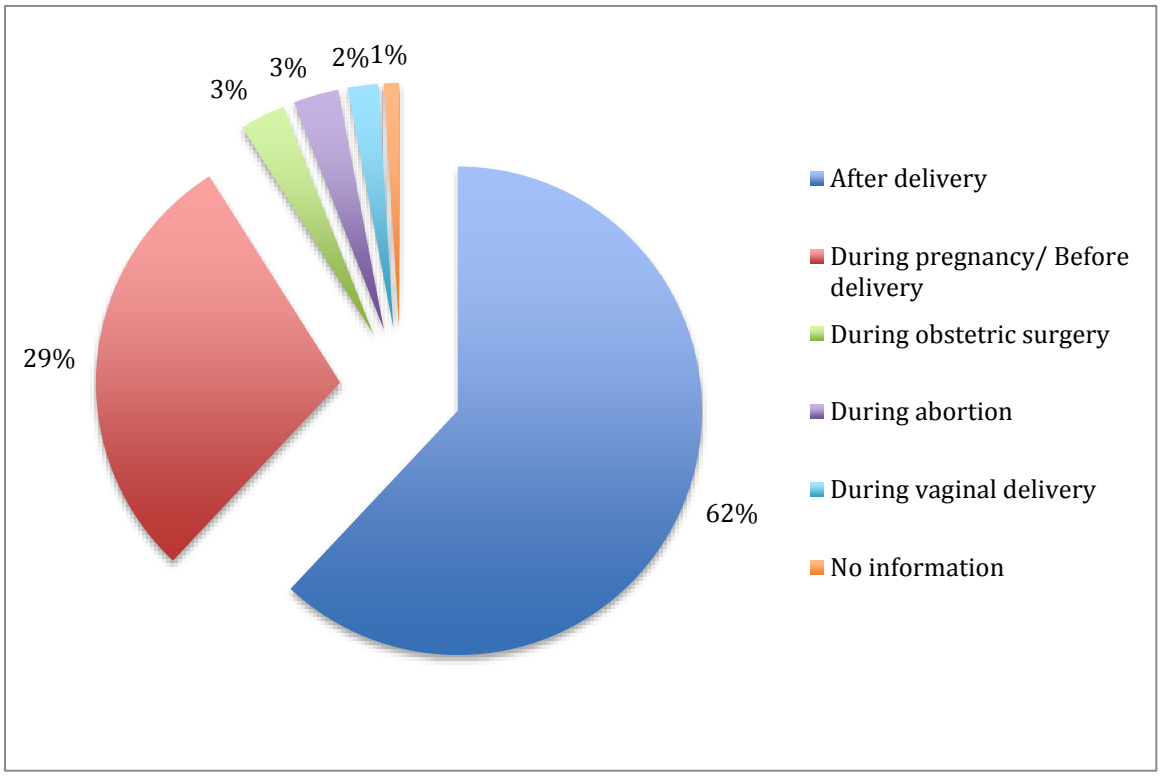
	Deaths in hospitals (n=124)		Deaths in health centres (n=19)		All reviewed deaths (n=143)	
	%	n	%	n	%	n
Direct causes[2]	71.8%	89	68.42%	13	71.33%	102
Haemorrhage	44.9%	40	76.9%	10	49.0%	50
Ruptured uterus	3.4%	3	0.0%	0	2.9%	3
Eclampsia/Pre-eclampsia	23.6%	21	15.4%	2	22.5%	23
Sepsis	24.7%	22	0.0%	0	21.6%	22
Abortion complications	1.1%	1	0.0%	0	1.0%	1
CPD/Prolonged or obstructed labour	0.0%	0	7.7%	1	1.0%	1
Complications of caesarean	2.25%	2	0.00%	0	1.96%	2
Retained placenta	0.00%	0	0.00%	0	0.00%	0
Indirect causes	24.19%	30	5.26%	1	21.68%	31
Anaemia	36.67%	11	100.00%	1	38.71%	12
Malaria	26.67%	8	0.00%	0	25.81%	8
HIV/AIDS	13.33%	4	0.00%	0	12.90%	4
Hepatitis B	3.33%	1	0.00%	0	3.23%	1
Respiratory failure	3.33%	1	0.00%	0	3.23%	1
Pneumonia	3.33%	1	0.00%	0	3.23%	1
Severe pulmonary oedema	3.33%	1	0.00%	0	3.23%	1
Cardiac failure/Cardiac arrest	10.00%	3	0.00%	0	9.68%	3
No cause listed	4.0%	5	26.3%	5	6.99%	10
Total	86.71%	124	13.29%	19	100.00 %	143

[1]Causes of death as recorded in the records.

[2]If the woman died due to direct and indirect causes, her death was classified as due to direct cause.

Figure 9.01 shows that the majority of women (62 percent) whose deaths were reviewed died after delivery (89 of 143 deaths) and PPH and haemorrhage accounted for half of those post-delivery deaths, sepsis accounted for a quarter and severe preeclampsia/eclampsia accounted for a fifth of those deaths (Table 9.02A).

Fig 9.01: Timing of death in maternal death cases reviewed (n=143)



The average age of women whose deaths were reviewed was 27. Forty-five percent of women who died were between the ages of 20 and 29. From the 90 cases reviewed where there was a delivery, 61 percent of women delivered in hospital, 17 percent at a health centre (or en route to a health centre) while 17 percent were home deliveries. Sixty-one percent of the women whose deaths were reviewed had a vaginal delivery while 32 percent delivered by caesarean section. Forty-six percent of women delivered normal live births. The rest of the newborns were either in distress (7 percent), or died (30 percent). However, it is important to note that 17 percent of records reviewed did not have the newborn's condition (Table 9.11).

Table 9.11: Percentage distribution of women whose deaths were reviewed according to their age, location of the delivery, type of delivery, and condition of newborn

	Deaths reviewed
	%
Among maternal deaths	(n =143)
Age of woman	
<20	12
20-24	25
25-29	20

30-34	20
35-39	16
≥40	5
Missing	2
Mean age (in years)	27
Among those with a delivery	(n =90)
Location of delivery	
At home	17
On the way to health centre	6
In a health centre	11
In a hospital	61
No information	6
Type of delivery	
Vaginal	61
Assisted with forceps or extractor	0
Caesarean	32
Destructive delivery	0
Laparotomy	3
No information	3
Condition of the newborn	
Normal live birth	46
Live birth with distress	7
Dead	30
One alive one dead	1
No information	17

Sixty-six percent of the deaths reviewed occurred in comprehensive EmONC facilities and another 19 percent in partially functioning EmONC facilities (that is, hospitals performing seven or eight of the signal functions). Unlike what we will see later in the neonatal death reviews (Module 10), many of the women who died (50 percent) were referred into the facility from somewhere else — most from a health centre (75 percent) and 14 percent from another hospital. In close to half of the deaths reviewed, a delay in arrival at the facility was considered a contributing factor to the woman's death while in 42 percent of cases, a delay in transfer to the appropriate level of care was considered a contributing factor (Table 9.12).

Table 9.12: Percentage distribution of women whose deaths were reviewed, according to EmONC classification of the facility where a woman died, referral status, day of week that death occurred, and factors contributing to the death

	%
Among all women whose deaths were reviewed	(n =143)
EmONC classification	
Comprehensive EmONC (CEmONC)	
Fully functioning CEmONC	66
Partially functioning CEmONC	19
Non functioning CEmONC	1
Basic EmONC	
Fully functioning BEmONC	1
Partially functioning BEmONC	8
Non functioning BEmONC	4
Referral status	(n =143)
Referred in	50
Not referred	48
No information	2
Among those referred	(n =72)
Referred from:	
Health post/health extension worker	6
Health centre	75
Hospital	14
Private hospital/private clinic	1
Other	3
No information	1
Day of the week of death woman died	
Weekday	65
Weekend	24
No information	11
Factors contributing to death	
Delay in arrival to health facility (%)	48
Delayed transfer to appropriate level of care (%)	42
Delay due to lack of supplies (%)	32
Delay due to absence or slowness of human resources (%)	28
Delay in correct diagnosis	22

9.04 Neonatal death review

Data collectors were asked to identify the last three neonatal deaths that had occurred in the facility in the previous 12 months. A neonatal death is defined as the live birth of an infant who dies before reaching the age of 28 days. Neonatal deaths include babies born in a facility who died before discharge; babies discharged and readmitted; and babies who were delivered at home, brought in for treatment, and died in the facility before reaching the age of 28 days.

A total of 408 neonatal deaths were reviewed from 174 facilities (death review data were not weighted). Seventy percent of the deaths occurred in a public facility, which is not surprising given that there are many more public facilities than private ones. Almost 40 percent of the deaths occurred at fully or partially functioning comprehensive EmONC facilities while a quarter of the deaths took place at fully or partially Basic EmONC facilities (Table 9.13).

Table 9.13: Percentage distribution of facilities where neonatal death reviews were performed according to the number of cases reviewed, type of facility, sector, EmONC classification, and location (n=174)

Facility Characteristics	n	%
Number of cases reviewed		
1	45	26
2	24	14
3	105	60
Type of facility		
Central Hospital	4	100
District Hospital	23	100
Rural/Community Hosp	28	85
Other Hospital	17	63
Health centre	102	37
Sector		
Public	122	70
Private (for profit)	3	2
CHAM	49	28
EmONC classification		
Comprehensive		
Fully functioning	41	24
Partially functioning CEmONC	22	13
Non-CEmONC	9	5
Basic		
Fully functioning	7	4

Partially functioning BEmONC	36	21
Non-BEmONC	59	34
Location		
Urban	35	20
Rural	139	80

Table 9.14 addresses maternal characteristics and information about the delivery. The average age of the mother was 24 years (note that 12 percent of cases reviewed did not have information on the mother's age). Most of the mothers (95 percent) survived the delivery. In 85 percent of the deaths reviewed, the baby was born in the same facility where it died. Six percent of the infants whose deaths were reviewed had been delivered at home either with or without a traditional birth attendant or en route to the health facility. In 7 percent of cases, the location of delivery was in another health facility to the facility where the baby died. Among infants who had been referred (n=349), the indications for referral were more likely to be obstetric or maternal than foetal (during delivery) or newborn-related (after delivery).

The neonatal death reviews also collected information on maternal characteristics (such as the number of deliveries, live births, stillbirths, and antenatal care visits made during the index pregnancy), but with a lot of missing this information.

Table 9.14: Percentage distribution of neonatal deaths reviewed according to maternal and delivery characteristics (n=408)

Maternal & Delivery Characteristics	n	%
Age (in years)		
under 20	105	26
20-24	106	26
25-29	59	15
30-34	51	13
35+	37	9
Unknown	50	12
Average age (in years)[1]	24.3	N/A
Maternal survival status		
Alive	386	95
Died	1	0.2
Unknown	21	5
Location of delivery		
At home	12	3
En route to facility	14	3

In this facility	348	85
Another facility	29	7
No information	5	1
Type of delivery		
SVD	308	76
Breech	34	8
Instrumental Vaginal Delivery	22	5
Caesarean	32	8
No information	12	3
Mother or newborn referred from another facility?		
Yes	349	86
No	59	14
Unknown		
[1]Cases where age was unknown were not included in the average.		

Table 9.15 examines characteristics of the newborn. Seventy-one percent of the deaths reviewed occurred in the first 24 hours of life and another quarter within the first week. Globally, half of neonatal deaths occur in the first 24 hours and three-fourths during the first week of life, but this distribution includes non-institutional deaths.

Around half of the newborn deaths were babies born at term, 41 percent were preterm and approximately half were of normal birth weight. No birth weight had been recorded in the files for 11 percent of the deaths. The two most common causes of death were asphyxia (52 percent), prematurity (26 percent) and neonatal sepsis (6 percent). However, for 6 percent of newborn deaths reviewed, no information had been recorded on the cause of the death —further evidence of the need for improved record-keeping. No attempt was made to analyse apgar scores at 1 or 5 minutes owing to large percentage of missing data.

Table 9.15: Percentage distribution of neonatal deaths reviewed according to age at death, gestation, gestational age at birth, birth weight, and cause of death (n=408)

Newborn Characteristics	n	%
Age at death		
less than 24 hours	289	71
24 hrs up to 7 days	109	27
7 days to 28 days	10	3
Gestation		
Singleton	358	88
Multiple gestation	50	12

No information	Drop row	
Gestational age at birth		
Preterm (<37 weeks)	167	41
Term (≥ 37 weeks and < 42 weeks)	210	51
Post term (≥ 42 weeks)	0	0
No information	31	8
Birth weight		
< 1500g	52	13
1500 - 1999g	65	16
2000- 2499g	37	9
≥ 2500g	211	52
No information	43	10
Cause of death		
Asphyxia	211	52
Congenital Malformation	11	3
Preterm/LBWT	105	26
Small for gestational age	3	1
Trauma	6	2
Neonatal Sepsis	25	6
Meningitis		
LBW	4	1
Pneumonia due to aspiration	2	0.5
Syndrome of meconium aspiration	6	1.5
Cyanosis	1	0.2
Convulsions	1	0.2
Kernicterus		
fever of unknown cause		
Diarrhoea	1	0.2
Hypothermia	1	0.2
Hypoglycaemia	1	0.2
Malaria		
sick newborn (cause unknown)		
Neonatal tetanus	1	0.2
Other	5	1.2
No information	24	6

Table 9.16 looks at the cause of death in terms of the death's timing and location. Again, one must take into consideration lack of information – for example, among neonatal deaths that occurred at health centres, the cause of death was not recorded for 9 percent of cases.

Among very early neonatal deaths (less than 24 hours after delivery), 57 percent occurred due to asphyxia while almost a third were due to prematurity. Among infants who survived the first day but died within the first week, 41 percent of the deaths were due to asphyxia while 24 percent

were due to prematurity— conditions that together account for two-thirds of the total deaths. Among those who died between the ages of one week and 28 days, 70 percent of the deaths were due to 'other' causes other than the 3 specified causes.

The most common cause of death among newborns dying in private facilities was preterm/low birth weight and 'others' (40 percent), followed by 'asphyxia (20 percent). Cause of death was more likely to have been recorded at hospitals than at any of the other facility types.

Table 9.16: Percentage distribution of cause of death, by age at death and by sector and facility type where death occurred

	Cause of neonatal death					Total number of reviewed neonatal deaths
	Asphyxia	Neonatal sepsis	Preterm / Low birth weight	Other	No information	
	%	%	%	%	%	
Age at death						
Less than 24 hours	57.1%	0.0%	28.4%	8.3%	6.2%	289
24 hrs up to 7 days	41.3%	0.0%	23.9%	29.4%	5.5%	109
7 days to 28 days	10.0%	10.0%	10.0%	70.0%	0.0%	10
Sector						
Government	57.8%	0.0%	25.8%	10.5%	5.9%	287
Private (for profit)	20.0%	0.0%	40.0%	40.0%	0.0%	5
CHAM	37.9%	0.9%	28.4%	26.7%	6.0%	116
Type of facility						
Central hospital	8.3%	0.0%	50.0%	41.7%	0.0%	12
District Hospital	63.8%	0.0%	20.3%	10.1%	5.8%	69
Rural/ Community hospital	52.9%	1.5%	23.5%	19.1%	2.9%	68
Other hospital	35.4%	0.0%	27.1%	37.5%	0.0%	48
Health centre	53.6%	0.0%	28.4%	9.5%	8.5%	211

Table 9.17 provides additional details on the types of complications reported for each newborn death, by age at death. Note that multiple responses were permitted. Overall, the four most commonly reported complications were asphyxia (reported in 62 percent of neonatal deaths),

prematurity (37 percent) and respiratory distress from pneumonia, meconium aspiration, cyanosis or an unspecified cause (21 percent) and neonatal sepsis (7percent).

However, it is clear that the reported complications differed by age at death. For example, among very early newborn deaths (within 24 hours), asphyxia was the predominant complication (reported in 66 percent of very early newborn deaths), low birth weight accounted for 37 percent of deaths and respiratory distress was reported for 11 percent of deaths.

Among newborns that survived the first 24 hours but died during the first week, asphyxia was still the most common complication, followed by low birth weight respiratory distress, sepsis, and fever. For newborns who survived the first week, the most common complications were low birth weight, neonatal sepsis, respiratory distress and fever.

Table 9.17: Percentage of reviewed neonatal deaths with newborn complications, by age at death

Newborn Complications[1]	All cases	Less than 24 hours	24 hrs up to 7 days	7 to 28 days
	(n=408)	(n=289)	(n=109)	(n=10)
	%	%	%	%
Asphyxia	62.3	65.7	56.9	20.0
Congenital malformation	4.9	4.2	6.4	10.0
Low birth weight preterm or small for gestational age	36.8	37.0	36.7	30.0
Low birth weight – unspecified	2.0	2.1	1.8	0.0
Trauma due to delivery	2.0	2.1	1.8	0.0
Neonatal sepsis	7.1	1.4	20.2	30.0
Meningitis	0.0	0.0	0.0	0.0
Respiratory distress – pneumonia	2.2	0.0	8.3	0.0
Respiratory distress - meconium aspiration	5.2	3.5	9.2	10.0
Respiratory distress – unspecified	5.2	3.1	11.0	0.0
Respiratory distress –cyanosis	8.1	4.8	15.6	20.0
Convulsions	1.5	0.4	3.7	10.0
Jaundice	1.0	0.4	2.8	0.0
Kemicterus	0.5	0.0	1.8	0.0
Fever	5.9	2.1	14.7	20.0
Diarrhoea	0.5	0.0	0.9	10.0
Hypoglycaemia	2.2	1.0	5.5	0.0
Malaria	0.3	0.0	0.9	0.0
Sick newborn (cause unknown)	4.4	3.5	5.5	20.0
Other	2.0	1.4	1.8	20.0
None noted	5.6	5.5	5.5	10.0

[1]Multiple responses possible

Table 9.18 looks at the relationships between maternal or foetal complications and the causes of neonatal death. Asphyxia was the primary cause of newborn death among women who suffered from haemorrhage (antenatal or postpartum), obstructed or prolonged labour, and foetal distress. Preterm/low birth weight was the primary cause of neonatal death among newborns whose mothers suffered from preterm labour, APH and HIV-positive status.

Table 9.18: Number of neonatal deaths reviewed where a maternal or foetal complication was reported, by cause of newborn death

Maternal or Foetal Complication[1]	Total number of neonatal deaths reviewed	Cause of death				
		Asphyxia	Neonatal sepsis	Preterm / low birth weight	Others	No info
	n	n	n	n	n	n
Antepartum haemorrhage	5	1	0	4	0	0
Postpartum haemorrhage	6	5	0	0	1	0
Severe pre-eclampsia	4	1	0	2	1	0
Eclampsia	0	0	0	0	0	0
Postpartum infections/sepsis	2	2	0	0	0	0
Premature rupture of membranes (>24 hrs)	5	1	0	2	2	0
Obstructed labour	10	7	0	0	3	0
Prolonged labour	43	25	1	6	9	2
Preterm labour	50	7	0	40	3	0
Cord prolapse	1	1	0	0	0	0
Severe foetal distress	7	6	0	1	0	0
Other	17	11	0	3	3	0
Mother was HIV+	15	5	0	9	1	0
Mother tested positive for syphilis	1	0	0	1	0	0
Mother had malaria	1	0	0	1	0	0
Mother had TB	2	1	0	0	1	0
No known complication	171	104	0	29	28	10
No information	87	40	0	22	13	12

[1] Multiple complications possible

[2] Other complications included one of each of the following cases: 3 previous caesareans, anaemia, failed induction, fever, home delivery, malpresentation, severe malaria, and slept on baby

CHAPTER TEN Conclusion and recommendations

Maternal and newborn mortality indices for Malawi are unacceptably high and the government of Malawi is committed to reducing maternal and newborn mortality. Based on the findings of this survey, considerable investments need to be made to improve public health infrastructure, and equipment and supplies to support the delivery of maternal and newborn health services.

The supply of drugs for maternal and newborn health care, especially those on the Essential Medicines List is inadequate and compounded by frequent stock-outs that health facilities blame on transportation delays and administrative difficulties. Provision of equipment and clinical guidelines for the care of the newborn, especially the preterm or sick newborn, also needs urgent attention.

It is important to develop strategies to decongest further maternal health services in central and district hospitals by strengthening the capacity of rural/community hospitals and health centres, where most deliveries take place and which are nearer to most of the population.

Lack of basic emergency obstetric and neonatal care (BEmONC) facilities contributes to congestion at district hospitals with women whose care could be safely and promptly handled at lower lever facilities that are fully functional at the BEmONC level. Currently, Malawi has 148 health centres that missed one or two basic signal functions. Strengthening these to fully functioning status will result in Malawi having the recommended number of BEmONC sites.

The inability of health facilities to perform manual removal of placenta, removal of retained products and assisted vaginal delivery severely limits the capacity of health facilities to save lives of women and children when complications occur and it places an undue burden on the referral system. All nurse/midwives and clinicians should be mentored and supported to perform all EmONC signal functions for a BEmONC facility.

Midwives in lower level facilities (i.e. health centres) could be discouraged from performing certain signal functions such as assisted vaginal delivery in view of lack of ambulances on site. This has resulted in many health centres not performing such life-saving interventions.

Postpartum haemorrhage, postpartum sepsis and severe pre-eclampsia/eclampsia are the highest contributors to maternal mortality in Malawi. It is important to target these conditions in all pre-service and in-service training for all health care workers.

The capacity for cervical cancer screening and treatment and repair of fistula is limited in health facilities. A comprehensive national policy or strategy for cervical cancer screening is therefore needed.

Provision of ambulatory and in-patient KMC and corticosteroids for pregnant mothers at risk of preterm labour remain limited in health facilities conducting deliveries. There is the need for more rapid rollout to other health facilities.

