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THE STATE OF THE

WORLD'S MIDWIFERY

ANALYSIS OF THE SEXUAL, REPRODUCTIVE, MATERNAL, NEWBORN AND ADOLESCENT HEALTH WORKFORCE IN EAST & SOUTHERN AFRICA

REPRODUCTIVE HEALTH | PREGNANCY | CHILDBIRTH | POSTNATAL

CONTRIBUTORS AND ACKNOWLEDGEMENTS

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ABBREVIATIONS AND ACRONYMS

AAAQ	Availability, Accessibility, Acceptability, Quality
CHW	Community health worker
CPD	Continuing professional development
DRC	Democratic Republic of the Congo
EmONC	Emergency obstetric and newborn care
HRH	Human resources for health
ICM	International Confederation of Midwives
ISCO	International Standard Classification of Occupations
MDG	Millennium Development Goal
MMR	Maternal mortality ratio
NMR	Neonatal mortality rate
NPC	Non-physician clinician
SDG	Sustainable Development Goal
SoWMy	State of the World's Midwifery
SRMNAH	Sexual, reproductive, maternal, newborn and adolescent health
UHC	Universal health coverage
UNFPA	United Nations Population Fund
WHO	World Health Organization

CONTENTS

BOXES

TABLES

FIGURES

FOREWORD

The East and Southern Africa region has made significant progress in recent years in improving the survival and health of women, newborns, adolescents and youth. Maternal mortality ratio (MMR) in the region is reduced by an average of 3.3 per cent per year between 1990 and 2015, faster than the global 2.3 per cent. In 2015, MMR in the region is estimated at 455 per 100,000 live births, 50 per cent reduction from the baseline MMR of 913 in 1990. However, most countries in the region will need to accelerate on this progress in order to meet national, regional and global sustainable development goals (SDGs) targets.

The vast majority of maternal, newborn, and adolescent deaths are preventable, if women, adolescents and children are able to access skilled health workers who are adequately equipped to provide the health services that they need. Without the right investments in a skilled health workforce, meeting the SDGs will not be possible.

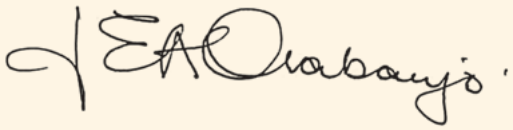
This report provides a comprehensive assessment of the current state of the region's sexual, reproductive, maternal, newborn and adolescent health workforce in 21 countries. It gives clear evidence of the region's progress, and identifies the ongoing workforce bottlenecks and challenges that must be addressed if the region is to meet the SDGs.

Evidence from the 21 countries shows a specific mixture of challenges, with each country at a different stage of development and with a unique health system. Therefore this report can be used to reinforce tailored responses to national needs.

This report aims to stimulate policy discussion and evidence-based decision-making at national and subnational levels, to enable countries to ensure that women and young people are able to fully realize their right to health, and that they obtain the care and services that they need. It supports countries in meeting their obligations under regional and global initiatives, such as the Africa Health Strategy, the Sustainable Development Goals, and the Global Strategy for Women's, Children's and Adolescents' Health.

The region must have a health workforce that delivers high quality health services throughout the population, and reaches underserved, marginalized, and high-priority groups - ensuring equity, dignity, and choice for all.

I recommend this report to all involved in providing sexual, reproductive, maternal, newborn, and adolescent health care in the East and Southern Africa region.



Julitta Onabanjo
United Nations Population Fund
Regional Director, East and Southern Africa

EXECUTIVE SUMMARY

This report takes its inspiration from the United Nations Secretary-General's *Every Woman Every Child* initiative, which calls for countries to do everything possible to protect the lives and futures of all women, children and adolescents. It follows the approach used for the *State of the World's Midwifery* (SoWMy) 2014 report, but focuses on 21 of the 23 countries in the United Nations Population Fund (UNFPA) East and Southern Africa region: Angola, Botswana, Burundi, Comoros, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Swaziland, Tanzania (mainland and Zanzibar), Uganda, Zambia and Zimbabwe.