Recommendations

EmONC Indicators

1. Strengthen the capacity of the 148 partially functioning BEmONC facilities to be fully functional BEmONC facilities and connecting them operationally to CEmONC facilities.
2. Strengthen the 28 partially functioning CEmONC facilities to be fully functioning CEmONC facilities.
3. Strengthen the referral system from BEmONC facilities to CEmONC facilities through provision of motor vehicle ambulances in targeted health centres and improvements in road infrastructure.
4. Emphasize the use of best practice guidelines including the use of oxytocin and magnesium sulphate.
5. Provide effective communication systems for referral through provision of mobile phones and airtime supported by health facilities
6. Develop a plan to equip and train staff at health centres to perform all basic signal functions including assisted vaginal delivery, manual removal of placenta and removal of retained products of conception.

Other essential MNH services

1. Strengthen ambulatory and in-patient KMC in all facilities
2. Train in the provision of corticosteroids to pregnant mothers at risk of pre-term labour
3. Ensure the provision of Family planning commodities and supplies at all facility levels including rural/community hospitals and health centres.
4. Develop and implement a comprehensive national policy or strategy for cervical cancer screening.
5. Increase training of clinicians and support staff in fistula repair and support their clinical practice.
6. Strengthen community-based MNH services.

Infrastructure and Referral for MNH

1. Ensure 24-hour water and electricity supply at health facilities at all times.
2. Initiate/strengthen community mobilisation actions such as mobilising communities to devise back-up funds or plans for emergency transport and Central communities about the danger signs during pregnancy, childbirth, the postpartum period and for the newborn.

3. Improve patient care/referral management, the logistics management information system (LMIS), and the health management information system (HMIS).
4. Improve record-keeping and documentation at all levels (Central, district, health centres).

Human Resources

1. Train and recruit nurses/midwives, clinical officers and medical officers and plan their subsequent deployment to facilities where demand exceed supply.
2. Re-deploy excess staff from central hospitals to lower level facilities based on need.
3. Develop health human resources management framework with benchmarks for refresher training and rotation of staff from heavy workload facilities to low workload facilities and vice-versa.
4. Conduct refresher trainings of clinicians and midwives. Major topics to include:
    a. Early newborn care
    b. Care of the sick newborn including low birth weight and preterm babies
    c. BEmONC training – including manual vacuum aspiration (MVA), vacuum delivery and manual removal of the placenta
    d. Post-abortion care and management of the victims of gender-based violence
5. Improve staff retention and motivation.
6. Improve the human resources management information system (HRMIS)

Drugs, Equipment and Supplies

1. Carry out a comprehensive review of access to blood supplies and distribution of blood banks
2. Train staff to use approved protocols and clinical guidelines for post-abortion care, post-exposure prophylaxis, KMC and management and referral of sick newborns.
3. Strengthen biological waste management.
4. Recommend and make available WHO revised partograph in all facilities conducting deliveries.

Policy level recommendations

1. Develop all-encompassing policy/guidelines on quality assurance.
2. Enhance a multi sectorial collaboration with line ministries (Ministry of Road and Transport, Ministry of Education etc.).
3. Establish maternity waiting homes in hospitals and health centres for women who live far from health facilities.
4. Increase the overall budgetary allocation to the health sector and development partners should pledge a multi-year budgetary support.
5. Find alternative and sustainable health financing mechanisms.

APPENDIX A

Table 2.01A: Names of data collection teams

TEAM NUMBER	TEAM MEMBERS	DISTRICT (S)	Number of facilities	SUPERVISOR
01	**Loveness Kafoteka**[16] Cornelius Munyanga Alex Zumazuma	Blantyre	19	Leonard Banda
02	**Cecelia Mthethe** Samuel Bingo Bester Gondwe	Chitipa Karonga	16	Rose Chisiza
03	**Mercy Chatsunda** Dzeliwe Mlongeni Cathryn Masakasa	Nsanje Chikwawa	24	Jane Chisenga
04	**Esmie Chamalawa** Pamela Ndovi Wezzie Mgungwe	Mulanje Phalombe	21	Edwin Libamba
05	**Lapani Ngala** Gloria Nkhula Dora Rwanda	Lilongwe (A)	18	Fannie Kachale
06	**Esau Kasonda** MacDonald Gondwe Atusaye Kawonga	Rumphi Mzuzu Central Hospital	12	Egglie Chirwa

[16] Shaded name in yellow represents team leader

TEAM NUMBER	TEAM MEMBERS	DISTRICT (S)	Number of facilities	SUPERVISOR
07	**Moses Enock** Blessings Gausi Hope Kanise	Nkhatabay Likoma	14	Hans Katengeza
08	**Edith Tewesa** Zione Mchikaya Elasi Gondwe	Ntchisi Dowa	20	Evelyn Chitsa Banda
09	**Allaise Nkhoma** Julia Chilinda Noria Chinkunda	Kasungu Mchinji	21	Twambilire Phiri
10	**Brenda Gausi** Mary Mzombwe Temwa Mzumara	Chiradzulu Mwanza Neno	17	Pilirani Msambati
11	**Ruth Mnyanga** George Liomba Priscilla Kafumbata	Mangochi	21	Chris Oyeyipo
12	**Jane Dzoole** Modesta Banda Beatrice Moyo	Zomba	20	Tambosi Phiri
13	**Patricia Kapena** Albert Kamanga Agnes Dulani	Dedza	18	Sheilla Bandazi/ Jean Mwandira
14	**Rodney Masese** Jeromy Sakwiya	Nkhotakota Salima	21	Enelesi Kachule

TEAM NUMBER	TEAM MEMBERS	DISTRICT (S)	Number of facilities	SUPERVISOR
	Joseph Kasililika			
15	**Sekundina Matewere** Janet Mambulasa Jane Msuku	Balaka Machinga	18	Limbika Tauzi
16	**Modesta Kasawala** Ella Kondowe Lucy Nyirenda	Thyolo	18	Ann Phoya
17	**Patrick Nkhoma** Lucy Mkutumula Francia Matewere	Lilongwe (B)	17	Harriet Chanza Dalitso Kabambe
18	**Emmanuel Golombe** Lutenganyo Fumbo Lydia Magombo	Ntcheu	17	Lydia Chimtembo
19	**Bertha Kaudza** Maggie Zamasoya Loveness Ngulube	Mzimba South	18	Beata Zuza
20	**Violet Kaonga** Mayamiko Kayuzga Emily Salima	Mzimba North (MINUS Mzuzu Central Hosp)	14	Ellassy Khonje

Table 2.02A: Names of data entry clerks

1.	Christina Chisinga
2.	Christina Majora
3.	Katie Khonje
4.	Vic Gondwe
5.	Grace Chikwamba
6.	Emmanuel Jhala
7.	Tisunge Kaludzu
8.	Chimwemwe Ngayivale
9.	Shupie Phiri
10.	Edina Bonga
11.	John Nzeruzatha
12.	Thembi Mkandawire

Table 2.03A: Data Analysis Team, 12TH TO 23RD January 2015: Malawi Sun Hotel, Blantyre.

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17.	Evelyn Zimba	MNCH Specialist	ezimba@usaid.gov

Table 2.4A: Weights used for the calculation of EmONC and other Indicators in the 2014 Malawi EmONC Needs Assessment

	Sampling Frame (Total facilities providing deliveries)				Difference (visited - sampled)		Weights	
	Hospitals	Other (excludes dispensaries and HPs)	All facilities	60% of other	Hospitals	Other (60% sample vs. visited)	Hospitals	Other facilities
Total	87	468	555	281	-1	-4		
District								
Balaka	1	10	11	6	0	0	1.0000	1.6667
Blantyre	6	23	29	14	0	-1	1.0000	1.7692
Chikhwawa	3	21	24	13	0	-1	1.0000	1.7500
Chiradzulo	2	9	11	5	0	0	1.0000	1.8000
Chitipa	3	6	9	4	-1	0	1.0000	1.5000
Dedza	2	26	28	16	0	0	1.0000	1.6250
Dowa	4	17	21	10	0	0	1.0000	1.7000
Karonga	4	11	15	7	0	0	1.0000	1.5714
Kasungu	4	14	18	8	0	0	1.0000	1.7500
Likoma	1	1	2	1	0	0	1.0000	1.0000
Lilongwe	14	36	50	22	0	-1	1.0000	1.7143
Machinga	1	17	18	10	0	0	1.0000	1.7000
Mangochi	4	29	33	17	0	0	1.0000	1.7059
Mchinji	4	9	13	5	0	0	1.0000	1.8000
Mulanje	2	19	21	11	0	0	1.0000	1.7273
Mwanza	1	3	4	2	0	0	1.0000	1.5000
Mzimba North	3	20	23	12	0	0	1.0000	1.6667
Mzimba South	4	24	28	14	0	0	1.0000	1.7143
Neno	2	9	11	5	0	0	1.0000	1.8000
Nkhata Bay	2	16	18	10	0	0	1.0000	1.6000
Nkhotakota	4	14	18	8	0	0	1.0000	1.7500
Nsanje	2	12	14	7	0	0	1.0000	1.7143
Ntcheu	1	27	28	16	0	0	1.0000	1.6875
Ntchisi	1	9	10	5	0	0	1.0000	1.8000
Phalombe	1	11	12	7	0	0	1.0000	1.5714
Rumphi	5	10	15	6	0	0	1.0000	1.6667
Salima	1	14	15	8	0	0	1.0000	1.7500
Thyolo	2	26	28	16	0	0	1.0000	1.6250
Zomba	5	25	30	15	0	0	1.0000	1.6667

Total	87	468	555					

Table 3.01A: Availability of EmONC facilities according to United Nations standards, by district (EmONC Indicator 1)

	Population[1,2]	Basic and Comprehensive EmONC facilities			Comprehensive EmONC facilities			Ratio of actual to recommended	
		Recommended[2]	Actual	Gap [exceeds minimum]	Recommended[2]	Actual	Gap [exceeds minimum]	Basic and Comp	Comp
		n	N	N	N	N	N	Target ≥ 5	Target ≥ 1
Malawi	15,805,239	158	64	94	32	45	-13	2	1
District									
Chitipa	211,170	2	1	1	0	1	0	2	2
Karonga	327,084	3	1	2	1	1	0	2	2
Nkhata Bay	260,583	3	1	2	1	1	0	2	2
Rumphi	203,053	2	0	2	0	0	0	0	0
Mzimba North	474,450	5	4	1	1	2	-1	4	2
Mzimba South	603,846	6	2	4	1	2	-1	2	2
Likoma	10,441	0	1	-1	0	1	0	48	48
Kasungu	794,991	8	3	5	2	1	1	2	1
Nkhotakota	367,776	4	2	2	1	2	-1	3	3
Ntchisi	276,481	3	0	3	1	0	1	0	0
Dowa	732,343	7	2	5	1	2	-1	1	1
Salima	407,148	4	1	3	1	1	0	1	1
Lilongwe	2,400,234	24	10	14	5	7	-2	2	1
Mchinji	569,085	6	3	3	1	1	0	2	1
Dedza	718,747	7	3	5	1	1	0	2	1
Ntcheu	557,433	6	3	3	1	1	0	2	1
Mangochi	982,058	10	5	5	2	3	-1	2	2
Machinga	589,709	6	1	5	1	1	0	1	1
Zomba	779,259	8	5	3	2	3	-1	3	2
Chiradzulo	314,059	3	2	1	1	2	-1	3	3
Blantyre	1,239,648	12	2	10	2	2	0	1	1

Mwanza	102,571	1	1	0	0	1	0	5	5
Thyolo	633,019	6	2	4	1	2	-1	2	2
Mulanje	564,975	6	1	5	1	1	0	1	1
Chikhwawa	364,281	4	2	2	1	2	-1	3	3
Nsanje	518,287	5	2	3	1	2	-1	2	2
Phalombe	274,797	3	2	1	1	0	1	3	0
Balaka	383,887	4	3	1	1	1	0	3	1
Neno	143,824	1	1	0	0	1	0	3	3
1. Source of Population Estimates:[NSO, 2008 Population Census Projections]									
2. WHO, UNFPA and UNICEF recommend as a minimum the ratio of 5 EmONC facilities per 500,000 where at least 1 is Comprehensive (Monitoring emergency obstetric care: a handbook, 2009). Number of facilities based on the unweighted n = 365									

Table 3.02A: EmONC facilities, classified according to 3 months or 12 months, by district

	Basic and Comprehensive EmONC facilities		% increase when considering 12 months	Comprehensive EmONC facilities		% increase when considering 12 months
	3 Month	12 Month		3 Month	12 Month	
	N	n	%	N	N	%
Malawi	64	108	70	45	55	22
District						
Chitipa	1	4	300	1	1	0
Karonga	1	3	200	1	1	0
Nkhata Bay	1	4	300	1	1	0
Rumphi	0	2	0	0	2	0
Mzimba North	4	4	9	2	2	0
Mzimba South	2	4	100	2	2	0
Likoma	1	1	0	1	1	0
Kasungu	3	5	82	1	3	200
Nkhotakota	2	2	0	2	2	0
Ntchisi	0	1	0	0	1	0
Dowa	2	4	100	2	2	0
Salima	1	3	200	1	1	0
Lilongwe	10	14	34	7	7	0
Mchinji	3	5	79	1	1	0
Dedza	3	5	90	1	2	100
Ntcheu	3	8	197	1	1	0
Mangochi	5	6	27	3	3	0
Machinga	1	1	0	1	1	0
Zomba	5	6	28	3	3	0
Chiradzulo	2	4	100	2	2	0
Blantyre	2	5	150	2	3	50
Mwanza	1	1	0	1	1	0
Thyolo	2	2	0	2	2	0
Mulanje	1	2	100	1	2	100
Chikhwawa	2	2	0	2	2	0
Nsanje	2	2	0	2	2	0
Phalombe	2	3	91	0	1	0
Balaka	3	3	12	1	1	0
Neno	1	2	100	1	2	100

Note: Based on unweighted n = 365

Table 3.03A: List of HEALTH CENTREs surveyed, EmONC classification and signal functions performed in the last 3 months, by district

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
BALAKA	COMFORT MATERNITY CLINIC	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
BALAKA	UTALE 1 HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
BALAKA	MBERA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
BALAKA	NANDUMBO HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
BALAKA	UTALE 2 HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
BALAKA	PHALULA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
BALAKA	BALAKA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
BLANTYRE	CHILEKA SDA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
BLANTYRE	MDEKA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
BLANTYRE	DZIWE HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	YES	YES	NO	YES		NO	NO
BLANTYRE	CHIMEMBE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
BLANTYRE	PENSULO HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
BLANTYRE	ST VINCENT HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
BLANTYRE	MPEMBA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
BLANTYRE	DAI HALIMA MATERNITY CLINIC	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
BLANTYRE	CHILOMONI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
BLANTYRE	CHILEKA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
BLANTYRE	LUNDU HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
BLANTYRE	LIRANGWE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
BLANTYRE	CHIKOWA HEALTH CE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
BLANTYRE	MWAIWATHU HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	NO	YES	YES	NO	YES		YES	YES
BLANTYRE	SHIFA HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
BLANTYRE	BLANTYRE ADVENTIST HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	NO	YES		YES	YES
BLANTYRE	MLAMBE HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
BLANTYRE	QUEEN ELIZABETH CENTRAL HOSP	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
BLANTYRE	MTENGO UMODZI HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	NO	YES	YES	NO	YES		YES	YES
CHIKHWAWA	LENGWE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
CHIKHWAWA	KALULU CLINIC	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
CHIKHWAWA	NKOMBEZI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
CHIKHWAWA	MWANZA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
CHIKHWAWA	ILLOVO FACTORY CLINIC	NON FUNCTIONING BASIC	NO	NO	NO	NO	NO	NO	NO		NO	NO
CHIKHWAWA	MISOMALI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
CHIKHWAWA	MAKHWIRA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
CHIKHWAWA	DOLO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
CHIKHWAWA	CHAPANANGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
CHIKHWAWA	CHIPWAILA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
CHIKHWAWA	CHITHUMBA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
CHIKHWAWA	NGABU SDA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
CHIKHWAWA	CHIKHWAWA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
CHIKHWAWA	NGABU RURAL HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	NO	YES		YES	YES
CHIKHWAWA	ST MONTFORT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
CHIRADZULO	PIM HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
CHIRADZULO	MBULUMBUZI HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
CHIRADZULO	MILEPA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
CHIRADZULO	NAMADZI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	NO	YES	YES	YES		NO	NO
CHIRADZULO	CHITERA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
CHIRADZULO	CHIRADZULU DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
CHIRADZULO	ST JOSEPH NGULUDI HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
CHITIPA	IFUMBO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
CHITIPA	CHAMBO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	NO	YES		NO	NO
CHITIPA	MISUKU HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	YES	YES		NO	NO
CHITIPA	KAMEME HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	NO	YES	YES	YES		NO	NO
CHITIPA	NTHALIRE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	YES	YES		NO	NO
CHITIPA	CHITIPA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
DEDZA	KAPHUKA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	NO	NO	YES	YES		NO	NO
DEDZA	KANYAMA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
DEDZA	NAKALAZI HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	NO	NO	NO	YES		NO	NO
DEDZA	MAYANI HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
DEDZA	MTAKATAKA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
DEDZA	CHIKUSE HEALTH CENTRE	NON FUNCTIONING BASIC	NO	NO	YES	NO	YES	YES	NO		NO	NO
DEDZA	KANYEZI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
DEDZA	MATUMBA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
DEDZA	CHIPHWANYA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
DEDZA	MPHUNZI HEALTH CENTRE	NON FUNCTIONING BASIC	NO	NO	NO	NO	NO	NO	NO		NO	NO
DEDZA	BEMBEKE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
DEDZA	KALULU HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	YES		NO	NO
DEDZA	LOBI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	NO	YES	YES	NO	YES	YES	YES		NO	NO
DEDZA	CHIMOTO HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	YES		NO	NO
DEDZA	MPHATHI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
DEDZA	KASINA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
DEDZA	MUA MISSION HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
DEDZA	DEDZA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
DOWA	DZOOLE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
DOWA	CHAKHAZA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
DOWA	CHIZOLOWONDO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	NO	YES	YES		NO	NO
DOWA	BOWE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
DOWA	CHANKHUNGU HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	YES	YES		NO	NO
DOWA	MWANGALA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
DOWA	KAYEMBE HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
DOWA	MVERA MISSION HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
DOWA	MVERA ARMY HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
DOWA	DZALEKA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
DOWA	MADISI MISSION HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
DOWA	DOWA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
DOWA	MPONELA COMMUNITY HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		NO	YES
DOWA	MTENGOWANTHENGA MISSION	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	NO	YES		YES	YES
KARONGA	IPONGA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	NO	YES		NO	NO
KARONGA	LUPEMBE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
KARONGA	NYUNGWE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
KARONGA	FURILWA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
KARONGA	NGANA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
KARONGA	WILIRO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
KARONGA	ST ANNES HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
KARONGA	KAPORO RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	NO	YES		NO	NO
KARONGA	ATUPELE HEALTH CENTRE	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	YES	YES	NO	YES		NO	YES

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
KARONGA	CHILUMBA RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	YES	YES	YES	YES		NO	NO
KARONGA	KARONGA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
KASUNGU	SIMLEMBA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	NO	YES		NO	NO
KASUNGU	KAMBONI HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	YES	YES	NO	YES		NO	NO
KASUNGU	LINYANGWA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
KASUNGU	MKHOTA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
KASUNGU	KHOLA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
KASUNGU	CHULU HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	NO	YES	YES	YES		NO	NO
KASUNGU	CHAMWABVI HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
KASUNGU	SANTHE HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
KASUNGU	KASUNGU DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
KASUNGU	KALULUMA RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
KASUNGU	NKHAMENYA HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	NO	YES	YES		YES	YES
KASUNGU	ST ANDREWS HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES
LIKOMA	CHIZUMULU HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
LIKOMA	ST PETERS HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
LILONGWE	MBWATALIKA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
LILONGWE	KATCHALE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
LILONGWE	UKWE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
LILONGWE	CHIUNJIZA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	NO	NO	NO	NO	NO	NO		NO	NO
LILONGWE	MALEMBO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	YES	YES		NO	NO
LILONGWE	MBANG'OMBE 2 HEALTH C ENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	YES	YES		NO	NO
LILONGWE	MBABVI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
LILONGWE	NGONI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
LILONGWE	CHIWAMBA HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
LILONGWE	CHIMBALANGA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	YES	YES		NO	NO
LILONGWE	MING'ONGO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	NO	YES	NO	YES	YES	YES	YES		NO	NO
LILONGWE	DICKSON HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	YES	YES		NO	NO
LILONGWE	NTHONDO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
LILONGWE	NDAULA HEALTH CENTR	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
LILONGWE	CHILOBWE HEALTH CENTRE	NON FUNCTIONING BASIC	NO	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
LILONGWE	DR DAVID LIVINGSTONE MEMORIAL	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
LILONGWE	KAWALE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	YES	YES		NO	NO
LILONGWE	DZENZA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
LILONGWE	AREA 18 HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
LILONGWE	CHILEKA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
LILONGWE	CHITEDZE HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
LILONGWE	MALINGUNDE RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	NO	NO	YES		NO	NO
LILONGWE	NAMBUMA RURAL HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		NO	NO
LILONGWE	DEAYANG LUKE HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
LILONGWE	ABC CLINIC	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	NO	YES	YES	YES		YES	NO
LILONGWE	CITY CENTRE CLINIC	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	YES	YES	NO	YES		YES	NO
LILONGWE	LIKUNI MISSION HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
LILONGWE	ST GABRIEL MISSION HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
LILONGWE	BWAILA HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
LILONGWE	NKHOMA MISSION HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
LILONGWE	KAMUZU CENTRAL HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
LILONGWE	MLARE RURAL HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES
LILONGWE	KAMUZU BARRACKS HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	NO	NO	NO	YES		NO	NO
LILONGWE	MITUNDU COMMUNITY HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
LILONGWE	KABUDULA COMMUNITY HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	NO
MACHINGA	LIFUNE HEALTH CENTRE	NON FUNCTIONING BASIC	NO	NO	YES	NO	NO	NO	YES		NO	NO
MACHINGA	MKWEPERE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MACHINGA	NYAMBI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
MACHINGA	NSANAMA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
MACHINGA	NAMANJA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MACHINGA	MANGAMA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
MACHINGA	NAYUCHI HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	NO	YES	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
MACHINGA	NGOKWE HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	YES	NO	YES		NO	NO
MACHINGA	CHIKWEWO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	YES	YES		NO	NO
MACHINGA	NAMANDANJE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MACHINGA	MACHINGA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MANGOCHI	NGAPANI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
MANGOCHI	NAMALAKA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
MANGOCHI	SISTER MARTHA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MANGOCHI	PHIRILONGWE HEALTH CENTER	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	NO	YES	YES	YES		NO	NO
MANGOCHI	KAPIRE HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	NO	YES	NO	YES		NO	NO
MANGOCHI	NANGALAMU HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	NO	YES		NO	NO
MANGOCHI	MALEMBO HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	NO	NO	NO	YES		NO	NO
MANGOCHI	MAKANJIRA HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
MANGOCHI	NANKUMBA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	YES	NO	YES		NO	NO
MANGOCHI	LUGOLA HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MANGOCHI	LUWARIKA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MANGOCHI	KATEMA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
MANGOCHI	CHILONGA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	NO	NO	YES	YES		NO	NO
MANGOCHI	KATULI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
MANGOCHI	KOCHE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
MANGOCHI	MPONDASI HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	NO	NO	NO	NO		NO	NO
MANGOCHI	NKOPE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	NO	YES	YES	YES	NO	YES	YES		NO	NO
MANGOCHI	MULIBWANJI HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES
MANGOCHI	MONKEYBAY COMMUNITY HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MANGOCHI	MANGOCHI DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES