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This report has been coordinated by the UNFPA East and Southern Africa Regional Office. It is primarily intended to provide an evidence base to support policy dialogue at national and regional levels, to assist countries in the region to meet the challenges of the Sustainable Development Goals (SDGs) relating to sexual, reproductive, maternal, newborn and adolescent health (SRMNAH). A strong workforce is essential to the success of UNFPA's strategies for improving SRMNAH (increased coverage of skilled attendance at birth, family planning, postnatal care and emergency obstetric care). Understanding the current state of the SRMNAH workforce is necessary to identify the specific challenges, gaps and bottlenecks which need to be addressed in order to strengthen the workforce, and to consider suitable strategies for overcoming them.

A strong health workforce is essential to the success of UNFPA's strategies for improving SRMNAH.

The evidence and analysis in this report are structured according to the four domains that determine whether a health system and its workforce are providing effective coverage, i.e. whether women are obtaining the SRMNAH care and services they want and need. These four domains are: availability, accessibility, acceptability and quality.

The workforce considered in this report includes all health workers engaged in providing SRMNAH care for women, adolescents and newborns, across the full continuum of care from sexual health and family planning through pregnancy to the neonatal period. This report is part of the *State of the World's Midwifery* series, and like the other reports in that series, it considers physicians, nurses, auxiliaries and other relevant health professionals in addition to midwives and nurse-midwives. Midwives and nurse-midwives are, however, considered a key SRMNAH cadre, so sections of the report — particularly those looking at acceptability and quality — do focus specifically on them.

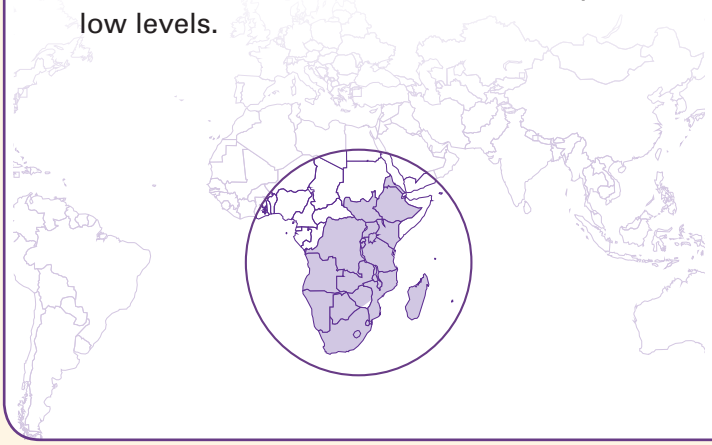
Availability: The analysis shows that a simple headcount of SRMNAH workers is insufficient to estimate the availability of SRMNAH services, because some cadres (e.g. nurses, generalist physicians) provide other health services in addition to SRMNAH services. Therefore, an apparently high level of availability as indicated by headcount can mask significant gaps in the care that the workforce is able to provide.

The 2014 *SoWMy* report noted that midwives, when educated and regulated to international standards, have the competencies to meet 87% of the need for essential SRMNAH services. However, in this region, midwives and nurse-midwives make up only 42% of the full-time equivalent SRMNAH workforce in the countries able to provide data on health worker numbers (i.e. excluding Angola, Namibia and South Sudan). This means that their capacity to provide essential SRMNAH services is limited.

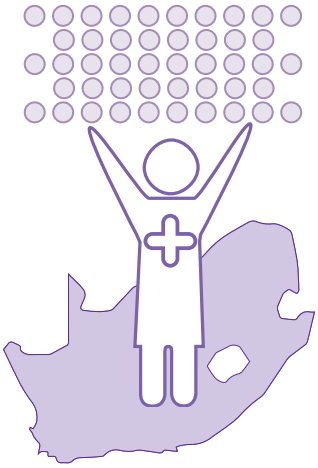
Despite many countries reporting recent efforts to improve systems for data collection and analysis, all of the participating countries found it challenging to provide the necessary data on the workforce for this report, making workforce availability difficult to assess clearly. It is important that systems for collecting, collating and analyzing workforce

KEY MESSAGES

① THE 21 COUNTRIES INCLUDED IN THIS REPORT REFLECT A FAIRLY HIGH LEVEL OF DIVERSITY ACROSS THE REGION: some have extremely high levels of maternal and neonatal mortality and stillbirths as well as high disease burdens; others have relatively low levels.