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			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
MANGOCHI	ST MARTINS HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MCHINJI	CHIOSHYA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	NO		NO	NO
MCHINJI	MIKUNDI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	YES	YES		NO	NO
MCHINJI	MKANDA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	YES	YES		NO	NO
MCHINJI	CHIPUMI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
MCHINJI	NKHWAZI HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
MCHINJI	KAPIRI(OLOMOC) RURAL HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		NO	YES
MCHINJI	GUILLIME ST MICHAELS HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	NO	YES		NO	YES
MCHINJI	ST JOSEPH (LUDZI) RURAL HOSPIT	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	NO	YES	YES		NO	YES
MCHINJI	MCHINJI DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MULANJE	CHAMBE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MULANJE	BONDO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO

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			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
MULANJE	NAMPHUNGO HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	YES		NO	NO
MULANJE	CHINYAMA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MULANJE	KAMBENJE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MULANJE	MULOMBA HEALTH CENTER	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
MULANJE	MPELA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MULANJE	CHONDE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MULANJE	MULOZA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	NO	YES	YES		NO	NO
MULANJE	NAPHIMBA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	YES	YES		NO	NO
MULANJE	NAMULENGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	NO		NO	NO
MULANJE	MULANJE MISSION HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES
MULANJE	MULANJE DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MWANZA	KUNENE KUDE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	NO	YES	YES	YES		NO	NO

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			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
MWANZA	THAMBANI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	YES	YES		NO	NO
MWANZA	MWANZA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MZIMBA NORTH	ENGUCWINI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	NO		NO	NO
MZIMBA NORTH	KABWAFU HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MZIMBA NORTH	KAWETCHE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MZIMBA NORTH	MATULI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MZIMBA NORTH	MALIDADE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MZIMBA NORTH	MTWALO HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	YES	NO	NO	YES		NO	NO
MZIMBA NORTH	EMSIZINI HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	YES		NO	NO
MZIMBA NORTH	CHOMA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	YES	NO	NO	YES		NO	NO
MZIMBA NORTH	MZUZU HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
MZIMBA NORTH	KAFUKULE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MZIMBA NORTH	NJUYU HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	NO		NO	NO

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			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
MZIMBA NORTH	KAMWE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MZIMBA NORTH	ST JOHNS HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	NO	YES		YES	YES
MZIMBA NORTH	MZUZU CENTRAL HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MZIMBA NORTH	EKWENDENI MISSION HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MZIMBA SOUTH	LUWAWA HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
MZIMBA SOUTH	HOHO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MZIMBA SOUTH	KAMTETEKA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
MZIMBA SOUTH	KALIKUMBI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	NO	YES	YES		NO	NO
MZIMBA SOUTH	MABIRI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MZIMBA SOUTH	MKOMA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
MZIMBA SOUTH	KHOSOLO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MZIMBA SOUTH	LUWEREZI H CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO

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			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
MZIMBA SOUTH	ENDINDENI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MZIMBA SOUTH	EDINGENI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MZIMBA SOUTH	CHIKANGAWA HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
MZIMBA SOUTH	JENDA HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	YES	YES		NO	NO
MZIMBA SOUTH	EMFENI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
MZIMBA SOUTH	EUTHINI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	YES	YES		NO	NO
MZIMBA SOUTH	EMBANGWENI CHAM HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MZIMBA SOUTH	MZIMBA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
MZIMBA SOUTH	MZAMBAZI COMMUNITY HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		NO	YES
MZIMBA SOUTH	KATETE COMMUNITY HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		NO	YES
NENO	NENO PARISH HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO

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			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
NENO	MATANDANI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
NENO	NSAMBE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
NENO	LIGOWE HEALTH CENTRE	NON FUNCTIONING BASIC	NO	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
NENO	MAGALETA HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
NENO	LISUNGWI COMMUNITY HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
NENO	NENO DISTRICT HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	NO	YES	YES		YES	YES
NKHATA BAY	KANDE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
NKHATA BAY	LIUZI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
NKHATA BAY	KACHERE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NKHATA BAY	BULA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	YES	YES		NO	NO
NKHATA BAY	MPAMBA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	YES	YES		NO	NO
NKHATA BAY	MZENGA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO

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NKHATA BAY	CHISALA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NKHATA BAY	CHILAMBWE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NKHATA BAY	OLD MAULA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NKHATA BAY	CHIKWINA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NKHATA BAY	NKHATA-BAY DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
NKHATA BAY	CHINTHECHE RURAL HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		NO	YES
NKHOTAKOTA	KAPIRI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NKHOTAKOTA	MPAMANTHA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
NKHOTAKOTA	BUA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NKHOTAKOTA	LIWALADZI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NKHOTAKOTA	MWANSAMBO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
NKHOTAKOTA	NGALA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO

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NKHOTAKOTA	MTOSA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NKHOTAKOTA	MATIKI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	YES
NKHOTAKOTA	DWAMBAZI RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	YES	YES	YES	YES		NO	NO
NKHOTAKOTA	SAINT ANNIES HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
NKHOTAKOTA	ALINAFE COMMUNITY HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	NO	NO	NO	YES		NO	YES
NKHOTAKOTA	NKHOTAKOTA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
NSANJE	CHIDIDI HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NSANJE	SORGIN HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
NSANJE	MBENJE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NSANJE	PHOKERA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NSANJE	TENGANI HEALTH CENTER	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NSANJE	NYAMITHUTHU HEALTH CENTER	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
NSANJE	KALEMBA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO

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			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
NSANJE	TRINITY MISSION HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
NSANJE	NSANJE DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
NTCHEU	MANJAWIRA HEALTH CENTER	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
NTCHEU	GOWA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NTCHEU	BIRIWIRI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
NTCHEU	MZAMA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
NTCHEU	KALIMANJIRA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
NTCHEU	SHARPEVALE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	YES	YES		NO	NO
NTCHEU	LIZULU HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
NTCHEU	NSIYALUDZU HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	NO		NO	NO
NTCHEU	BILILA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	NO	YES	YES	NO	YES	YES	YES		NO	NO
NTCHEU	MTONDA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	YES	YES	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
NTCHEU	NSIPE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NTCHEU	GANYA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
NTCHEU	SISTER TERESA COMMUNITY HOSPIT	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
NTCHEU	KATSEKERA HEALTH CNTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
NTCHEU	KANDEU HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	YES	YES		NO	NO
NTCHEU	KASINJE HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	YES	YES	YES		NO	NO
NTCHEU	NTCHEU DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
NTCHISI	KHUWI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
NTCHISI	CHINGULUWE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
NTCHISI	NTHONDO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
NTCHISI	KAMSONGA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
NTCHISI	MALOMO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
NTCHISI	NTCHISI DISTRICT HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES
PHALOMBE	MKHWAYI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
PHALOMBE	CHITEKESA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
PHALOMBE	CHIRINGA MATERNITY	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
PHALOMBE	MWANGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
PHALOMBE	MIGOWI HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
PHALOMBE	NKHULAMBE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
PHALOMBE	NAMBAZO HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
PHALOMBE	HOLY FAMILY MISSION HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	NO	YES		YES	YES
RUMPHI	MLOWE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
RUMPHI	MWAZISI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
RUMPHI	LURA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
RUMPHI	MPHOMPHA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
RUMPHI	ST PATRICKS HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
RUMPHI	MZOKOTO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
RUMPHI	RUMPHI DISTRICT HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES
RUMPHI	KATOWO RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	NO	NO	YES		NO	NO
RUMPHI	MHUJU RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	NO	YES		NO	NO
RUMPHI	BOLERO RURAL HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	NO	YES		NO	NO
RUMPHI	DAVID GORDON MEMORIAL HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	NO	YES	YES	YES		YES	YES
SALIMA	MCHOKA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
SALIMA	MAGAGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
SALIMA	CHINGULUWE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
SALIMA	CHAGUNDA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
SALIMA	LIFUWU HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
SALIMA	KHOMBEDZA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	YES	NO	YES		NO	NO
SALIMA	KAPHATENGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
SALIMA	CHITALA HELTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	YES	NO	YES		NO	NO
SALIMA	SALIMA DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
THYOLO	MAKWASA DISPENSARY	NON FUNCTIONING BASIC	NO	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
THYOLO	THUNGA HEALTH CENTER	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	YES		NO	NO
THYOLO	SAMBANKHANGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	NO		NO	NO
THYOLO	CHIMVU HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
THYOLO	GOMBE HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
THYOLO	THOMAS HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
THYOLO	MIANGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
THYOLO	MAKAPWA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
THYOLO	CHIPHO HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
THYOLO	MAPANGA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	YES	NO	NO	YES		NO	NO
THYOLO	ST JOSEPH MITENGO HEALTH CENTR	NON FUNCTIONING BASIC	NO	YES	NO	NO	NO	NO	NO		NO	NO
THYOLO	MAKUNGWA HEALTH CENTER	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	NO	YES	YES		NO	NO
THYOLO	KHONJENI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	NO	YES	NO	YES	YES		NO	NO
THYOLO	CHANGATA HEALTH CENTRE	NON FUNCTIONING BASIC	NO	YES	NO	YES	NO	NO	NO		NO	NO
THYOLO	DIDI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
THYOLO	THEKERANI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	YES
THYOLO	THYOLO DISTRICT HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
THYOLO	MALAMULO HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
ZOMBA	MACHINJILI HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
ZOMBA	NKASALA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	NO	NO	NO	NO	YES		NO	NO
ZOMBA	MAERA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
ZOMBA	LAMBULIRA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
ZOMBA	MAGOMERO HEALTH CENTER	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
ZOMBA	BIMBI HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO
ZOMBA	CHAMBA HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
ZOMBA	MAKWAPALA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	YES	YES		NO	NO
ZOMBA	NAMIKANGO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
ZOMBA	M'MAMBO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
ZOMBA	NGWELERO HEALTH CENTRE	NON FUNCTIONING BASIC	YES	YES	YES	NO	NO	NO	YES		NO	NO
ZOMBA	NAMASALIMA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	NO	YES		NO	NO

DISTRICT	FACILITY NAME	EMONC STATUS	SIGNAL STATUS PERFORMED IN THE PAST 3 MONTHS									
			PARENTERAL ANTIBIOTICS	PARENTERAL OXYTOCICS	PARENTERAL ANTICONVULSAN	MANUAL REMOVAL OF	REMOVAL OF RETAINED	ASSISTED VAGINAL	NEWBORN RESUSCITATION		CESAREAN DELIVERY	BLOOD TRANSFUSION
ZOMBA	LIKANGALA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	NO	YES	NO	YES		NO	NO
ZOMBA	MATAWALE HEALTH CENTRE	BASIC	YES	YES	YES	YES	YES	YES	YES		NO	NO
ZOMBA	NASAWA HEALTH CENTRE	PARTIALLY FUNCTIONING BASIC	YES	YES	YES	YES	NO	YES	YES		NO	NO
ZOMBA	ST LUKES HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
ZOMBA	ZOMBA CENTRAL HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
ZOMBA	POLICE HOSPITAL	NON FUNCTIONING COMPREHENSIVE	YES	YES	NO	NO	YES	NO	NO		NO	NO
ZOMBA	PIRIMITI COMMUNITY HOSPITAL	COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		YES	YES
ZOMBA	DOMASI RURAL HOSPITAL	PARTIALLY FUNCTIONING COMPREHENSIVE	YES	YES	YES	YES	YES	YES	YES		NO	NO

Table 3.04A: Number and percentage of health centres that DO NOT perform each signal function among facilities lacking 1, 2 or 3 signal functions

Signal function	-1		-2[1]		-3[1]		Total
	%	N	%	N	%	n	
Total number of facilities	12%	56	21%	98	32%	149	464

Parenteral anticonvulsants	4%	8	11%	23	26%	8	219
Assisted vaginal delivery	6%	24	20%	75	37%	141	381
Neonatal resuscitation	0%	0	0%	0	6%	3	54
Manual removal of placenta	4%	12	14%	44	39%	123	313
Removal of retained products	4%	12	17%	53	36%	115	318
Parenteral antibiotics	0%	0	11%	7	18%	12	66
Parenteral oxytocics	0%	0	0%	0	0%	0	0
1. Multiple responses allowed. -2 facilities are missing two signal functions; -3 facilities are missing 3 signal functions. Based on an unweighted n= 278							

Table 3.05A: Number and percentage of hospitals that DO NOT perform each signal function among facilities lacking 1, 2 or 3 signal functions

Signal function	-1		-2[1]		-3[1]		Total
	%	N	%	N	%	N	
Total number of facilities	20%	17	13%	11	8%	7	87
Parenteral anticonvulsants	0%	0	20%	2	50%	5	10
Assisted vaginal delivery	17%	3	28%	5	17%	3	18
Neonatal resuscitation	0%	0	0%	0	0%	0	1
Manual removal of placenta	38%	8	24%	5	10%	2	21
Removal of retained products	14%	1	29%	2	0%	0	7
Parenteral antibiotics	0%	0	0%	0	0%	0	0
Parenteral oxytocics	0%	0	0%	0	0%	0	0
Blood transfusion	6%	1	19%	3	38%	6	16
Caesarean section	19%	4	24%	5	24%	5	21
1. Multiple responses allowed. -2 facilities are missing two signal functions; -3 facilities are missing 3 signal functions.							

Table 3.06A: Definitions of minimum required drugs, equipment and supplies for each signal function

Signal function	MINIMUM drugs, equipment and supplies required
ANTIBIOTICS	Ampicillin, Benzyl penicillin, Gentamicin (injection), Metronidazole (injection)
OXYTOCICS	Oxytocin or Ergometrine or Both
ANTICONVULSANTS	Magnesium sulphate (injection) or Diazepam (injection)
MANUAL REMOVAL OF PLACENTA	Gloves in stock
REMOVAL OF RETAINED PRODUCTS OF CONCEPTION	Surgical instrument curettage set or Manual vacuum aspiration instrument set, Lignocaine/Lidocaine 2% or 1%
ASSISTED VAGINAL DELIVERY	Vacuum extraction / Forceps delivery set
RESUSCITATION OF NEWBORN WITH BAG AND MASK in Maternity	Newborn bag and mask
BLOOD TRANSFUSION	Microscope, Blood donor chair and Blood bank
OBSTETRIC SURGERY/CESAREAN	Functional Operating Theater, Cesarean section tray, Surgical instrument basic surgery set, Surgical instrument abdominal set, Surgical instrument delivery set, Surgical instrument exam/set, vaginal/cervical/ set, Anesthetic face masks, Oxygen cylinders with manometer and flow meter (low flow) tubes and connectors, halothane or ketamine

Table 6.01A: Required staff in public sector for selected health worker cadres, by facility type

Health Worker Cadre	Central Hospital	District Hospital	Community/Rural Hospital[2]	Health Centre[3]	Total
Number of facilities	4	23	15	338	380
Medical Doctor	84	156	0	0	240
Obstetrician/ Gynaecologist	40	0	0	0	40
General Surgeon	36	0	0	0	36
Paeditrician	36	0	0	0	36
Clinical Officer	188	1144	75	676	2083
Registered Nurse Midwife	364	572	0	0	936
Enrolled nurse midwife/Nurse midwife Technician	1112	2860	420	5408	9800
Nurse/CO anesthetist	20	182	0	0	202
Laboratory Technologist/Technician	66	156	30	338	590
Medical Assistant	0	624	60	676	1360

Table 6.02A: Existing staff in public sector for selected health worker cadres, by facility type

Health Worker Cadre	Central Hospital	District Hospital	Community/Rural Hospital	Health Centre	Total
Number of facilities	**4**	**23**	**15**	**338**	380
Medical Doctor	151	50	2	0	203
Obstetrician/ Gynaecologist	5	0	0	0	5
General Surgeon	2	0	0	0	2
Paediatrician	9	0	0	0	9
Clinical Officer	170	409	22	39	640
Registered Nurse	37	100	7	10	154
Registered Nurse Midwife	231	284	21	40	576
Community midwives	5	24	6	87	122
Enrolled nurse midwife/Nurse midwife Technician	626	1181	107	809	2723
Anaesthesiologist	1	0	0	0	1
Nurse/CO anaesthetist	37	60	5	0	102
Laboratory Technologist/Technicians	95	126	18	34	273
Medical Assistant	7	279	34	438	758

Note: estimates based on unweighted n = 365					

Table 6.03A: Ratio of current staff per 200,000 population, for selected health worker cadre by district

	Population	Medical doctor	Obst/ Gynaecologist	General surgeon	Paediatrician	Clinical Officer	Registered Nurse	Registered Nurse Midwife	Community Midwife	Enrolled Nurse Midwife	Anaesthesiologist	Nurse /CO Anaesthetist	Lab Tech	Medical Assistant
Malawi	**15,805,239**	**3.2**	**0.2**	**0.2**	**0.2**	**10.9**	**2.6**	**9.5**	**1.7**	**52.0**	**0.1**	**2.0**	**5.2**	**12.0**
District														
Chitipa	211,170	1.9	0.0	0.0	0.0	17.0	0.0	11.4	8.5	36.0	0.0	0.9	3.8	40.7
Karonga	327,084	1.2	0.0	0.0	0.0	14.1	1.8	6.1	1.2	47.7	0.0	1.2	5.5	12.8
Nkhata Bay	260,583	1.5	0.0	0.0	0.0	8.4	0.8	10.0	4.6	47.6	0.0	1.5	9.2	17.7
Rumphi	203,053	2.0	0.0	0.0	0.0	16.7	0.0	11.8	0.0	61.1	0.0	3.0	9.8	21.7
Mzimba North	474,450	2.1	0.8	0.4	0.0	8.4	4.6	26.6	0.4	101.2	0.4	3.0	13.5	12.6
Mzimba South	603,846	0.7	0.0	0.0	0.0	8.3	7.3	1.0	0.7	50.3	0.0	1.3	5.3	10.3
Likoma	10,441	0.0	0.0	0.0	0.0	38.3	0.0	19.2	19.2	191.6	0.0	0.0	19.2	19.2
Kasungu	794,991	0.8	0.0	0.0	0.0	10.6	1.3	5.8	0.8	22.6	0.0	1.0	2.0	9.6
Nkhotakota	367,776	1.6	0.0	0.0	0.0	22.3	1.6	12.0	0.0	69.1	0.0	1.6	5.4	20.7
Ntchisi	276,481	0.0	0.0	0.0	0.0	17.4	0.0	2.9	4.3	31.1	0.0	0.7	5.8	17.4
Dowa	732,343	0.8	0.0	0.0	0.0	8.2	2.5	1.6	2.5	30.6	0.0	1.4	2.2	8.2
Salima	407,148	1.5	0.0	0.0	0.0	9.8	0.5	6.9	0.0	50.1	0.0	1.5	2.9	17.2
Lilongwe	2,400,234	4.2	0.6	0.3	0.8	12.0	2.5	13.1	0.3	47.3	0.1	2.8	6.2	7.2
Mchinji	569,085	1.8	0.0	0.0	0.0	10.2	0.4	5.3	0.0	48.9	0.0	0.0	4.2	18.3
Dedza	718,747	0.8	0.0	0.0	0.0	8.9	1.9	4.2	0.8	40.9	0.0	1.4	1.7	9.5
Ntcheu	557,433	1.1	0.0	0.0	0.0	11.5	13.6	13.6	0.7	70.3	0.0	1.1	2.9	14.4
Mangochi	982,058	0.6	0.0	0.0	0.0	2.9	0.4	4.9	2.2	35.6	0.0	1.0	3.1	6.9
Machinga	589,709	0.3	0.0	0.0	0.0	0.7	0.3	6.8	0.0	44.8	0.0	1.0	1.4	9.2
Zomba	779,259	0.5	0.0	0.0	0.0	23.4	2.6	16.7	3.1	77.5	0.0	3.3	8.0	8.0
Chiradzulo	314,059	1.9	0.0	0.0	0.0	22.3	6.4	10.2	4.5	77.1	0.0	2.5	5.7	25.5
Blantyre	1,239,648	20.2	1.1	0.8	0.6	6.5	5.3	16.3	1.8	76.6	0.3	2.4	9.0	5.6
Mwanza	102,571	1.9	0.0	0.0	0.0	17.5	3.9	21.4	23.4	72.1	0.0	11.7	11.7	39.0

Thyolo	633,019	1.3	0.0	0.6	0.0	13.9	1.3	5.7	2.5	40.1	0.0	1.6	4.4	16.7
Mulanje	564,975	1.4	0.0	0.0	0.0	6.0	0.4	6.4	0.0	44.6	0.0	1.8	3.5	12.7
Chikhwawa	364,281	2.7	0.0	0.0	0.0	18.7	0.0	9.9	0.0	81.3	0.0	4.9	8.2	20.3
Nsanje	518,287	1.5	0.0	0.0	0.0	5.0	1.2	5.0	5.0	38.6	0.0	1.5	3.1	12.0
Phalombe	274,797	1.5	0.0	0.0	0.0	5.8	0.7	7.3	6.6	40.8	0.0	2.2	0.7	13.8
Balaka	383,887	1.0	0.0	0.0	0.0	15.1	0.0	9.9	0.0	53.7	0.0	2.1	4.7	10.9
Neno	143,824	8.3	0.0	0.0	0.0	19.5	5.6	18.1	1.4	62.6	0.0	4.2	7.0	19.5

Note: estimates based on weighted data

Table 6.04A: Total number of selected health worker cadres currently working, who left, transferred out and who were posted in the last 12 months at central hospital

Health worker cadre	Central Hospital				
	Currently working	In the last 12 months:			
		staff left	staff transferred out	staff posted	net gain (loss)
Total	**1376**	**88**	**48**	**113**	**-23**
Medical doctor	151	27	13	29	-11
Obstetrician/Gynaecologist	5	2	0	2	0
General surgeon	2	0	0	0	0
Paediatrician	9	1	0	1	0
Clinical officer	170	12	2	0	-14
Registered nurse	37	0	0	3	3
Registered nurse midwife	231	14	11	16	-9
Community midwife	5	0	0	0	0
Enrolled nurse midwife	626	25	19	51	7
Anaesthesiologist	1	0	0	1	1
Nurse/Clinical officer anaesthetist	37	1	0	3	2
Laboratory technologist/ technician	95	3	0	1	-2
Medical Assistant	7	3	3	6	0

Table 6.05A: Total number of selected health worker cadres currently working, who left, transferred out and who were posted in the last 12 months at district hospital

Health worker cadre	District Hospital				
	Currently working	In the last 12 months:			
		staff left	staff transferred out	staff posted	net gain (loss)
Total	**2513**	**230**	**125**	**331**	**-24**
Medical doctor	50	23	18	22	-19
Obstetrician/Gynaecologist	0	0	0	0	0
General surgeon	0	0	0	0	0
Paediatrician	0	0	0	0	0
Clinical officer	409	37	11	48	0
Registered nurse	100	6	3	15	6
Registered nurse midwife	284	35	6	57	16
Community midwife	24	0	8	5	-3
Enrolled nurse midwife	1181	79	48	111	-16
Anaesthesiologist	0	0	0	0	0
Nurse/Clinical officer anaesthetist	60	10	4	11	-3
Laboratory technologist/ technician	126	5	2	21	14

Medical Assistant	279	35	25	41	-19

Table 6.06A: Total number of selected health worker cadres currently working, who left, transferred out and who were posted in the last 12 months at Rural Community Hospital

Health worker cadre	Rural/Community Hospital				
	Currently working	In the last 12 months:			
		staff left	staff transferred out	staff posted	net gain (loss)
Total	**554**	**122**	**30**	**67**	**-85**
Medical doctor	6	1	0	2	1
Obstetrician/Gynaecologist	0	0	0	0	0
General surgeon	0	0	0	0	0
Paediatrician	0	0	0	0	0
Clinical officer	62	26	2	10	-18
Registered nurse	9	1	0	1	0
Registered nurse midwife	41	10	2	5	-7
Community midwife	9	4	2	1	-5
Enrolled nurse midwife	319	53	19	33	-39
Anaesthesiologist	0	0	0	0	0
Nurse/Clinical officer anaesthetist	18	3	0	0	-3
Laboratory technologist/ technician	35	5	1	6	0
Medical Assistant	55	19	4	9	-14

Table 6.07A: Total number of selected health worker cadres who are currently working, who left, transferred out and who were posted in the last 12 months at other hospital

Health worker cadre	Other Hospital				
	Currently working	In the last 12 months:			
		staff left	staff transferred out	staff posted	net gain (loss)
Total	**1313**	**171**	**10**	**150**	**-31**
Medical doctor	40	11	1	10	-2
Obstetrician/Gynaecologist	11	0	0	1	1
General surgeon	10	3	0	1	-2
Paediatrician	5	4	0	0	-4
Clinical officer	141	27	0	16	-11
Registered nurse	44	4	0	11	7
Registered nurse midwife	140	33	1	17	-17
Community midwife	4	0	0	0	0

Enrolled nurse midwife	714	63	0	70	7
Anaesthesiologist	3	0	0	0	0
Nurse/Clinical officer anaesthetist	41	3	0	2	-1
Laboratory technologist/ technician	88	8	1	14	5
Medical Assistant	72	15	7	8	-14

Table 6.08A: Total number of selected health worker cadres who are currently working, who left, transferred out and who were posted in the last 12 months at Health Centre

Health worker cadre	Health centre				
	Currently working	In the last 12 months:			
		staff left	staff transferred out	staff posted	net gain (loss)
Total	**2113**	**401**	**175**	**468**	**-108**
Medical doctor	4	0	0	0	0
Obstetrician/Gynaecologist	0	0	0	0	0
General surgeon	0	0	0	0	0
Paediatrician	0	0	0	0	0
Clinical officer	77	15	3	10	-8
Registered nurse	12	2	0	0	-2
Registered nurse midwife	59	9	3	22	10
Community midwife	92	12	10	62	40
Enrolled nurse midwife	1275	204	89	218	-75
Anaesthesiologist	0	2	2	0	-4
Nurse/Clinical officer anaesthetist	0	0	0	0	0
Laboratory technologist/ technician	62	7	3	14	4
Medical Assistant	532	150	65	142	-73

Note: estimates based on weighted data

Table 6.09A: Percentage of hospitals with health workers present on duty and on call during the week

HOSPITALS (n=87)	Percent of hospitals with cadre present		Mon-Fri daytime				Mon-Fri night		
			On duty	On call	Total[1]		On duty	On call	Total[1]
			%	%	%		%	%	%
Health worker cadre									
Medical doctor	59%		80%	12%	92%		12%	73%	84%
Obstetrician/Gynaecologist	14%		67%	33%	100%		8%	92%	100 %
General surgeon	10%		67%	22%	89%		11%	78%	89%
Paediatrician	8%		86%	14%	100%		14%	57%	71%

Clinical officer	91%		95%	5%	100%		25%	75%	100 %
Registered nurse	45%		74%	3%	77%		31%	26%	56%
Registered nurse midwife	76%		97%	2%	99%		42%	44%	86%
Community midwife	20%		82%	0%	82%		71%	6%	77%
Enrolled nurse midwife	98%		99%	1%	100%		95%	5%	100 %
Anaesthesiologist	5%		60%	20%	80%		0%	80%	80%
Nurse/Clinical officer anaesthetist	68%		95%	5%	100%		24%	74%	98%
Laboratory technologist/ technician	90%		94%	1%	95%		21%	74%	95%
Medical Assistant	85%		74%	1%	76%		30%	45%	74%
[1]Columns may not sum to total due to rounding. Total columns may not equal the first column 'percent with cadre present' due to missing information.									

Table 6.10A: Percentage of hospitals with health workers present on duty and on call during weekends

	Percent of hospitals with cadre present		Sat-Sun day				Sat-Sun night		
HOSPITALS (n=87)			On duty	On call	Total[1]		On duty	On call	Total[1]
			%	%	%		%	%	%
Health worker cadre									
Medical doctor	59%		16%	67%	82 %		10%	73%	82%
Obstetrician/Gynaecologist	14%		17%	75%	92 %		8%	83%	92%
General surgeon	10%		11%	78%	89 %		22%	67%	89%
Paediatrician	8%		29%	43%	72 %		29%	43%	72%
Clinical officer	91%		44%	54%	99 %		22%	76%	97%
Registered nurse	45%		39%	21%	59 %		28%	23%	51%
Registered nurse midwife	76%		52%	35%	86 %		42%	41%	83%
Community midwife	20%		65%	6%	71 %		65%	6%	71%
Enrolled nurse midwife	98%		95%	4%	99 %		97%	4%	100 %
Anaesthesiologist	5%		0%	80%	80 %		0%	80%	80%
Nurse/Clinical officer anaesthetist	68%		26%	72%	98 %		17%	79%	97%

Laboratory technologist/ technician	90%		39%	56%	95 %		15%	77%	92%
Medical Assistant	85%		39%	37%	76 %		23%	50%	73%
[1]Columns may not sum to total due to rounding. Total columns may not equal the first column 'percent with cadre present' due to missing information.									

Table 6.11A: Percentage of health centres with health workers present on duty and on call during the week

	Percent of health centres with cadre present		Mon-Fri daytime				Mon-Fri night		
HEALTH CENTERS/CLINICS (n=464)			On duty	On call	Total[1]		On duty	On call	Total[1]
			%	%	%		%	%	%
Health worker cadre									
Medical doctor	1%		100 %	0%	100 %		0%	100%	100 %
Obstetrician/Gynaecologist	0%		0%	0%	0%		0%	0%	0%
General surgeon	0%		0%	0%	0%		0%	0%	0%
Paediatrician	0%		0%	0%	0%		0%	0%	0%
Clinical officer	9%		92%	4%	96%		20%	64%	84%
Registered nurse	2%		100%	0%	100 %		25%	0%	25%
Registered nurse midwife	7%		95%	0%	95%		37%	42%	79%
Community midwife	16%		91%	0%	91%		71%	18%	88%
Enrolled nurse midwife	96%		97%	1%	98%		58%	41%	99%
Anaesthesiologist	0%		0%	0%	0%		0%	0%	0%
Nurse/Clinical officer anaesthetist	0%		0%	0%	0%		0%	0%	0%
Laboratory technologist/ technician	10%		81%	0%	81%		19%	33%	52%
Medical Assistant	84%		96%	1%	97%		16%	78%	94%
[1]Columns may not sum to total due to rounding. Total columns may not equal the first column 'percent with cadre present' due to missing information. Estimates based on unweighted n = 278									

Table 6.12A: Percentage of health centres with health workers present on duty and on call during weekends

	Percent of health centres with cadre present		Sat-Sun day				Sat-Sun night		
HEALTH CENTERS/CLINICS (n=464)			On duty	On call	Total[1]		On duty	On call	Total[1]

			%	%	%		%	%	%
Health worker cadre									
Medical doctor	1%		0%	100%	100 %		0%	100%	100 %
Obstetrician/Gynaecologist	0%		0%	0%	0%		0%	0%	0%
General surgeon	0%		0%	0%	0%		0%	0%	0%
Paediatrician	0%		0%	0%	0%		0%	0%	0%
Clinical officer	9%		29%	54%	83 %		13%	69%	82%
Registered nurse	2%		50%	0%	50 %		25%	0%	25%
Registered nurse midwife	7%		37%	42%	79 %		35%	41%	76%
Community midwife	16%		71%	20%	91 %		62%	29%	91%
Enrolled nurse midwife	96%		64%	34%	98 %		53%	45%	98%
Anaesthesiologist	0%		0%	0%	0%		0%	0%	0%
Nurse/Clinical officer anaesthetist	0%		0%	0%	0%		0%	0%	0%
Laboratory technologist/ technician	10%		33%	30%	63 %		19%	35%	54%
Medical Assistant	84%		29%	64%	93 %		14%	79%	92%

1. Columns may not sum to total due to rounding. Total columns may not equal the first column 'percent with cadre present' due to missing information. Estimates based on unweighted n = 278

Table 6.13A: Percentage of hospitals where indicated cadre provides the EmONC signal functions (parenteral drugs) by health worker cadre

HOSPITALS (n=87)	Facilities cadre present	Parenteral Drugs		
		Antibiotics	Oxytocics	Anti-convulsants
	%	%	%	%
Health worker cadre				
Medical doctor	59%	58.60%	58.60%	59.70%
Obstetrician/Gynaecologist	14%	13.80%	13.80%	11.70%
General surgeon	10%	10.30%	10.30%	9.10%
Paediatrician	8%	8.00%	8.00%	6.50%
Clinical officer	91%	90.80%	90.80%	90.90%
Registered nurse	45%	44.80%	44.80%	48.10%
Registered nurse midwife	76%	75.90%	75.90%	76.60%
Community midwife	20%	19.50%	19.50%	20.80%
Enrolled nurse midwife	98%	97.70%	97.70%	97.40%
Anaesthesiologist	5%	4.60%	4.60%	3.90%
Nurse/Clinical officer anaesthetist	68%	67.80%	67.80%	74.00%
Laboratory technologist/ technician	90%	89.70%	89.70%	89.60%
Medical Assistant	85%	85.10%	85.10%	87.00%

Table 6.14A: Percentage of hospitals where indicated cadre provides the EmONC signal functions (procedures) by health worker cadre

HOSPITALS (n=87)	Facilities cadre present		Procedures						
			Manual removal of placenta	Removal of retained products		Assisted vaginal delivery	Neonatal resuscitation	Blood transfusion	Caesarean delivery
				MVA	D&C or E&C				
	%		%	%	%	%	%	%	%
Health worker cadre									
Medical doctor	59%		63.6%	54.5%	70.1%	62.3%	62.3%	66.2%	74.2%
Obstetrician/Gynaecologist	14%		13.6%	9.1%	16.4%	13.0%	13.0%	12.7%	18.2%
General surgeon	10%		10.6%	5.5%	13.4%	7.2%	7.2%	9.9%	13.6%
Paediatrician	8%		7.6%	5.5%	10.4%	5.8%	5.8%	7.0%	10.6%
Clinical officer	91%		92.4%	90.9%	94.0%	97.1%	97.1%	95.8%	95.5%
Registered nurse	45%		53.0%	45.5%	52.2%	50.7%	50.7%	52.1%	56.1%

Registered nurse midwife	76%		77.3%	76.4%	82.1%	82.6%	82.6%	80.3%	87.9%
Community midwife	20%		22.7%	27.3%	22.4%	21.7%	21.7%	22.5%	21.2%
Enrolled nurse midwife	98%		97.0%	96.4%	97.0%	97.1%	97.1%	98.6%	98.5%
Anaesthesiologist	5%		4.5%	5.5%	6.0%	2.9%	2.9%	4.2%	6.1%
Nurse/Clinical officer anaesthetist	68%		69.7%	61.8%	79.1%	75.4%	75.4%	78.9%	86.4%
Laboratory technologist/ technician	90%		87.9%	89.1%	97.0%	91.3%	91.3%	95.8%	97.0%
Medical Assistant	85%		84.8%	85.5%	83.6%	88.4%	88.4%	85.9%	81.8%

Table 6.15A: Percentage of health centres where indicated cadre provides the EmONC signal functions (parenteral drugs) by health worker cadre

HEALTH CENTERS/ CLINICS (n=464)	Facilities cadre present	Parenteral Drugs		
		Antibiotics	Oxytocics	Anti-convulsants
	%	%	%	%
Health worker cadre				
Medical doctor	1%	0.40%	0.40%	0.00%
Obstetrician/Gynaecologist	0%	0.00%	0.00%	0.00%
General surgeon	0%	0.00%	0.00%	0.00%
Paediatrician	0%	0.00%	0.00%	0.00%
Clinical officer	9%	8.80%	8.60%	8.40%
Registered nurse	2%	1.60%	1.50%	2.10%
Registered nurse midwife	7%	7.00%	6.20%	7.50%
Community midwife	16%	16.80%	16.40%	17.60%
Enrolled nurse midwife	96%	95.20%	96.10%	99.30%
Anaesthesiologist	0%	0.00%	0.00%	0.00%
Nurse/Clinical officer anaesthetist	0%	0.00%	0.00%	0.00%
Laboratory technologist/ technician	10%	9.80%	9.80%	11.20%
Medical Assistant	84%	84.40%	85.40%	86.10%

Note: estimates based on unweighted n = 278

Table 6.16A: Percentage of health centres where indicated cadre provides the EmONC signal functions (procedures) by health worker cadre

HEALTH CENTERS/ CLINICS (n=464)	Facilities cadre present		Manual removal of placenta	Removal of retained products		Assisted vaginal delivery	Neonatal resuscitation	Blood transfusion	Caesarean delivery
				MVA	D&C or E&C				
	%		%	%	%	%	%	%	%
Health worker cadre									
Medical doctor	1%		0.0%	1.2%	50.7%	0.0%	0.0%	51.9%	0.0%
Obstetrician/Gynaecologist	0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
General surgeon	0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Paediatrician	0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clinical officer	9%		8.9%	9.2%	50.7%	6.0%	6.0%	51.9%	0.0%
Registered nurse	2%		3.3%	2.3%	0.0%	4.0%	4.0%	0.0%	0.0%
Registered nurse midwife	7%		8.7%	9.0%	50.7%	15.5%	15.5%	51.9%	0.0%
Community midwife	16%		20.1%	17.8%	0.0%	24.9%	24.9%	48.1%	0.0%
Enrolled nurse midwife	96%		97.8%	96.6%	100.0%	94.4%	94.4%	100.0%	0.0%
Anaesthesiologist	0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nurse/Clinical officer anaesthetist	0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Laboratory technologist/ technician	10%		11.4%	7.0%	50.7%	12.2%	12.2%	100.0%	0.0%
Medical Assistant	84%		92.3%	93.1%	100.0%	98.0%	98.0%	100.0%	0.0%

Note: estimates based on unweighted n = 278

Table 6.17A: Percentage of facilities where indicated cadre provides other essential services or procedures by health worker cadre

HOSPITALS (n=87)	Normal delivery	Breech delivery	Partograph management	Immediate newborn care	Focused ANC	FP counselling	Short and long term FP methods	Surgical FP methods (Vasectomy)	Surgical FP methods (Tubal ligation)	PMTCT	Uterotonic drugs by other routes	Newborn blood transfusion	Provide anaesthesia	Provide corticosteroids for pre-term labour	Provide antibiotics for newborn with infection
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Health worker cadre															
Medical doctor	53%	38%	30%	31%	22%	28%	21%	17%	39%	33%	34%	26%	5%	37%	40%
Obstetrician/Gynaecologist	3%	14%	9%	10%	10%	11%	8%	8%	14%	9%	13%	7%	1%	13%	10%
General surgeon	0%	1%	0%	0%	2%	1%	0%	2%	2%	1%	1%	3%	1%	0%	0%
Paediatrician	0%	0%	0%	6%	1%	0%	1%	0%	0%	0%	2%	6%	0%	1%	5%
Clinical officer	71%	82%	59%	70%	41%	60%	54%	30%	63%	78%	63%	36%	8%	62%	69%
Registered nurse	0%	0%	0%	9%	9%	23%	22%	0%	0%	13%	9%	15%	0%	13%	23%
Registered nurse midwife	76%	72%	75%	75%	71%	71%	60%	0%	2%	72%	61%	51%	0%	64%	74%
Community midwife	14%	10%	15%	15%	17%	15%	14%	0%	1%	17%	7%	8%	0%	9%	13%
Enrolled nurse midwife	94%	86%	94%	95%	94%	87%	71%	0%	5%	92%	68%	55%	1%	74%	94%
Anaesthesiologist	6%	0%	0%	5%	0%	0%	0%	0%	0%	1%	0%	2%	3%	0%	1%
Nurse/Clinical officer anaesthetist	10%	5%	10%	28%	2%	6%	5%	1%	2%	8%	17%	26%	57%	7%	13%
Laboratory technologist/ technician	0%	0%	0%	0%	1%	1%	0%	0%	0%	5%	0%	5%	0%	1%	1%
Medical Assistant	23%	11%	20%	20%	18%	31%	28%	0%	0%	40%	10%	15%	0%	13%	37%

Note 1. Facilities that did not provide answers are excluded. Where the percentage of facilities that did not answer (missing values) is greater than 3% we have noted so.

Note 2. Dashes indicate that there was no question about the procedure or service for that cadre of health worker.