② SOUTH AFRICA IS THE ONLY COUNTRY in the region with an SRMNAH workforce that is large enough and has the appropriate skill mix to meet all of the country's need for the 46 essential interventions for SRMNAH.



data are improved, so that workforce policy and planning can be evidence-based. The accurate collection of a minimum of 10 data items is recommended: headcount, percentage of working time spent on SRMNAH, roles and responsibilities, age distribution, retirement age, duration of education, number of students enrolling per year, education attrition rate, number of graduates per year, and the rate of voluntary attrition from the workforce.

This report provides country-specific estimates of the need for SRMNAH services, which can be converted into estimates of the need for the workforce. It also provides estimates of the level of availability of SRMNAH workers to meet this identified need. Based on current population levels and epidemiological conditions, the SRMNAH workforce is estimated to have the potential to meet all of the need for essential SRMNAH care in just one of the 17 countries for which this analysis was possible, that country being South Africa. In the remaining 16 countries, estimates of the level of potential met need range from 25% in Mozambique to 97% in Comoros and Kenya.

Countries in the region have recognized that workforce availability is a critical bottleneck to improving SRMNAH outcomes: 15 of the 21 participating countries reported that steps had been taken since 2013 to increase domestic production of SRMNAH workers. Future projections of workforce availability show that these steps are predicted to increase the potential level of met need by 2030 in 10 of the 17 countries for which this analysis was possible. Of the remaining 7 countries, the projections for 3 countries indicate no change in potential met need by 2030, and in 4 countries potential met need is projected to decrease slightly. In 8 countries, the workforce modelling estimates that increased availability will result in the SRMNAH workforce being able to meet over 90% of the need by 2030. However, the potential for meeting 100% of the need is curtailed by a very severe shortage of obstetricians/gynaecologists.

3 The size of the SRMNAH workforce is an essential building block for effective coverage of SRMNAH services, but **EFFECTIVE COVERAGE DEPENDS ALSO ON ACCESSIBILITY, ACCEPTABILITY AND QUALITY.** Countries with SRMNAH worker shortages must focus on increasing availability, and all countries should address the identified challenges to the provision of SRMNAH care that is accessible, acceptable and high-quality.

4 Countries are working hard to expand the SRMNAH workforce and deliver equitable services, **BUT ACCURATE WORKFORCE PLANNING IS DEPENDENT ON ACCURATE WORKFORCE DATA.** A minimum of 10 pieces of information should be collected on all cadres: headcount, percentage time spent on SRMNAH, roles, age distribution, retirement age, duration of education, enrolments into, attrition and graduation from education, and voluntary attrition from the workforce.

Accessibility: Although all countries in the region recognize the importance of affordability of care and have a policy of offering at least some essential elements of SRMNAH care free at the point of access, only two provide a national "minimum guaranteed benefits package" that includes all essential SRMNAH interventions. Gaps in the essential interventions include those designed to prevent or treat the most common causes of maternal and neonatal mortality and morbidity, e.g. low-dose aspirin to prevent pre-eclampsia, calcium supplementation to prevent hypertension, and safe abortion.

Due to lack of geographical data on the locations of health facilities and SRMNAH workers, this report does not attempt to estimate geographical accessibility of SRMNAH services. Accessibility is generally estimated to be lower in rural areas than in urban areas so, even if a country has a workforce which can theoretically meet all of most of the need, it cannot be assumed that the need is met in all parts of the country. Many countries in the region have recognized this and taken actions to address inequity in accessibility, e.g. focused deployment of SRMNAH workers to underserved areas and the establishment of maternity waiting homes so that women do not have to travel long distances while in labour.

In the longer term, improving the geographical accessibility of the SRMNAH workforce requires making all underserved areas — whether urban, rural or remote — more attractive as places in which to live and work (e.g. by improving transport, housing, utilities and education for health workers and their families) and improving health infrastructure and health systems in these areas.

Acceptability: 16 of the 21 countries covered by this report stated that at least one national policy document specifically addresses how the country will deliver SRMNAH care that is sensitive to social, cultural and traditional needs, e.g. in relation to age,

KEY MESSAGES

5 However, comprehensive, disaggregated data for determining the availability, accessibility, acceptability and quality of the SRMNAH workforce are **NOT ROUTINELY AND EASILY AVAILABLE,** even to those tasked with making decisions about workforce planning and deployment.

6 In order for the SRMNAH workforce to work effectively, **HEALTH FACILITIES NEED TO BE EQUIPPED TO OFFER THE APPROPRIATE SERVICES,** including for emergencies (access to safe blood, caesarean sections, newborn resuscitation). All hospitals and primary care facilities in the region tend to be designated to offer these services, but relatively few are sufficiently well-equipped to be able to provide them routinely.

gender, ethnicity, religion and language. Countries were also asked specifically about the acceptability of midwives and nurse-midwives, but only 7 were aware of any recent studies of public perceptions of midwives and midwifery practice in their country. It therefore seems that the extent to which the care provided by midwives and nurse-midwives is acceptable is largely undocumented.

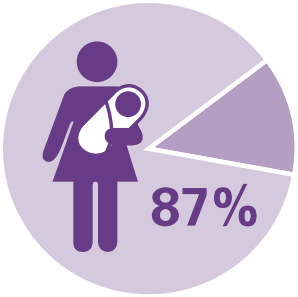
Nevertheless, most countries identified at least one reason why a woman might be uncomfortable seeking care from a midwife or nurse-midwife. The main reasons identified were a lack of understanding of the role/competencies of a midwife/nurse-midwife and fear of disrespect or abuse. This indicates a need for better public information about midwifery services, midwives and nurse-midwives, and the need to tackle the issue of respectful care as part of health worker education and management. A few countries in the region are taking action on respectful care, e.g. DR Congo and South Africa have revised education curricula to emphasize its importance, and midwifery associations in Zambia and Zimbabwe have provided in-service training on respectful care. Regulated codes of ethics would help to define and frame a mandate for respectful care.

It is notable that only 9 of the 21 countries apply legislation which recognizes midwifery as an autonomous profession. The creation (where it does not exist) and application (where it does exist) of such legislation would be an important public acknowledgement of the worth of midwives and nurse-midwives.

Quality: There is increasing recognition of the importance of this fourth dimension of effective coverage. The International Confederation of Midwives has identified education, regulation and association as the three pillars of a strong, high-quality midwifery profession, and this report focuses mainly on these three aspects of quality.

7 Legislation, regulation and licensing allows SRMNAH workers to provide high-quality care and thus protect the health of women, adolescents and newborns. Countries in the region tend to have good policies and systems for this aspect of quality of care, but in some countries there are **BARRIERS TO THE EFFECTIVE IMPLEMENTATION OF THESE POLICIES AND SYSTEMS.**

8 Midwives and nurse-midwives who are educated and regulated to international standards can provide 87% of the essential care needed for women, adolescents and newborns. Midwives and nurse-midwives can make a unique contribution due to their competencies covering the whole continuum of SRMNAH care, from pre-pregnancy, through antenatal care and care during childbirth, to postnatal services. **THE SCALING UP OF MIDWIFERY REPRESENTS A COST-EFFECTIVE CONTRIBUTION TO IMPROVING SRMNAH OUTCOMES.**



Pre-service education curricula for midwives and nurse-midwives in countries in the region generally align to global and national standards in terms of duration and content, but countries in the region identified numerous challenges to the successful delivery of the curriculum content. The main challenges are perceived to be insufficient teaching staff and insufficient opportunities for students to gain practical experience in health facilities providing evidence-based and high-quality care. Other identified challenges relate to weak infrastructure and lack of essential educational supplies. These issues limit the quality of education that student midwives and nurse-midwives receive and thus compromise the production of competent and confident midwives and nurse-midwives. Many countries in the region are taking action to improve in-service training and continuing professional development opportunities, especially for SRMNAH workers in rural areas.