HEALTH CENTERS/CLINICS (n=464)	Normal delivery	Breech delivery	Partograph management	Immediate newborn care	Focused ANC	FP counselling	Short and long term FP methods	Surgical FP methods (Vasectomy)	Surgical FP methods (Tubal ligation)	PMTCT	Uterotonic drugs by other routes	Newborn blood transfusion	Provide general anaesthesia	Provide corticosteroids for pre-term labour	Provide antibiotics for newborn with infection
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Health worker cadre															
Medical doctor	1%	0%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%
Obstetrician/Gynaecologist	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
General surgeon	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Paediatrician	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Clinical officer	8%	8%	8%	8%	5%	6%	4%	0%	0%	8%	1%	1%	0%	2%	8%
Registered nurse	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%
Registered nurse midwife	6%	6%	6%	6%	6%	5%	5%	0%	0%	6%	2%	1%	0%	1%	5%
Community midwife	16%	59%	16%	16%	15%	15%	13%	0%	0%	11%	2%	0%	0%	2%	14%
Enrolled nurse midwife	94%	89%	93%	93%	94%	90%	81%	0%	0%	90%	18%	3%	0%	14%	89%
Anaesthesiologist	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Nurse/Clinical officer anaesthetist	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Laboratory technologist/ technician	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Medical Assistant	71%	56%	66%	69%	50%	64%	57%	0%	0%	68%	12%	3%	0%	31%	72%

Note 1. Facilities that did not provide answers are excluded. Where the percentage of facilities that did not answer (missing values) is greater than 3% we have noted so.										
Note 2. Dashes indicate that there was no question about the procedure or service for that cadre of health worker.										
Note: health centre estimates based on unweighted n = 278										

Table 7.01A: Percentage of providers with knowledge of focused antenatal care practices and signs and knowledge of high-risk pregnancy

	Total (n=355)	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community nurse midwife (n=17)
Knowledge of focused antenatal care					
Average score (out of 6)	3.1	3	3.2	2.7	2.5
Percent providing specific response:					
Minimum of 4 consultations	68.17%	64.00%	69.23%	71.43%	52.94%
Ensure woman has birth plan	45.63%	48.00%	44.82%	35.71%	64.71%
Prevent illness and promote health	81.69%	76.00%	84.62%	71.43%	47.06%
Detect existing illnesses and manage complications	56.90%	64.00%	57.19%	52.14%	41.18%
Teach danger signs	46.48%	36.00%	48.16%	35.71%	41.18%
Promote breastfeeding	10.70%	12.00%	11.71%	0.00%	0.00%
Knowledge of which pregnant women are at risk					
Average score (out of 8)	2.8	2.76	2.9	1.9	2.3
Percent providing specific response:					
Previous caesarean	71.27%	64.00%	72.58%	57.14%	70.59%
5 or more deliveries	58.59%	60.00%	59.87%	42.86%	47.06%
Interval <2 or >5 years between deliveries	11.83%	4.00%	12.71%	14.29%	5.88%
Previous stillbirth	23.94%	16.00%	26.09%	0.00%	17.65%
Previous neonatal death	17.46%	8.00%	19.06%	7.14%	11.76%
Previous instrumental delivery	14.93%	12.00%	16.05%	0.00%	11.76%
History of severe obstetric complications	81.69%	92.00%	82.61%	64.29%	64.71%
Previous obstetric fistula repair	5.07%	20.00%	4.35%	0.00%	0.00%

Table 7.02A: Percentage of providers who know when a woman is in labour, what to monitor, where to record information, and steps of active management of the third stage of labour (AMTSL), by health worker cadre

	Total (n=355)	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community nurse midwife (n=17)

How do you know when a pregnant woman is in labour?					
Average score (out of 4)	3.1	2.9	3.1	3.2	2.5
Percent providing specific response:	%				
Regular uterine contractions	94.37%	96.00%	95.32%	92.86%	76.47%
Dilation of the cervix	81.97%	80.00%	82.61%	92.86%	64.71%
Discharge of blood and mucus	78.59%	72.00%	79.26%	85.71%	70.59%
Breaking of the waters/ruptured membranes	54.08%	40.00%	56.19%	50.00%	41.18%
What do you monitor when a woman is in labour?					
Average score (out of 9)	6.6	7.5	6.5	6.1	6.1
Percent providing specific response:					
Foetal heartbeat	92.39%	84.00%	93.31%	85.71%	94.12%
Colour of amniotic fluid	43.10%	68.00%	41.14%	50.00%	35.29%
Degree of moulding	33.80%	60.00%	33.44%	21.43%	11.76%
Dilatation of the cervix	80.85%	84.00%	81.27%	35.71%	64.71%
Descent of the head	71.55%	92.00%	69.90%	64.29%	76.47%
Uterine contractions	88.73%	92.00%	89.30%	78.57%	82.35%
Maternal blood pressure	90.70%	100.00%	89.97%	85.71%	92.12%
Maternal temperature	81.69%	88.00%	81.61%	64.29%	88.24%
Maternal pulse	73.52%	84.00%	73.24%	71.43%	64.71%
Where do you record this information?					
Average score (out of 4)	1.7	1.8	1.7	1.4	1.7
Percent providing specific response:	%				
Partograph	97.75%	100.00%	97.32%	100.00 %	100.00%
Clinical record	41.13%	44.00%	42.14%	28.57%	29.41%
Partograph in the prenatal card	4.51%	4.00%	4.01%	7.14%	11.76%
Piece of paper	23.94%	32.00%	23.75%	7.14%	29.41%
What are the steps of AMTSL?					
Average score (out of 4)	2.5	2.6	2.5	2.2	2.4
Percent providing specific response:					
Immediate oxytocin (1 to 2 min)	95.21%	96.00%	95.32%	92.86%	94.12%
Immediate ergometrine (1 to 2 min)	1.13%	4.00%	1.00%	0.00%	0.00%
Controlled cord traction	94.65%	96.00%	95.65%	78.57%	88.24%
Uterine massage	57.18%	64.00%	56.86%	50.00%	58.82%

Table 7.03A: Percentage of providers who know the signs of postpartum haemorrhage (PPH), how to treat PPH and retained placenta, by health worker cadre

	Total (n=338)	Registered nurse/Mid wife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community nurse midwife
What do you look for when a woman arrives with or develops heavy bleeding after birth?					
Average score (out of 7)	3.9	4.9	3.9	3.6	2.9
Percent providing specific response:	%				
Signs of shock	70.00%	84.00%	69.57%	78.57%	41.18%
Amount of external blood	50.83%	64.00%	50.84%	35.71%	47.06%
Signs of anaemia	57.50%	68.00%	58.53%	35.71%	35.29%
Damage to the genital tract	67.22%	84.00%	65.89%	85.71%	52.94%
Whether uterus is contracted	58.61%	84.00%	57.53%	50.00%	47.06%
Retained products or retained placenta	46.94%	60.00%	45.48%	57.14%	47.06%
Full bladder	38.61%	44.00%	39.46%	21.43%	23.53%
What do you do when a woman arrives with or develops heavy bleeding after birth?					
Average score (out of 8)	5.1	5.8	5.1	4.7	5.1
Percent providing specific response:					
Massage the fundus	58.61%	80.00%	57.86%	50.00%	52.94%
Give ergometrine or oxytocin (IV or IM)	88.61%	80.00%	90.30%	57.14%	94.12%
Begin IV fluids	90.28%	92.00%	90.30%	100.00%	76.47%
Empty full bladder	62.22%	76.00%	63.21%	35.71%	47.06%
Take blood for Hb and cross-matching	28.61%	60.00%	27.42%	21.43%	17.65%
Examine woman for lacerations	75.28%	84.00%	74.25%	71.43%	76.47%
Manually remove retained products	50.83%	60.00%	49.16%	42.86%	64.71%
Refer	60.00%	44.00%	59.20%	92.86%	82.35%
What do you do when a woman has given birth and retained the placenta?					
Average score (out of 10)	4.2	4.5	4.3	2.9	3.5

Percent providing specific response:					
Empty the bladder	42.22%	40.00%	44.15%	14.29%	41.18%
Sign of separation of placenta before controlled cord traction	29.44%	40.00%	29.10%	7.14%	29.41%
Give or repeat oxytocin	61.39%	56.00%	62.10%	50.00%	58.82%
Manually remove placenta	80.56%	92.00%	80.94%	71.43%	64.71%
Administer IV fluids	66.11%	72.00%	67.22%	35.71%	64.71%
Monitor vital signs for shock and act	23.89%	28.00%	24.41%	21.43%	11.76%
Check that uterus is well contracted	31.11%	28.00%	32.78%	14.29%	17.65%
Determine blood type and cross-match	11.67%	40.00%	10.70%	0.00%	0.00%
Prepare surgical theatre	13.06%	32.00%	13.04%	0.00%	0.00%
Refer	60.56%	24.00%	62.88%	78.57%	64.71%

Table 7.04A: Percentage of providers who know steps of immediate newborn care and signs of newborn complications by health worker cadre

	Total (n=355)	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community nurse midwife (n=17)
The last time you delivered a baby, what immediate care did you give the newborn?					
Average score (out of 11)	5.9	6.4	5.9	5.9	
Percent providing specific response:	%	%	%	%	
Clean the mouth before shoulders out	46.39%	52.00%	44.82%	57.14%	47.06%
Clean the mouth, face and nose	63.61%	72.00%	63.21%	64.29%	52.94%
Ensure the baby is breathing	57.22%	76.00%	55.52%	59.09%	64.71%
Ensure the baby is dry	87.22%	92.00%	87.29%	90.91%	94.12%
Observe for colour	30.83%	36.00%	30.77%	31.82%	35.29%
Baby kept warm (skin to skin)	85.28%	96.00%	82.94%	92.86%	100.00%
Provide prophylaxis for eyes	29.17%	24.00%	29.43%	50.00%	5.88%
Weigh the baby	49.44%	28.00%	52.84%	50.00%	23.53%
Care for the umbilical cord	60.56%	64.00%	60.54%	42.86%	76.47%
Begin breastfeeding within 30 minutes	57.78%	64.00%	57.53%	71.43%	41.18%
Evaluate/examine baby within first hour	25.72%	40.00%	24.75%	14.29%	11.26%
Signs & symptoms of newborn infection					
Average score (out of 9)	3.3	3.6	3.3	4.1	2.4
Percent providing specific response:	%	%	%	%	

Not feeding or stopped feeding	69.44%	64.00%	70.23%	78.57%	47.06%
Convulsions	33.33%	36.00%	33.78%	42.86%	17.65%
Only moves when stimulated or even not	18.89%	24.00%	18.06%	28.57%	17.65%
Respiratory rate ≥60	21.67%	36.00%	21.40%	35.71%	0.00%
Severe chest indrawing	27.50%	36.00%	25.75%	50.00%	29.41%
Hyperthermia	93.89%	92.00%	93.65%	100.00%	94.12%
Hypothermia	16.39%	20.00%	16.05%	28.57%	11.76%
Yellow soles (sign of jaundice)	30.56%	40.00%	29.77%	28.57%	23.53%
Severe abdominal distension	15.83%	12.00%	17.06%	14.29%	0.00%
Care for the infected newborn					
Average score (out of 5)	2.3	2.5	2.3	2.7	1.8
Percent providing specific response:	%	%	%	%	
Explain the situation to the mother	29.88%	40.00%	28.76%	35.71%	17.65%
Continue to breastfeed or to give breastmilk in nasogastric tube	50.59%	72.00%	47.83%	71.43%	41.18%
Keep airways open	12.43%	16.00%	12.37%	7.14%	0.00%
Begin antibiotics	94.08%	100.00%	93.31%	100.00%	82.35%
Refer	45.27%	20.00%	46.82%	57.14%	35.29%
Care for the low birth weight newborn					
Average score (out of 6)	2.8	3.4	2.8	2.3	2.1
Percent providing specific response:	%	%	%	%	
Ensure baby is warm (skin to skin/KMC)	92.90%	100.00%	93.31%	71.43%	94.12%
Provide extra support to mother to establish breastfeeding	60.36%	64.00%	60.54%	50.00%	47.06%
Monitor ability to breastfeed	49.41%	72.00%	47.49%	50.00%	17.65%
Monitor baby for first 24 hours	25.44%	40.00%	24.75%	14.29%	17.65%
Ensure infection prevention	26.04%	24.00%	27.09%	7.14%	5.88%
Counsel on follow-up and refer to HSA upon discharge	28.99%	36.00%	28.09%	35.71%	29.41%

Table 7.05A: Percentage of providers who recognize complications of abortion, how to intervene, and what to do for victims of sexual violence, by health worker cadre

	Total (n=355)	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community nurse midwife (n=17)
What are the complications of unsafe abortion?					
Average score (out of 5)	2.7	3.1	2.7	2.8	1.8
Percent providing specific response:	%	%	%	%	%

Sepsis	89.1	92.0	88.3	100.0	70.6
Bleeding	78.1	84.0	77.6	78.6	64.7
Genital injuries	34.9	52.0	34.5	14.3	11.8
Abdominal injuries	36.4	48.0	34.8	50.0	17.7
Shock	33.7	36.0	33.4	35.7	11.8
What do you do for a woman with an unsafe or incomplete abortion?					
Average score (out of 9)	4.3	4.9	4.3	4.4	3.0
Percent providing specific response:	%	%	%	%	
Vaginal exam	45.6	40.0	46.2	42.9	29.4
Assess vaginal bleeding	48.2	52.0	48.5	35.7	52.9
Assess vital signs	47.9	48.0	48.2	42.9	17.7
Start IV fluids	63.0	72.0	62.9	50.0	41.2
Start antibiotics	69.8	80.0	68.9	71.4	41.2
Vacuum aspiration (manual or electric)	36.1	60.0	33.8	42.9	29.4
Dilatation with curettage or evacuation	23.7	60.0	20.7	21.4	0.0
Provide Counselling	26.9	40.0	25.4	35.7	0.0
Refer	71.3	36.0	72.9	100.0	88.2
What information do you give to women after unsafe or incomplete abortion?					
Average score (out of 6)	2.9	2.9	3.0	2.9	2.0
Percent providing specific response:	%	%	%	%	
Information on Reproductive tract infection or HIV	22%	8%	24%	36%	0%
Information on when women can conceive again	48%	60%	47%	50%	35%
Counselling of FP and services	86%	84%	86%	79%	82%
Refer for FP methods	61%	56%	62%	64%	35%
Information on social support	11%	8%	12%	7%	0%
Information on consequences of unsafe abortion	64%	76%	64%	57%	47%
What do you do for the victim of sexual violence?					
Average score (out of 8)	3.7	4.1	3.7	4.4	2.5
Percent providing specific response:	%	%	%	%	
Encourage her complete the police report	36%	36%	36%	43%	24%
Help filling police report	25%	32%	24%	43%	12%

Counsel for pre- and post-HIV testing	80%	96%	79%	86%	76%
Counsel for pregnancy prevention	25%	28%	24%	43%	6%
Provide emergency contraception	54%	64%	52%	71%	41%
Provide post-exposure prophylaxis for HIV	86%	92%	86%	79%	65%
Request urine and blood samples	37%	48%	36%	43%	18%
Refer	28%	16%	28%	29%	12%

Table 7.06A: Percentage and number of providers who reported training in various services and percentage of those trained who provided the service in the past 3 months, by health worker cadre (Registered nurse/midwives & Enrolled nurse/midwives)

	Total (n=355)							Registered nurse/Midwife (n=25)							Enrolled nurse/ Midwife (n=299)					
	Trained		Provided (among trained)		Provided (among not trained)			Trained		Provided (among trained)		Provided (among not trained)			Trained		Provided (among trained)		Provided (among not trained)	
	n	%	n	%	n	%		%	N	n	%	n	%		%	n	n	%	n	%
Provide focused antenatal care	332	93.5%	296	89.2%	17	73.9%		96.0%	24	16	66.7%	1	100.0%		93.7%	280	254	90.7%	14	73.7%
Use of partograph	350	98.6%	339	96.9%	4	80.0%		100.0%	25	25	100.0%	0	0.0%		98.7%	295	286	97.0%	3	75.0%
Do AMTSL	350	98.6%	348	99.4%	5	100.0%		100.0%	25	25	100.0%	0	0.0%		98.7%	295	293	99.3%	4	100.0%
Manually remove placenta	312	87.9%	132	42.3%	10	23.3%		96.0%	24	11	45.8%	1	100.0%		89.6%	268	114	42.5%	8	25.8%
Begin IV fluids	352	99.2%	341	96.9%	2	66,67%		100.0%	25	25	100.0%	0	0.0%		99.0%	296	285	96.3%	2	66.7%
Check for anaemia	353	99.4%	347	98.3%	2	100.0%		100.0%	25	25	100.0%	0	0.0%		99.3%	297	291	98.0%	2	100.0%
Administer IM or IV magnesium sulphate	337	95.0%	161	47.8%	5	27.8%		96.0%	24	16	66.7%	1	100.0%		96.3%	288	137	47.6%	5	45.5%
Bimanual compression of uterus (external)	270	76.1%	84	31.1%	2	2.4%		92.0%	23	10	43.5%	0	0.0%		78.3%	234	70	29.9%	2	3.1%
Bimanual compression of uterus (internal)	243	68.5%	51	21.0%	6	5.4%		88.0%	22	8	36.4%	1	33.3%		69.6%	208	40	19.2%	4	4.4%
Suture an episiotomy	350	98.6%	245	70.0%	2	40.0%		100.0%	25	22	88.0%	0	0.0%		98.7%	295	206	69.8%	2	50.0%
Suture vaginal lacerations	347	97.8%	319	91.9%	2	25.0%		100.0%	25	24	96.0%	0	0.0%		97.7%	292	268	91.8%	2	28.6%

Suture cervical lacerations	42	11.8%	14	33.3%	1	0.3%		12.0%	3	0	0.0%	0	0.0%		12.7%	38	14	36.8%	1	38.0%
Apply vacuum extractor	257	72.4%	79	30.7%	2	2.0%		92.0%	23	15	65.2%	0	0.0%		75.3%	225	62	27.6%	2	2.7%
Apply forceps	39	11.0%	2	5.1%	1	0.3%		8.0%	2	0	0.0%	0	0.0%		12.0%	36	2	5.6%	1	0.4%
Perform MVA	190	53.5%	59	31.1%	6	3.6%		72.0%	18	3	16.7%	1	14.3%		53.9%	161	52	32.3%	3	2.2%
Perform D&C	31	8.7%	6	19.4%	3	0.9%		8.0%	2	1	50.0%	0	0.0%		8.7%	26	4	15.4%	3	1.1%
Administer antiretrovirals for PMTCT	307	86.5%	277	90.2%	15	31.3%		88.0%	22	16	72.7%	1	33.3%		86.6%	259	238	92.0%	12	30.0%
Counsel women for FP and contraception	343	96.6%	305	88.9%	6	50.0%		96.0%	24	20	83.3%	0	0.0%		97.3%	291	258	88.7%	4	50.0%
Resuscitate an adult	286	80.6%	144	50.4%	5	7.3%		84.0%	21	13	61.9%	1	25.0%		82.5%	246	115	46.8%	4	7.6%
Resuscitate a newborn with ambu bag and mask	343	96.6%	299	87.2%	7	58.3%		100.0%	25	21	84.0%	0	0.0%		96.3%	288	251	87.2%	7	63.6%
Provide KMC for LBW/pre-term	306	86.2%	192	62.8%	17	34.7%		100.0%	25	15	60.0%	0	0.0%		88.0%	263	168.0	63.9%	14	38.9%
Administer corticosteroids to women at risk	218	61.4%	82	37.6%	6	4.3%		92.0%	23	12	52.2%	0	0.0%		61.9%	165	67	36.2%	5	4.4%
Manages newborn infection (sepsis)	338	95.2%	294	87.0%	8	47.1%		92.0%	23	18	78.3%	0	0.0%		95.3%	285	248	87.0%	8	57.1%
Sterile cord cutting and appropriate cord care	347	97.8%	340	98.0%	3	37.5%		92.0%	23	23	100.0%	0	0.0%		98.0%	293	288	98.3%	3	50.0%
Apply chlorhexidine for umbilical cord cleansing	105	29.6%	66	62.9%	4	1.6%		48.0%	12	5	41.7%	0	0.0%		26.42%	79	51	64.6%	4	1.8%

Table 7.07A: Percentage and number of providers who reported training in various services and percentage of those trained who provided the service in the past 3 months, by health worker cadre (medical assistants and community midwives)

	Total (n=355)							Medical Assistant (n=14)							Community Midwife (n=17)					
	Trained		Provided (among trained)		Provided (among not trained)			Trained		Provided (among trained)		Provided (among not trained)			Trained		Provided (among trained)		Provided (among not trained)	
	n	%	n	%	n	%		%	N	n	%	n	%		n	%	n	%	n	%
Provide focused antenatal care	332	93.5%	296	89.2%	17	73.9%		78.6%	11	9	81.8%	2	66.7%		17	100.0%	17	100.0%	0	0.0%
Use of partograph	350	98.6%	339	96.9%	4	80.0%		92.9%	13	11	84.6%	1	100.0%		17	100.0%	17	100.0%	0	0.0%
Do AMTSL	350	98.6%	348	99.4%	5	100.0%		92.9%	13	13	100.0%	1	100.0%		17	100.0%	17	100.0%	0	0.0%
Manually remove placenta	312	87.9%	132	42.3%	10	23.3%		71.4%	10	6	60.0%	1	25.0%		10	58.8%	1	10.0%	0	0.0%
Begin IV fluids	352	99.2%	341	96.9%	2	66,67%		100.0%	14	14	100.0%	0	0.0%		17	100.0%	17	100.0%	0	0.0%
Check for anemia	353	99.4%	347	98.3%	2	100.0%		100.0%	14	14	100.0%	0	0.0%		17	100.0%	17	100.0%	0	0.0%
Administer IM or IV magnesium sulphate	337	95.0%	161	47.8%	5	27.8%		71.4%	10	3	30.0%	0	0.0%		15	88.2%	5	33.3%	0	0.0%
Bimanual compression of uterus (external)	270	76.1%	84	31.1%	2	2.4%		57.1%	8	2	25.0%	0	0.0%		5	29.4%	2	40.0%	0	0.0%
Bimanual compression of uterus (internal)	243	68.5%	51	21.0%	6	5.4%		50.0%	7	2	28.6%	0	0.0%		6	35.3%	1	16.7%	1	9.1%

Suture an episiotomy	350	98.6%	245	70.0%	2	40.0%		100.0%	14	7	50.0%	0	0.0%		16	94.1%	10	62.5%	0	0.0%
Suture vaginal lacerations	347	97.8%	319	91.9%	2	25.0%		100.0%	14	11	78.6%	0	0.0%		16	94.1%	16	100.0%	0	0.0%
Suture cervical lacerations	42	11.8%	14	33.3%	1	0.3%		7.1%	1	0	0.0%	0	0.0%		0	0.0%	0	0.0%	0	0.0%
Apply vacuum extractor	257	72.4%	79	30.7%	2	2.0%		35.7%	5	0	0.0%	0	0.0%		4	23.5%	2	50.0%	0	0.0%
Apply forceps	39	11.0%	2	5.1%	1	0.3%		0.0%	0	0	0.0%	0	0.0%		1	5.9%	0	0.0%	0	0.0%
Perform MVA	190	53.5%	59	31.1%	6	3.6%		50.0%	7	4	57.1%	0	0.0%		4	23.5%	0	0.0%	2	15.4%
Perform D&C	31	8.7%	6	19.4%	3	0.9%		14.3%	2	0	0.0%	0	0.0%		1	5.9%	1	100.0%	0	0.0%
Administer antiretrovirals for PMTCT	307	86.5%	277	90.2%	15	31.3%		78.6%	11	10	90.9%	1	33.3%		15	88.2%	13	86.7%	1	50.0%
Counsel women for FP and contraception	343	96.6%	305	88.9%	6	50.0%		92.9%	13	12	92.3%	1	100.0%		15	88.2%	15	100.0%	1	50.0%
Resuscitate an adult	286	80.6%	144	50.4%	5	7.3%		92.9%	13	11	84.6%	0	0.0%		6	35.3%	5	83.3%	0	0.0%
Resuscitate a newborn with ambu bag and mask	343	96.6%	299	87.2%	7	58.3%		92.9%	13	10	76.9%	0	0.0%		17	100.0%	17	100.0%	0	0.0%
Provide KMC for LBW/pre-term	306	86.2%	192	62.8%	17	34.7%		35.7%	5	1	20.0%	2	22.2%		13.0	76.1%	8	61.5%	1	25.0%