The regulatory environment for midwifery service provision in the region is generally positive. All 21 countries have an organization with responsibility for regulating the practice of midwives and nurse-midwives. Most of these organizations perform a wide range of functions, including setting standards for midwifery practice, continuing professional development (CPD) and verification of midwives and nurse-midwives joining the workforce from other countries. Midwives and nurse-midwives in most countries in the region are authorized to perform all seven basic emergency obstetric and newborn care (BEmONC) signal functions, and to provide a wide range of family planning products. Similarly, most countries have a licensing system for midwives and nurse-midwives and make CPD a condition of re-licensing.

Midwives and nurse-midwives in all 21 countries are eligible to join a professional association, and in most countries there is an association specifically for midwives (as opposed to a nursing association that is open to midwives and nurse-midwives). Most of the region's professional associations play a role in CPD, advising members of SRMNAH quality standards, and advising government on SRMNAH policy.

Conclusion

Workforce availability is essential to the provision of SRMNAH services, but the effective coverage of those services depends as much on accessibility, acceptability and quality as on availability. It should be noted that the country briefs in this report focus solely on the "availability" dimension of effective coverage. Countries with low levels of potential met need for SRMNAH care need to focus on availability as the foundation for improving effective coverage. All countries, whether their potential met need estimate is high or low, should address the identified challenges to the provision of an SRMNAH workforce that is accessible, acceptable and of high quality. Depending on the country context, this may require action in several areas, such as:

- Collecting accurate, timely workforce data
- Filling gaps in the SRMNAH interventions provided free at the point of access
- Reducing geographical and other inequities in accessibility of SMRNAH workers
- Having plans in place to ensure continuity of SRMNAH services in the event of a humanitarian or other crisis
- Acquiring knowledge and understanding of the wishes, needs and rights of women and their families in terms of SRMNAH care
- Improving public perceptions of midwives and nurse-midwives, e.g. by promoting respectful care
- Increasing the number of competent teaching staff in schools producing SRMNAH workers
- Creating more opportunities for clinical experience during pre-service education of SRMNAH workers
- Strengthening regulation mechanisms