Administer corticosteroids to women at risk	218	61.4%	82	37.6%	6	4.3%		14.3%	2	0	0.0%	0	0.0%		8	47.1%	3	37.5%	1	11.1%
Manages newborn infection (sepsis)	338	95.2%	294	87.0%	8	47.1%		100.0%	14	14	100.0%	0	0.0%		16	94.1%	14	87.5%	0	0.0%
Sterile cord cutting and appropriate cord care	347	97.8%	340	98.0%	3	37.5%		100.0%	14	13	92.9%	0	0.0%		17	100.0%	16	94.1%	0	0.0%
Apply chlorhexidine for umbilical cord cleansing	105	29.6%	66	62.9%	4	1.6%		28.6%	4	3	75.0%	0	0.0%		10	58.8%	7	70.0%	0	0.0%

Table 7.08A: Place of training, diagnosis and management of birth asphyxia, among midwives and nurses with either training or experience with neonatal resuscitation

	Total (n=355)	Registered nurse/Midwife (n=25)	Enrolled nurse/ Midwife (n=299)	Medical Assistant (n=14)	Community nurse midwife (n=17)
Number of providers					
Where training in newborn resuscitation took place	%	%	%	%	%
In-Service	30	32%	28%	64%	29%
Pre-service	25	16%	25%	21%	35%
Both	45	52%	47%	14%	35%
How to diagnose birth asphyxia					
Average score (out of 4)	2.6	2.8	2.7	2.1	2.6
Percent providing specific responses:	%	%	%	%	
Depressed breathing	81%	84%	81%	79%	76%
Floppiness	69%	64%	70%	50%	76%
Heart rate < 100 BPM	41%	52%	42%	14%	35%
Central cyanosis (blue tongue)	73%	76%	73%	64%	71%
Preliminary steps of neonatal resuscitation					
Average score (out of 7)	3.8	4.1	3.8	3.1	3.6
Percent providing specific responses:	%	%	%	%	

Call for help	17%	20%	16%	29%	18%
Explain to mother condition of the baby	16%	16%	17%	14%	0%
Place Newborn face up	52%	64%	51%	36%	53%
Wrap baby, except for face & upper chest	64%	76%	65%	43%	41%
Position baby's head so neck is slightly extended	59%	56%	60%	43%	76%
Suction mouth & then nose	84%	88%	85%	64%	82%
Start ventilation with bag and mask	90%	92%	90%	79%	94%
If resuscitating with bag & mask, what do you do?					
Average score (out of 5)	3.2	4.1	3.2	2.6	2.9
Percent providing specific responses:	%	%	%	%	
Cover baby's chin, mouth & nose with mask	78%	92%	78%	71%	65%
Ensure appropriate seal between chin, mouth & nose with mask	68%	80%	68%	64%	65%
Ventilate 1 or 2 times	66%	80%	66%	43%	71%
Ventilate 40 times per min	45%	84%	43%	29%	41%
Pause to determine whether breathing is spontaneous	64%	76%	64%	50%	53%
If baby is breathing and no respiratory difficulty, what do you do?					
Average score (out of 3)	2.1	2.5	2.1	2.1	1.9

Percent providing specific responses:	%	%	%	%	
Keep baby warm	78%	96%	76%	71%	88%
Initiate breastfeeding	78%	68%	79%	78%	59%
Continue monitoring baby	57%	88%	56%	57%	41%
If baby does not begin to breathe, or if breathing is < 30 per minute, what do you do?					
Average score (out of 6)	2.3	2.7	2.3	2.1	1.8
Percent providing specific responses:	%	%	%		
Continue to ventilate	67%	76%	68%	57%	47%
Administer O2	54%	60%	56%	21%	35%
Assess need for special care	24%	36%	23%	21%	24%
Explain to mother what is happening	21%	20%	20%	36%	12%
Intubate per adrenaline resuscitation guidelines	4%	8%	4%	7%	0%
Refer	63%	72%	62%	71%	59%

Table 8.01A: Percentage of facilities according to mechanisms for ordering drugs, by type of facility

	Central hospital	District hospital	Community hospital	Other hospital	Health Centre	Total
	(n=4)	(n=23)	(n=33)	(n=27)	(n=468)	(n=555)
	%	%	%	%	%	%[1]
Among facilities with a pharmacy						
Drug supplies in the pharmacy are ordered						
Same time (each week, month or quarter)	75%	96%	85%	63%	65%	67%
Same time (every 6 or 12 months)	0%	0%	3%	0%	1%	1%
When stock reaches 're-order' level	25%	4%	12%	30%	24%	22%
When stock runs out	0%	0%	0%	4%	5%	4%
Never ordered, but shipments come	0%	0%	0%	4%	6%	5%
In labour room, delivery room and maternity ward						
Same time (each week, month or quarter)	25%	96%	79%	63%	52%	56%
When stock reaches 're-order' level	75%	4%	15%	26%	33%	31%
When stock runs out	0%	0%	3%	7%	12%	11%
Never ordered, but shipments come	0%	0%	0%	0%	1%	1%
Drug ordered on patient-by-patient basis	0%	0%	0%	4%	1%	1%
No delivery Service	0%	0%	0%	0%	1%	1%
Among facilities with an OT						
Same time (each week, month or quarter)	25%	96%	79%	60%	0%	79%
When stock reaches 're-order' level	75%	4%	21%	28%	0%	18%
When stock runs out	0%	0%	0%	8%	0%	3%
Never ordered, but shipments come	0%	0%	0%	0%	0%	0%
Drug ordered on patient-by-patient basis	0%	0%	0%	4%	0%	0%

[1]Percentages may not add up to 100 due to rounding; estimates based on weighted n

Table 8.02A: Percentage of facilities reporting most common cause of delay of delivery of supplies, by type of facility and sector (among facilities that experienced delays, n=211).

	Hospitals					Health Centres			
Most common cause of delay	Govt	Private for Profit	CHAM	All hospitals		Govt	Private for Profit	CHAM	All health centres
	(n=25)	(n=1)	(n=10)	(n=36)		(n=138)	(n=3)	(n=34)	(n=175)
	%	%	%	%		%	%	%	%
Inadequate transport	20%	0%	30%	22%		31%		27%	29%
Administrative difficulties	44%	0%	20%	36%		38%	66%	44%	41%
Financial problems	4%	0%	40%	14%		2%	0%	15%	5%
Insufficient fuel	0%	0%	0%	0%		0%	0%	0%	0%
Insufficient staff	0%	0%	0%	0%		0%	0%	0%	0%
Stock out at the central store	20%	100%	10%	19%		20%	34%	9%	18%
Other[1]	12%	0%	0%	8%		9%	0%	6%	7%
[1]'Other' includes staff didn't know, pharmacy or facility was new. Estimates based on weighted n									

Table 8.03A: Percentage of facilities reporting on stock outs of magnesium sulphate, oxytocin, and dexamethasone, by type of facility (among facilities with pharmacy/supply of drugs)

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=468)	Total (n=555)
	%	%	%	%	%	%
Magnesium Sulphate						
Never had Magnesium Sulphate in stock	0%	0%	3%	0%	3%	3%
Stock out in last 12 months	0%	4%	9%	19%	10%	10%
Currently out of stock	0%	100%	33%	40%	48%	47%
Within last month	0%	0%	33%	0%	4%	5%
Within 3 months	0%	0%	0%	20%	11%	11%
Within 6 months	0%	0%	0%	20%	15%	15%
Within 12 months	0%	0%	33%	20%	22%	22%
Oxytocin						
Never had Oxytocin in stock	0%	0%	0%	0%	2%	1%
Stock out in last 12 months	0%	0%	3%	15%	12%	11%
Currently out of stock	0%	0%	0%	50%	26%	27%

Within last month	0%	0%	0%	25%	9%	10%
Within 3 months	0%	0%	0%	25%	26%	25%
Within 6 months	0%	0%	100%	0%	23%	22%
Within 12 months	0%	0%	0%	0%	14%	13%
Dexamethasone						
Never had Dexamethazone in stock	25%	13%	30%	7%	68%	60%
Stock out in last 12 months	0%	61%	24%	26%	19%	22%
Currently out of stock	0%	7%	75%	29%	60%	53%
Within last month	0%	21%	13%	29%	3%	8%
Within 3 months	0%	14%	13%	14%	5%	8%
Within 6 months	0%	43%	0%	14%	2%	8%
Within 12 months	0%	14%	0%	14%	27%	23%

NOTE: ESTIMATES BASED ON WEIGHTED N

Table 8.04A: Percentage of facilities reporting on availability of antibiotics, anticonvulsants, antihypertensives, oxytocics and drugs used in emergencies by type of facility (among facilities with pharmacy)

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=468)	Total (n=555)
	%	%	%	%	%	%
Antibiotics (any)	100 %	100 %	100%	100 %	99%	99%
Ampicillin	75%	78%	61%	63%	19%	26%
Benzylpenicillin	75%	74%	79%	96%	94%	92%
Benzathine benzylpenicillin	100 %	96%	97%	100 %	97%	97%
Ceftriaxone	75%	100 %	91%	96%	75%	78%
Cefotaxime injection (for newborn)	75%	0%	0%	15%	4%	5%
Oral flucloxacillin (for newborn)	25%	17%	12%	37%	7%	9%
Gentamicin (injection)	100 %	100 %	100%	100 %	93%	94%
Metronidazole (injection)	75%	100 %	73%	81%	19%	29%
Tetracycline eye ointment/drops	100 %	100 %	94%	96%	94%	94%
Anticonvulsants & Sedatives (any)	100 %	100 %	100%	100 %	99%	99%

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=468)	Total (n=555)
Magnesium sulphate (injection)	100 %	91%	98%	93%	90%	90%
Diazepam (injection)	75%	74%	88%	100 %	87%	87%
Phenobarbital (injection)	100 %	96%	79%	89%	73%	76%
Phenytoin (Diphenythydantoin)	50%	52%	24%	44%	8%	13%
Antihypertensives (any)	75%	100 %	85%	93%	25%	35%
Hydralazine	100 %	100 %	54%	84%	47%	59%
Methyldopa	100 %	91%	82%	88%	60%	71%
Nifedipine	100 %	83%	75%	96%	40%	58%
Oxytocics (any)	100 %	100 %	100%	96%	95%	96%
Oxytocin	100 %	100 %	100%	96%	98%	98%
Ergometrine	25%	0%	3%	4%	0%	1%
Oxytocin+Ergometrine	25%	0%	6%	12%	0%	2%
Misoprostol	75%	70%	27%	73%	4%	12%
Prostaglandin E2 (Dinoprostone)	0%	0%	3%	8%	1%	2%
Drugs used in emergencies (any)	100 %	96%	94%	100 %	96%	96%
Adrenaline (Epinephrine)	100 %	100 %	94%	89%	85%	86%
Chlorphenamine	50%	41%	55%	78%	27%	32%
Atropine	75%	100 %	61%	85%	21%	30%
Calcium gluconate	50%	18%	6%	52%	2%	6%
Digoxin	75%	50%	39%	67%	4%	12%
Frusemide	75%	100 %	84%	89%	34%	43%
Naloxone	25%	0%	3%	19%	0%	2%
Nitroglycerine	0%	5%	6%	26%	1%	3%
Promethazine	100 %	95%	87%	93%	78%	80%

NOTE: ESTIMATES BASED ON WEIGHTED N

Table 8.05A: Percentage of facilities reporting on availability of anaesthetics, analgesics, tocolytics, steroids, IV Fluids, antimalarials and ARV drugs by type of facility (among facilities with pharmacy)

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=468)	Total (n=555)
	%	%	%	%	%	%
Anaesthetics (any)	100 %	100%	97%	96%	90%	91%
Halothane	75%	100%	38%	77%	2%	13%
Ketamine Hydrochloride	75%	100%	47%	85%	3%	15%
Lignocaine / Lidocaine 2% or 1%	100 %	96%	97%	100 %	100 %	100 %
Analgesics (any)	75%	97%	67%	93%	14%	25%
Pethidine	100 %	95%	73%	96%	73%	80%
Morphine	100 %	95%	82%	84%	39%	65%
Tocolytics (any)	75%	87%	64%	93%	24%	33%
Indomethacin	33%	55%	81%	88%	85%	81%
Nifedipine	100 %	90%	90%	96%	43%	62%
Steroids (any)	75%	83%	70%	89%	20%	29%
Dexamethasone	67%	84%	74%	100 %	53%	67%
Hydrocortisone	100 %	42%	70%	88%	37%	51%
Prednisolone corticosteroid	100 %	68%	87%	96%	75%	80%
IV Fluids (any)	100 %	97%	97%	96%	98%	98%
Dextrose	100 %	77%	88%	96%	92%	91%
Dextran	25%	14%	6%	23%	6%	8%
Glucose 5%, 10%, 40% or 50%	100 %	100%	97%	100 %	95%	96%
Normal saline	75%	95%	91%	100 %	90%	91%
Ringer's Lactate	75%	77%	78%	92%	80%	80%

Antimalarials (any)	100 %	100%	94%	96%	98%	98%
Arteminisium-based combination therapy (ACT)	100 %	96%	90%	92%	86%	87%
Quinine Dihydrochloride	100 %	100%	94%	100 %	98%	98%
Antiretrovirals (any)	100 %	100%	100%	96%	98%	98%
Combined ARV for mother*	100 %	83%	85%	73%	95%	96%
Combined ARV for newborn*	100 %	100%	94%	100 %	72%	74%
Post-HIV exposure prophylactic treatment*	100 %	100%	85%	81%	87%	87%

NOTE: ESTIMATES BASED ON WEIGHTED N

Table 8.06A: Percentage of facilities reporting on availability of diagnostics and supplies at the nurse's station in maternity by type of facility (among facilities with deliveries)

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=464)	Total (n=551)
	%	%	%	%	%	%
Nurse's station						
Well-equipped emergency tray	50%	65%	45%	52%	29%	33%
Instrument table	75%	78%	82%	89%	71%	73%
Blood pressure cuff	75%	91%	94%	100 %	71%	74%
Stethoscope	100%	87%	82%	93%	82%	83%
Foetal stethoscope	100%	96%	88%	89%	83%	84%
Kick (swab) bucket	75%	70%	70%	74%	64%	65%
Lockable medication trolley	75%	83%	45%	70%	40%	44%
Sharp waste disposal unit	75%	91%	88%	96%	87%	88%
Aseptic tray	75%	61%	52%	74%	32%	37%

NOTE: ESTIMATES BASED ON WEIGHTED N

Table 8.07A: Percentage of facilities reporting on availability of diagnostics and supplies in labour and delivery room, by type of facility (among facilities with deliveries)

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=464)	Total (n=551)
	%	%	%	%	%	%
Blood pressure cuff	75%	96%	94%	89%	72%	75%
Cardiotocograph	50%	13%	6%	15%	3%	5%
Thermometer	100%	100%	91%	93%	87%	88%

Examination light	75%	74%	70%	74%	42%	47%
Flowmeter for oxygen therapy (with humidification)	50%	70%	64%	78%	14%	23%
Foetal heart detector (Doppler)	50%	48%	30%	52%	13%	17%
Foetoscope	100%	100%	100%	96%	99%	99%
Stethoscope	100%	87%	88%	89%	85%	86%
Bed, mattresses, pillows	100%	100%	100%	100 %	98%	98%
Intravenous stand	100%	96%	97%	93%	78%	81%
Kick (swab) bucket	100%	74%	76%	78%	67%	69%
Mayo stand	50%	17%	24%	48%	19%	21%
Instrument table	75%	83%	79%	93%	73%	74%
Screen for examination table	75%	83%	79%	93%	68%	71%
Sharp waste disposal unit	75%	96%	91%	96%	94%	93%
Amniorrhexis tray	50%	0%	6%	33%	4%	6%
Aseptic tray	75%	52%	48%	74%	29%	33%
Catheter placement tray	50%	30%	18%	33%	19%	20%
Laundering probe tray	50%	22%	6%	26%	4%	6%
Transfer forceps	75%	61%	79%	81%	64%	66%
Infant scale	100%	96%	97%	93%	94%	94%
Blood pressure non-invasive module	75%	52%	67%	78%	47%	50%
Foetal heart phono-detector	25%	13%	15%	26%	6%	8%
Operating light system	75%	74%	52%	56%	24%	30%
Paediatric suction machine	75%	87%	61%	70%	41%	46%
Electrocardiographic monitor	25%	4%	0%	11%	1%	1%
Pulse oximetry module	75%	43%	18%	26%	3%	7%
Suction electric machine	75%	87%	73%	78%	25%	33%
Examination paediatric table	75%	48%	42%	78%	20%	25%
Examination table with leg holders	50%	39%	39%	67%	27%	30%
Stool	100%	74%	70%	85%	55%	59%
Pre-packed Delivery pack	75%	96%	88%	89%	79%	81%
Removal of stitches tray	50%	39%	39%	70%	27%	30%
Suture tray	75%	48%	48%	78%	41%	44%
Vacuum extraction / Forceps delivery set	75%	96%	79%	85%	38%	46%
Newborn bag & mask	100%	100%	94%	93%	91%	91%
Cap/hat for newborn	25%	39%	15%	30%	6%	9%

Note: estimates based on weighted n

Table 8.08A: Percentage of facilities reporting on availability of diagnostics and supplies in postnatal/ postpartum room, by type of facility (among facilities with deliveries)

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=464)	Total (n=551)
	%	%	%	%	%	%
Newborn bag & mask	75%	70%	39%	59%	37%	40%
Resuscitation table with heat source	50%	35%	18%	44%	4%	9%
Infant scale	100%	74%	48%	70%	41%	44%
Soap or hand disinfectant	75%	70%	61%	78%	50%	53%
Linen and blankets	100%	91%	91%	85%	73%	76%

NOTE: ESTIMATES BASED ON WEIGHTED N

Table 8.09A: Percentage of facilities with autoclave and sterilisation items in maternity area, by type of facility (among facilities with deliveries)

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centre (n=464)	Total (n=551)
	%	%	%	%	%	%
Separate autoclave room	75%	78%	67%	59%	23%	30%
Autoclave with temperature and pressure gauges	75%	78%	55%	74%	30%	36%
Hot air sterilizer (dry oven)	25%	30%	18%	22%	10%	13%
Steam sterilizer	50%	52%	58%	44%	33%	36%
Steam instrument sterilizer/pressure cooker, electric	50%	52%	42%	26%	27%	29%
Sterilizer/pressure cooker, kerosene heated	0%	22%	21%	4%	29%	27%
Sterilization drum	50%	87%	70%	59%	48%	52%
Sterilization drum stand	50%	52%	45%	33%	28%	30%

Note: estimates based on weighted n

Table 8.10A: Percentage of hospitals with pre-op room & operation theatre (OT), and among those with OT, percentage with selected equipment and supplies, by type of facility

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Total (n=66)
	%	%	%	%	%
OT available	100%	100%	42%	93%	78
Separate OT for obstetric patients	75%	4%	12%	19%	20%
Pre-Op Room					

Infection prevention protocols	100%	74%	79%	88%	82%
Examination light	100%	70%	71%	84%	77%
Hospital stretcher	100%	87%	86%	96%	91%
Intravenous stand	100%	87%	86%	96%	91%
Kick (swab) bucket	75%	65%	57%	84%	71%
Screen for examination table	100%	26%	36%	68%	48%
Aseptic tray	100%	70%	64%	80%	74%
OT Room					
Infant scale	100%	100%	86%	84%	91%
Resuscitaire	100%	78%	86%	84%	83%
Caesarean section tray	100%	96%	100%	96%	97%
Surgical instrument basic surgery set	100%	96%	100%	100%	98%
Surgical instrument abdominal set	100%	96%	79%	100%	94%
Surgical instrument curettage set	100%	91%	100%	100%	97%
Surgical instrument delivery set	100%	70%	93%	80%	80%
Surgical instrument exam/set, vaginal/cervical/ set	100%	87%	79%	84%	85%
Surgical instrument suture set	75%	91%	86%	92%	89%
Surgical instrument laparoscopy set	100%	39%	14%	44%	39%
Surgical instrument minilaparotomy set	75%	83%	64%	72%	74%
Manual vacuum aspiration instrument set	100%	39%	79%	68%	62%

NOTE: ESTIMATES BASED ON WEIGHTED N

Table 8.11A: Percentage of hospitals with anaesthesia equipment and supplies among those with OT, by type of facility

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=14)	Other hospital (n=25)	Total (n=66)
	%	%	%	%	%
Aesthetic face masks	100%	91%	100%	96%	95%
Oropharyngeal airways	100%	96%	100%	100%	98%
Laryngoscopes with spare bulbs and batteries	100%	91%	100%	96%	95%
Endotracheal tubes with cuffs, 8mm	100%	96%	100%	100%	98%
Endotracheal tubes with cuffs, 10mm	100%	61%	79%	88%	77%
Intubating forceps	75%	70%	93%	92%	83%
Endotracheal tube connectors, plastic, 15 mm (connect directly to breathing valve; three for each tube size)	100%	83%	86%	88%	86%

Spinal needles, 18 gauge to 25 gauge	75%	78%	93%	100%	89%
Suction aspirator, foot-operated	100%	57%	43%	56%	56%
Suction aspirator, electric	100%	87%	93%	100%	94%
Anaesthetic vaporizers (draw-over system)	100%	87%	93%	96%	92%
Oxygen cylinders with manometer and flowmeter (low flow) tubes and connectors	100%	78%	79%	84%	82%

NOTE: ESTIMATES BASED ON WEIGHTED N

Table 8.12A: Percentage of facilities with laboratory among all facilities surveyed and among those with laboratory, percentage with selected equipment and supplies, by type of facility

	Central hospital (n=4)	District hospital (n=23)	Community hospital (n=33)	Other hospital (n=27)	Health Centres (n=470)	Total (n=557)
	%	%	%	%	%	%
General						
Does this facility have a laboratory?	100%	100%	91%	100%	26%	37%
Is there a set of guidelines for the laboratory?	100%	96%	90%	89%	70%	78%
Laboratory Room						
Bilirubin analyser	100%	74%	27%	74%	6%	27%
Blood glucose analyser	100%	96%	57%	89%	32%	51%
Cell-quantifying analyser	100%	74%	27%	81%	10%	30%
Centrifuge	100%	96%	87%	93%	35%	58%
Cholesterol analyser	100%	74%	23%	59%	4%	23%
Clinical chemistry analyser	100%	83%	27%	74%	6%	28%
Enzyme analyser	75%	48%	17%	48%	6%	19%
Hemoglobinometer	100%	87%	87%	74%	48%	62%
Laboratory refrigerator	100%	100%	70%	89%	26%	50%
Laboratory scale	100%	91%	67%	93%	27%	50%
Microscope	100%	100%	100%	100%	89%	93%
pH analyser	50%	22%	23%	41%	10%	18%
Urine analyser	75%	57%	60%	78%	29%	44%
Blood donour chair	50%	48%	27%	44%	6%	19%
Cuvette	100%	87%	83%	70%	42%	58%
Laboratory cabinet	100%	74%	57%	74%	54%	60%
Sharp waste disposal unit	100%	96%	100%	93%	82%	88%
Table top sterilizing unit	75%	43%	23%	52%	25%	31%
Instrument cabinet	100%	43%	63%	63%	58%	58%
Table	100%	100%	93%	93%	92%	93%
Blood bank	100%	96%	63%	78%	6%	35%

Note: estimates based on weighted n

Table 9.01A: Percentage distribution of time spent in facility following caesarean delivery and mean duration of stay according to type of caesarean, infection status and indication

	n	%
Time lapse, diagnosis of caesarean to surgery		
30 minutes or less	22	11.46
31 minutes to 1 hour	10	5.10
1 - 2 hours	24	12.50
2 - 3 hours	13	6.77
3 - 5 hours	8	4.17
5+ hours	6	3.13
No information	109	56.77
Time that the woman remained in the hospital after the caesarean		
0 - 3 days	90	46.88
4 - 8 days	73	38.02
9 - 12 days	8	4.17
13+ days	10	5.21
No information	11	5.73
Average time in hospital (in days)	4.52	N/A
By type of caesarean		
Emergency caesarean	4.02	N/A
Elective caesarean	4.88	N/A
No information	7.25	N/A
By wound infection		
Wound infected	1.65	N/A
Wound not infected	5.83	N/A
No information	3.9	N/A
By indication		
Maternal Indications		
Placenta previa/APH	7	N/A
Placenta abruptio	3	N/A
Maternal distress		N/A
Failed induction	1.5	N/A
Previous scar	5.92	N/A
Eclampsia/Severe preeclampsia	3.22	N/A
Cord prolapse	9	N/A
No information		N/A
Foetal Indications:		N/A

Foetal distress	4.06	N/A
Breech with footling	5.45	N/A
CPD/Prolonged labour	3.96	N/A
Multiple gestation	4	N/A
Vesico-vaginal fistula		N/A
Other	5.36	N/A
No information	0	N/A

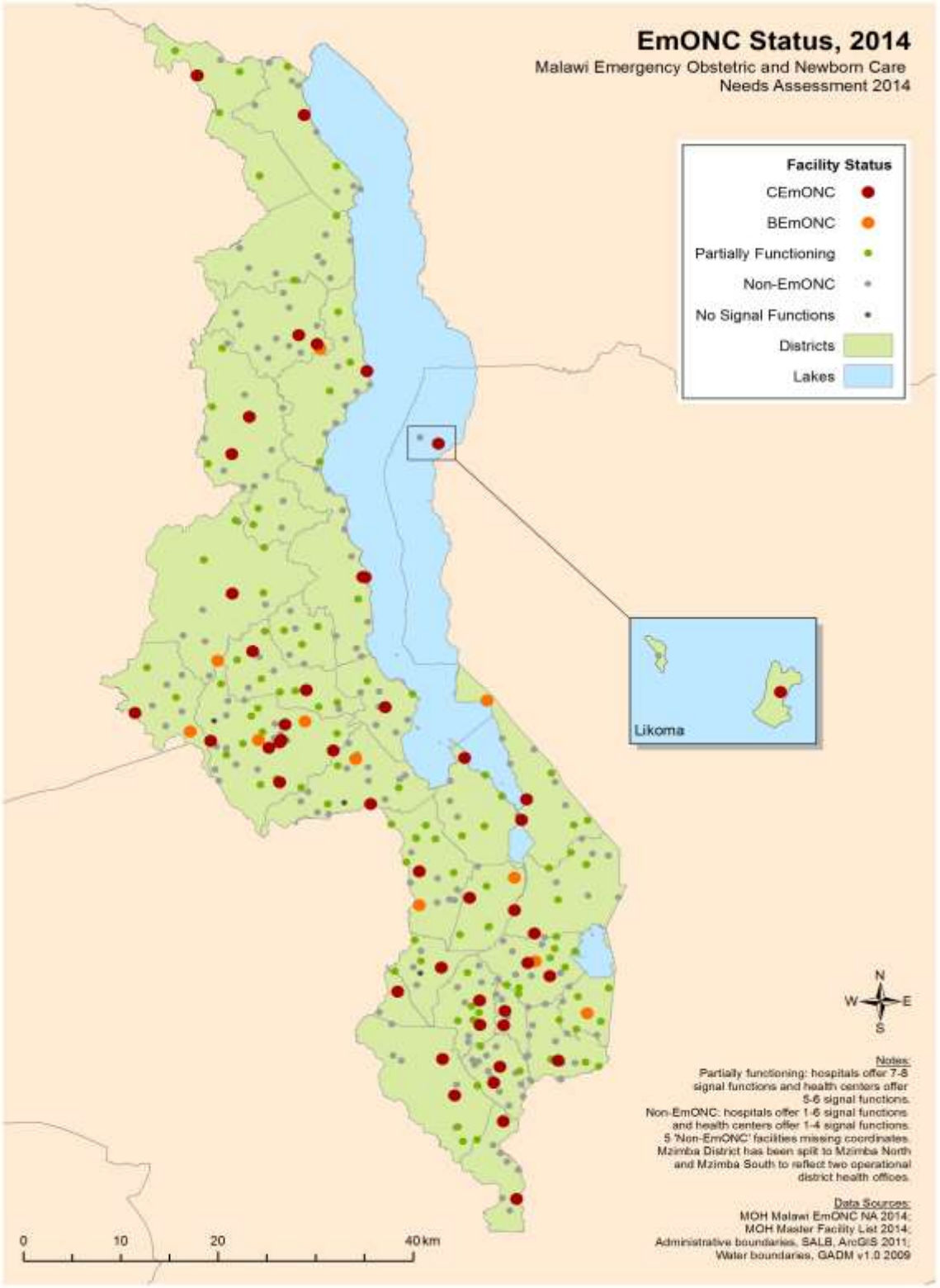
Table 9.02A: Percent distribution of women whose deaths were reviewed according to time of death, by primary cause of death

	Time of death						
Cause of death	During pregnancy / Before delivery	During abortion	During vaginal delivery	During obstetric surgery	After delivery	No information	Total number of deaths[1]
Total	29%	3%	2%	3%	62%	1%	143
Direct causes	44%	80%	67%	100%	83%	0%	102
Haemorrhage	44%	50%	0%	20%	53%	0%	50
Ruptured uterus	11%	0%	0%	0%	1%	0%	3
Eclampsia/Pre-eclampsia	22%	0%	100%	20%	22%	0%	23
Sepsis	17%	25%	0%	20%	23%	0%	22
Abortion complications	0%	25%	0%	0%	0%	0%	1
CPD/Prolonged or obstructed labour	6%	0%	0%	0%	0%	0%	1
Complications of caesarean	0%	0%	0%	40%	0%	0%	2
Retained placenta	0%	0%	0%	0%	0%	0%	0
Indirect causes	46%	20%	0%	0%	13%	0%	31
Anaemia	32%	0%	0%	0%	55%	0%	12
Malaria	42%	0%	0%	0%	0%	0%	8
HIV/AIDS	5%	100%	0%	0%	18%	0%	4
Respiratory failure	5%	0%	0%	0%	0%	0%	1
Pneumonia	5%	0%	0%	0%	0%	0%	1
Severe pulmonary oedema	0%	0%	0%	0%	9%	0%	1
Cardiac failure/Cardiac arrest	5%	0%	0%	0%	18%	0%	3

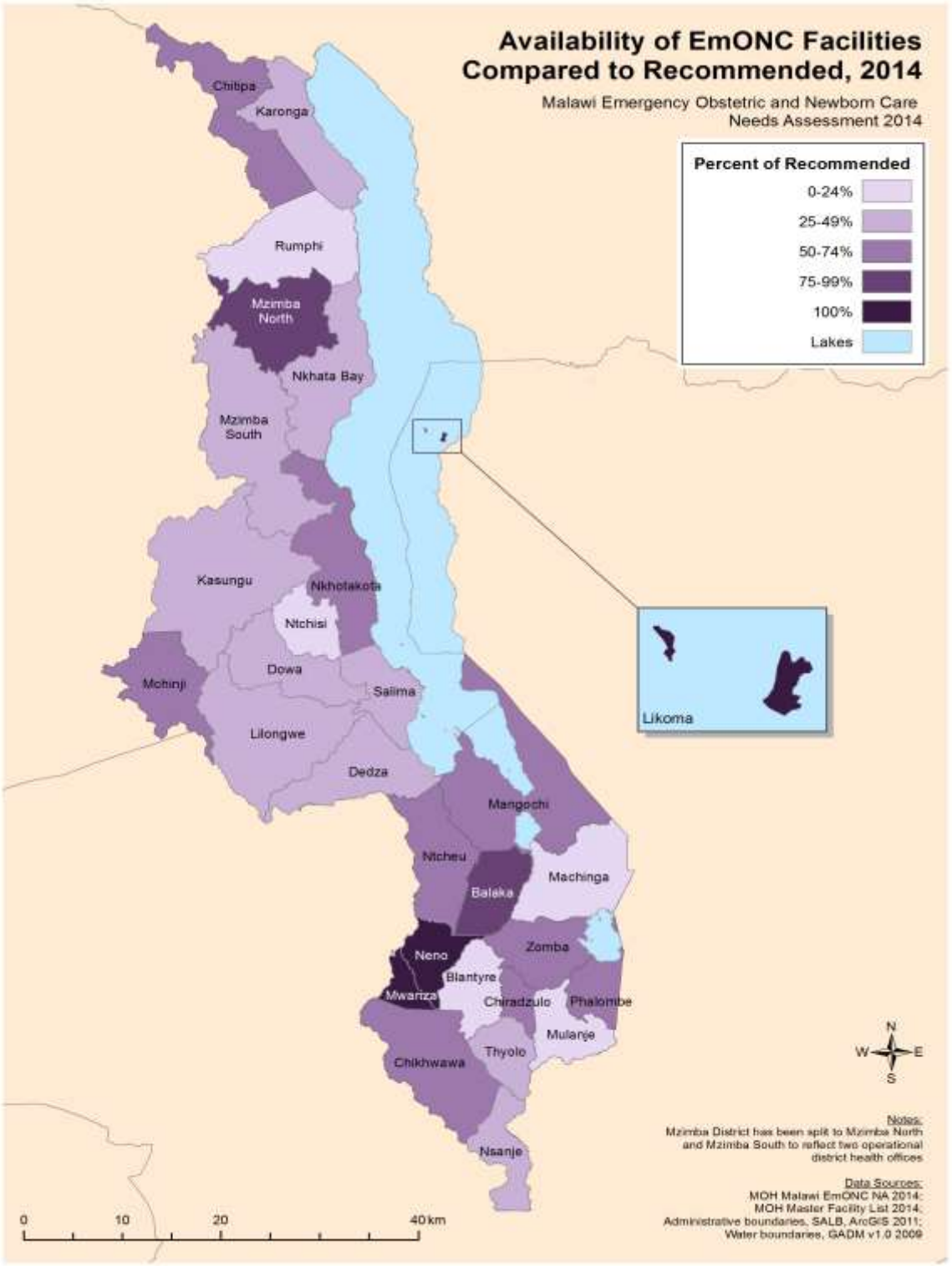
No cause listed	10%	0%	33%	0%	5%	100%	10

APPENDIX B: MAPS

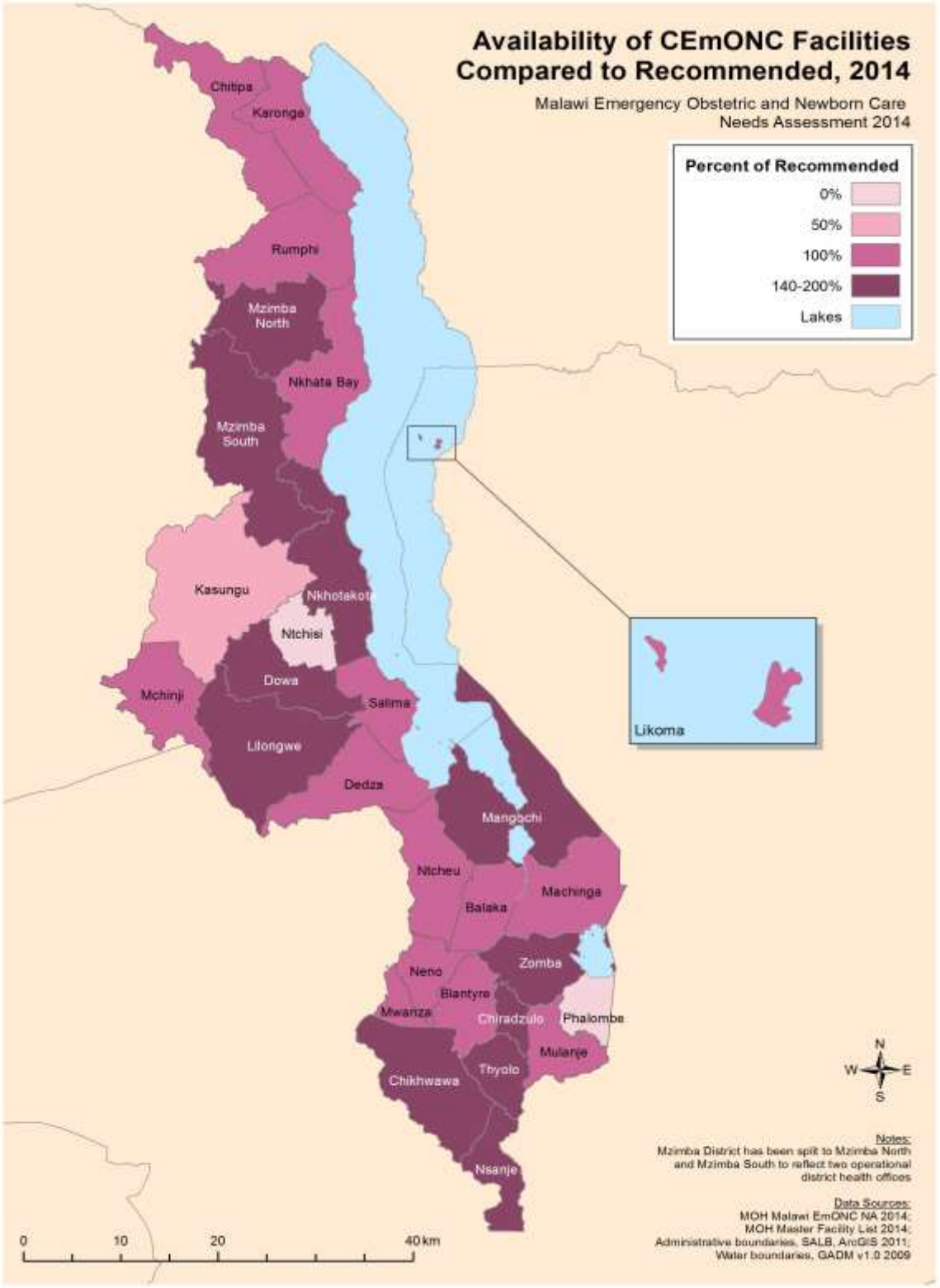
Map B1: Distribution of EmONC and Non-EmONC facilities in Malawi by district



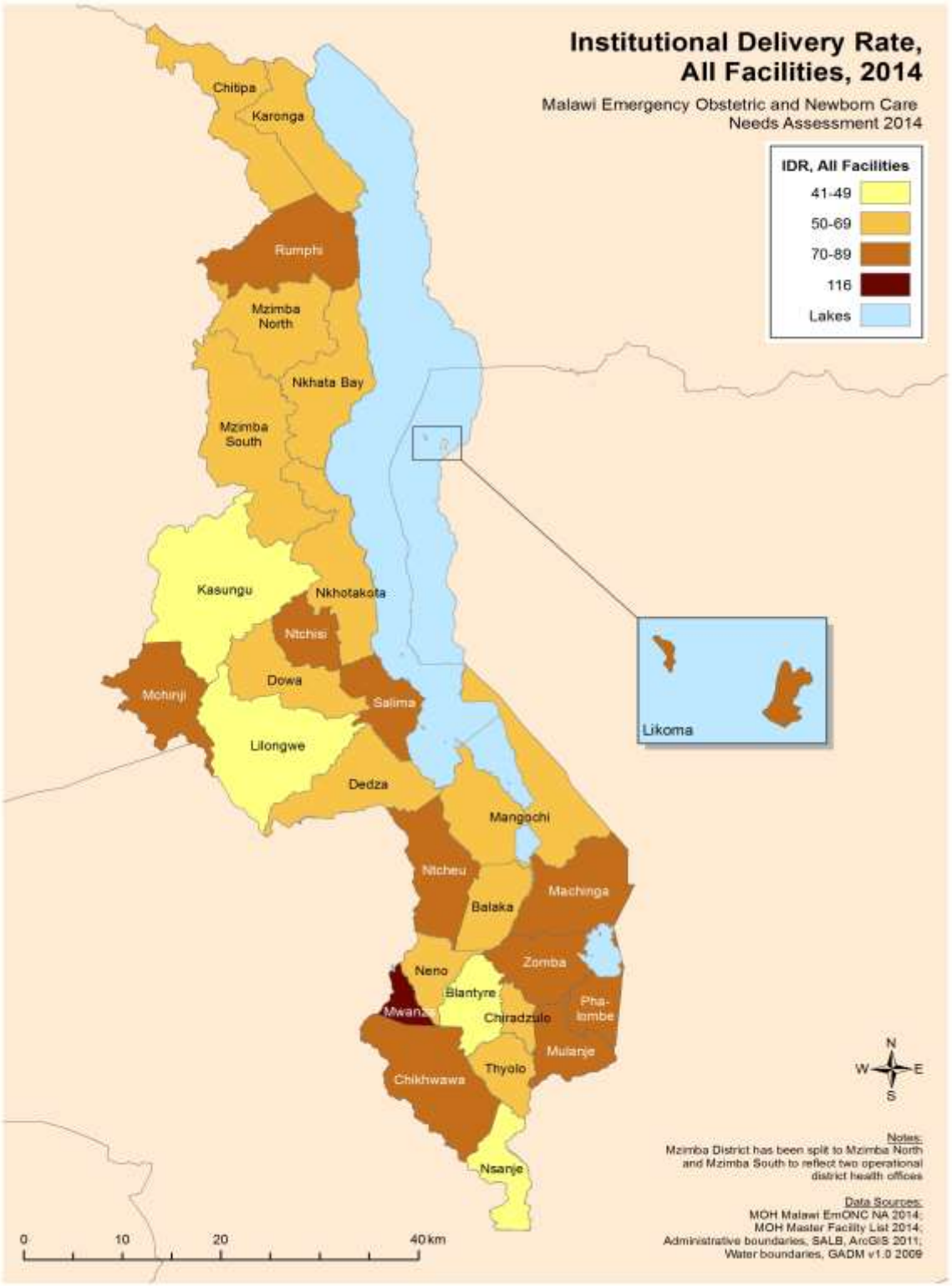
Map B2: Percentage of recommended number of EmONC facilities in Malawi