CHAPTER 1

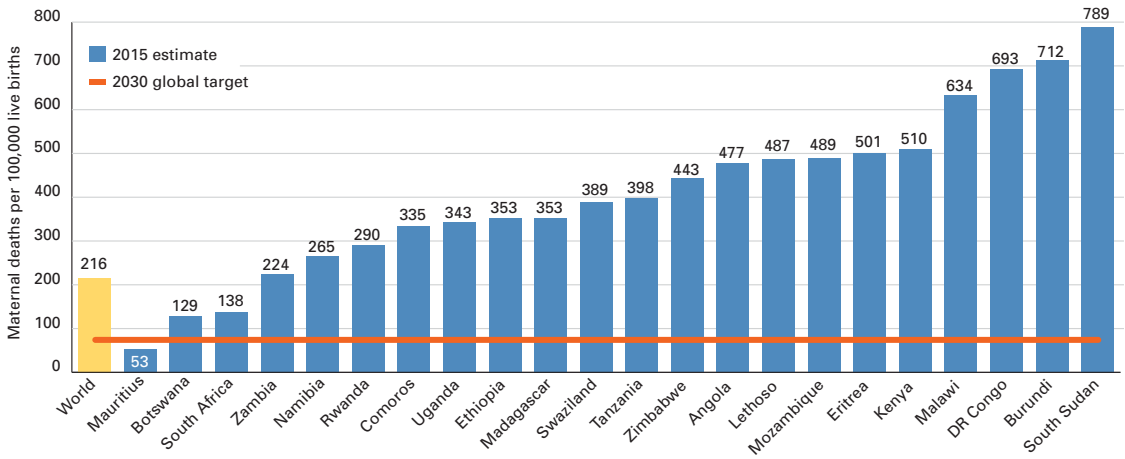
INTRODUCTION

Despite significant progress since 2000, most low- and middle-income countries failed to meet the 2015 targets set under the Millennium Development Goals (MDGs) relating to maternal and child health [1]. It is estimated that there were 303,000 maternal deaths in the world in 2015, and nearly all of the preventable deaths occurred in low- and middle-income countries [2]. Similarly, 2.7 million neonatal deaths and 2.6 million stillbirths occurred across the world in 2015 [3,4], mostly in low- and middle-income countries.

Between 1990 and 2015, there was a reduction of 44% in the global maternal mortality ratio (MMR). Over the same period, the United Nations Population Fund (UNFPA) East and Southern Africa region achieved a reduction of 50% (the MMR declined from 913 maternal deaths per 100,000 live births in 1990 to 455 in 2015) [2]. This achievement has been attributed to improvements in access to family planning and skilled birth attendance, but significant problems remain with inequality of access to services and poor quality of care.

The 23 countries in the region accounted for 7% of the world's women of reproductive age and 14% of the world's births in 2015 [5], but just 2% of the world's doctors, nurses and midwives in 2013 [6]. This indicates a severe shortage of health workers in the region. Correspondingly, and despite significant progress over the last two decades, countries in the region still tend to have relatively poor maternal and neonatal outcomes. In 2015, the MMR for countries in the region ranged from 53 maternal deaths per 100,000 live births in Mauritius to 789 in South Sudan, against a 2015 global average of 216 and an ambitious global 2030 target of 70 as illustrated by the red line in Figure 1.

FIGURE 1 **Maternal mortality ratio estimates for 22* East and Southern Africa countries, 2015**



Source: WHO, UNICEF, UNFPA, World Bank, UNPD (2015) [2]

* Data not available for Seychelles.

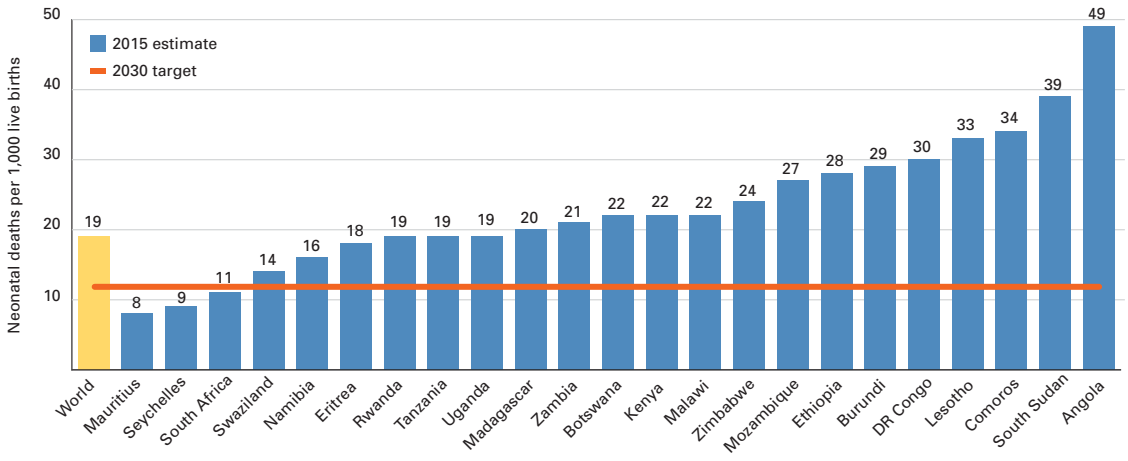
There was also a wide range in estimates of the 2015 neonatal mortality rate (NMR), from 8 neonatal deaths per 1,000 live births in Mauritius to 49 in Angola (Figure 2), against a global SDG target of no more than 12 in any country by 2030. The stillbirth rate varied slightly less, standing at between 10 and 31 stillbirths per 1,000 live births in 2015 (Figure 3).