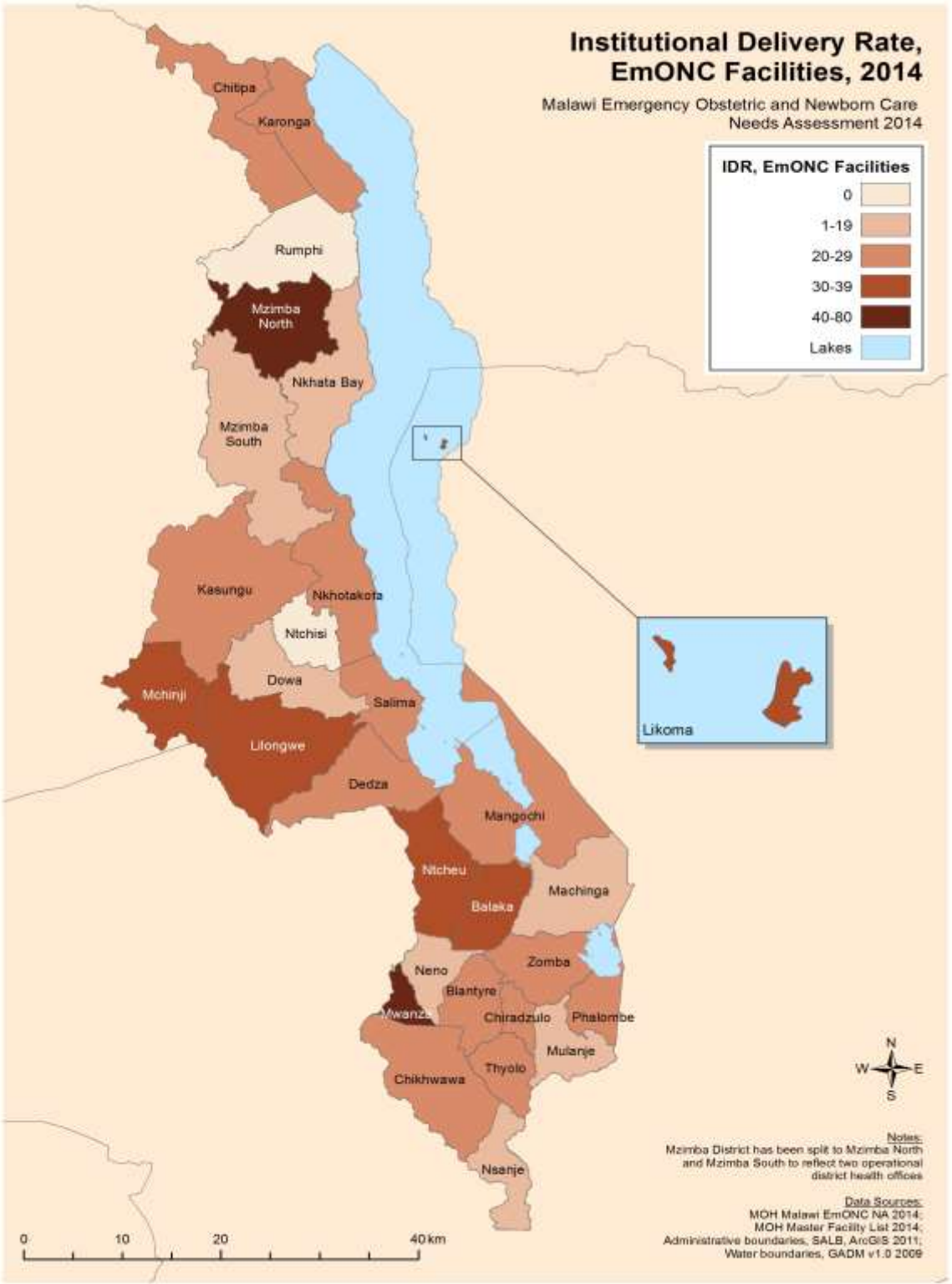
Map B3: Percentage of recommended number of Comprehensive EmONC facilities in Malawi



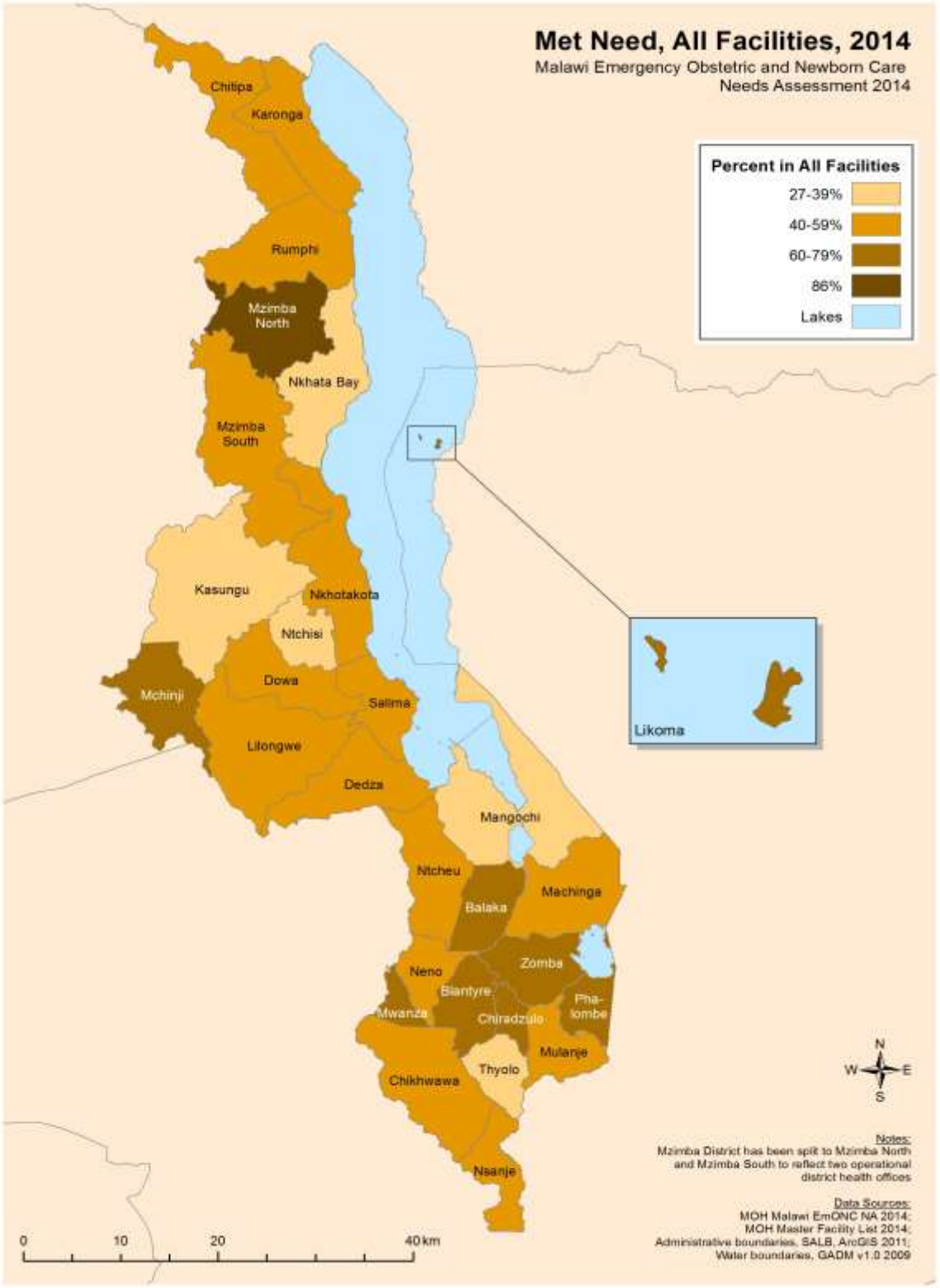
Map B4. Indicator 3: Percentage of expected births attended in all facilities by district



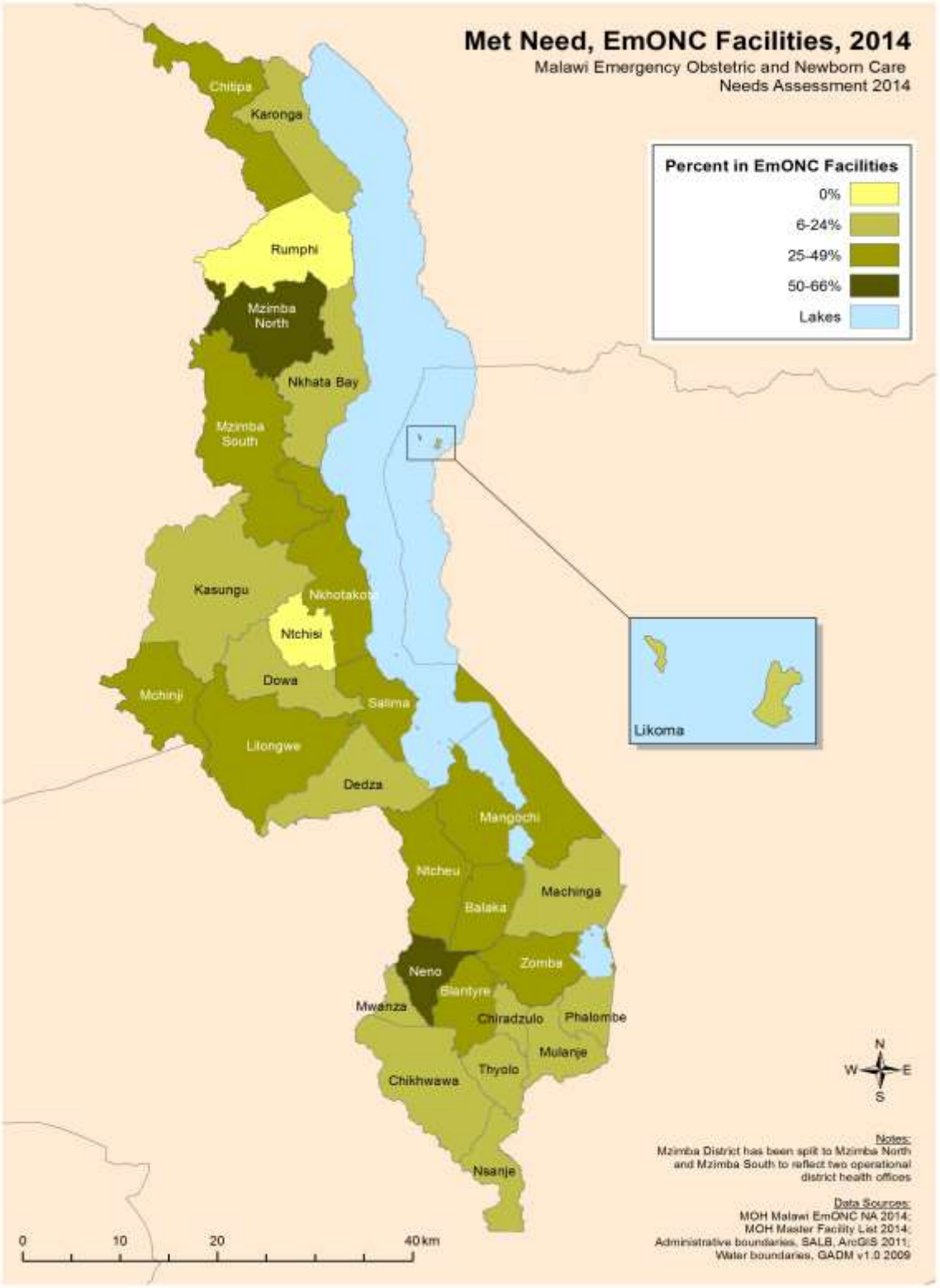
Map B5. Indicator 3: Percentage of expected births attended in EmONC facilities by district



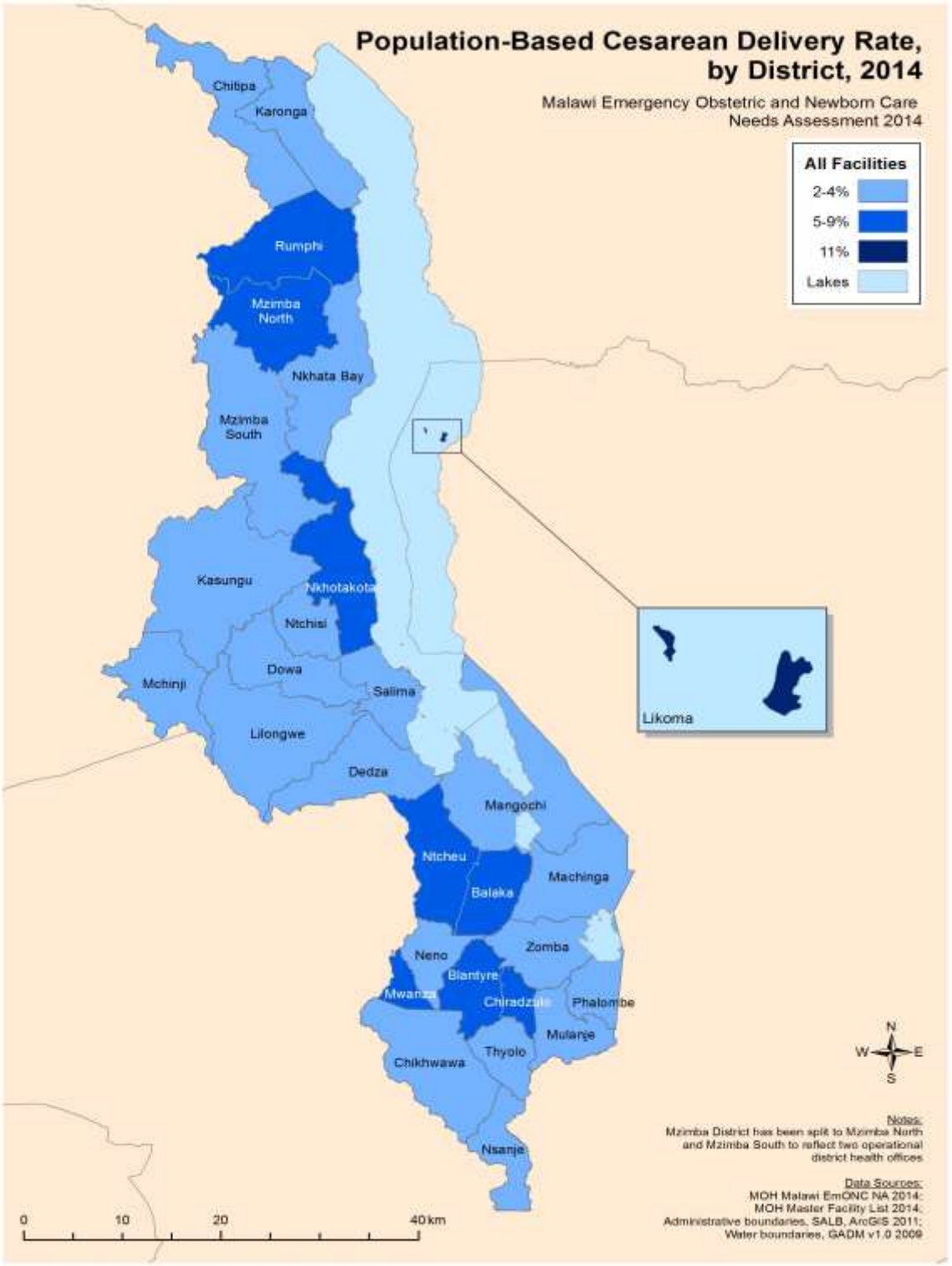
Map B6. Indicator 4: Percentage of Met need for EmONC among all facilities, by district



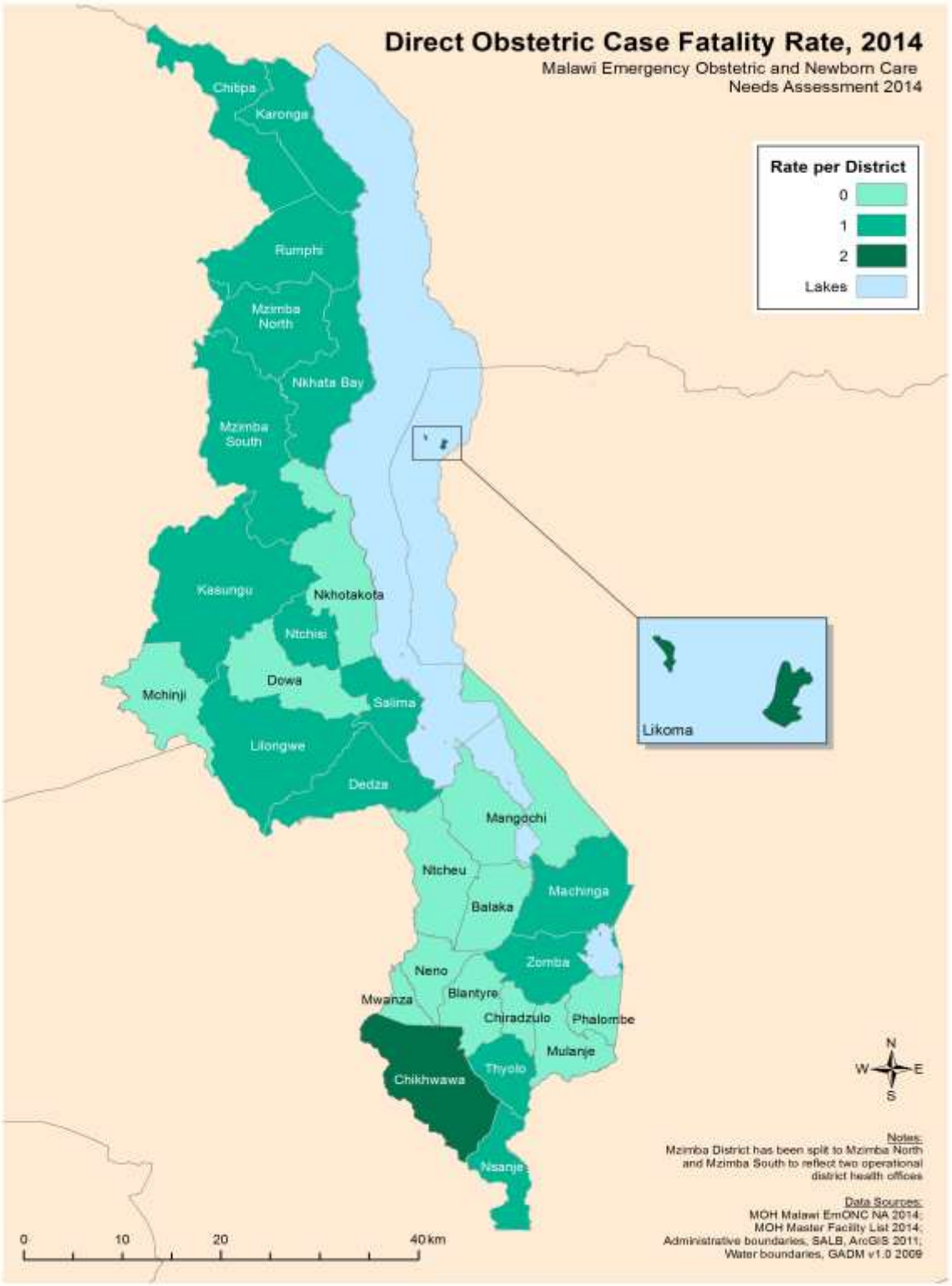
Map B7. Indicator 4: Percentage of Met need for EmONC among EmONC facilities, by district



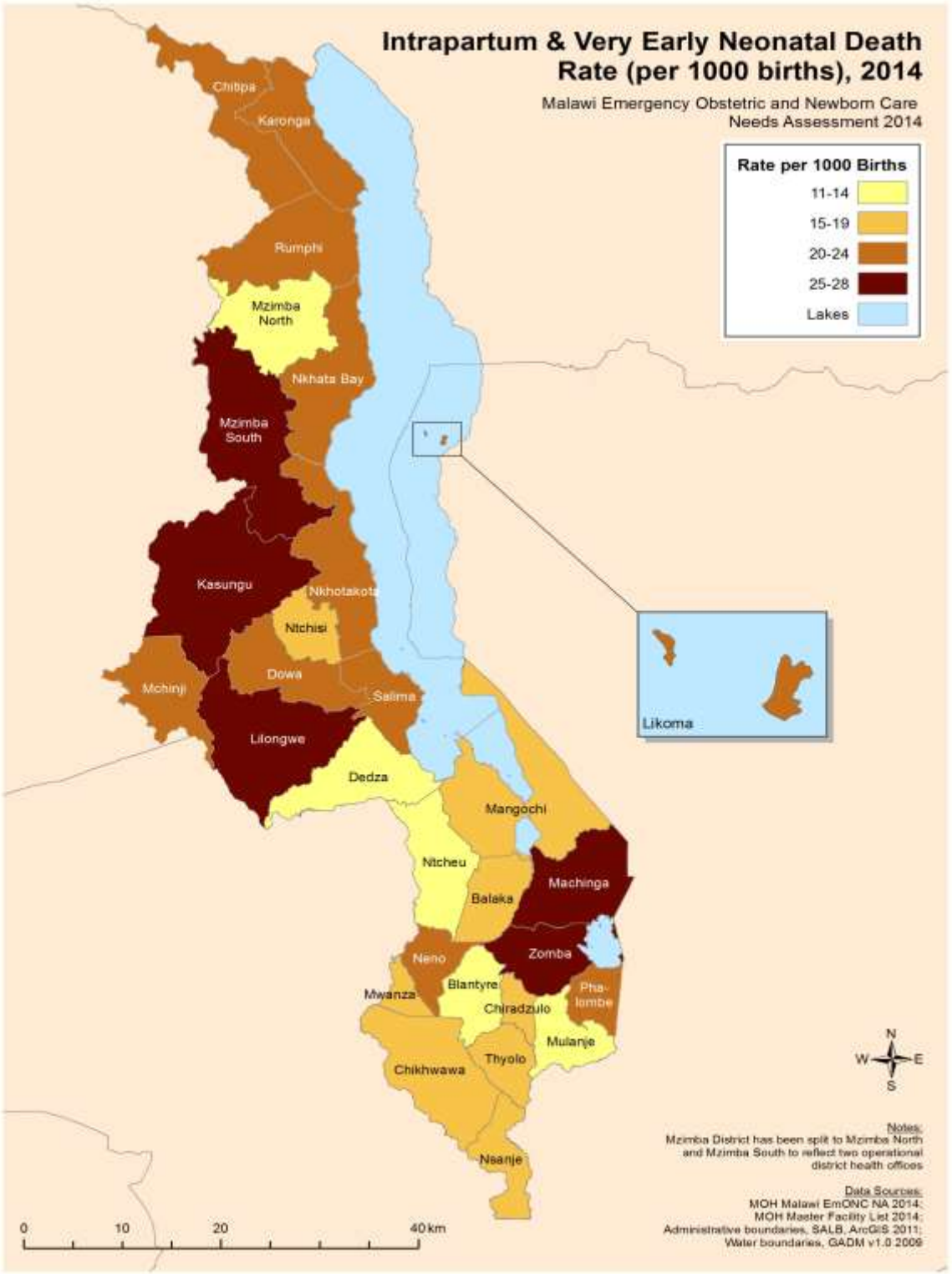
Map B8. Indicator 5: Percentage of all expected births delivered by caesarean section



Map B9. Indicator 6: Percentage of direct obstetric case fatality among all facilities



Map B10. Indicator 7: Intrapartum and very early neonatal death rate for all facilities



Map B11. Indicator 8: Percentage of institutional maternal deaths due to indirect causes