Globally and regionally, several initiatives aim to improve sexual, reproductive, maternal, newborn and adolescent health (SRMNAH) outcomes. Launched in 2015 as successors to the MDGs, the SDGs set ambitious targets for universal coverage of essential health services, including sexual and reproductive health and reproductive rights [7]. These targets include:

- By 2030, reduce the global MMR to fewer than 70 maternal deaths per 100,000 live births. To achieve this target, the global MMR will need to reduce by at least 7.5% each year between 2016 and 2030. Reaching the absolute target does not preclude countries from continuing to improve. Counties with relatively low MMR such as Botswana, Mauritius and South Africa should be aiming at ensuring the target is met within each state or district to reduce sub-national inequity, and by 2030 no country should have an MMR higher than 140 [8]
- By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce the NMR to at least as low as 12 neonatal deaths per 1,000 live births and under-5 mortality to at least as low as 25 deaths per 1,000 live births
- By 2030, ensure universal access to sexual and reproductive health care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes
- Achieve universal health coverage (UHC), including access to quality essential health care services for all
- Substantially increase health financing and the recruitment, development, education, training and retention of the health workforce in developing countries

The year 2015 also saw the launch of the updated *Global Strategy for Women's, Children's and Adolescents' Health* [9], which called for country leadership and partnership working to generate, synthesize, coordinate and implement a prioritized research agenda for improving SRMNAH.

FIGURE 2 **Neonatal mortality rate estimates for 23 East and Southern Africa countries, 2015**



Sources: Healthy Newborn Network [4]

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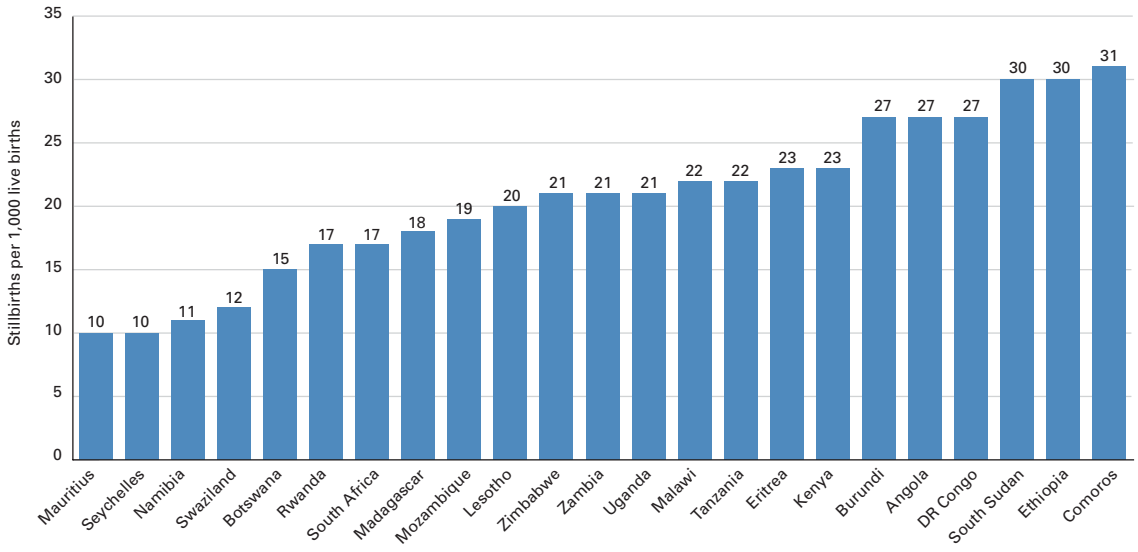
FIGURE 3 **Stillbirth rate estimates for 23 East and Southern Africa countries, 2015**



Sources: Healthy Newborn Network [4]

In recent years, there has been increasing recognition that targets such as those shown above cannot be achieved without significant investment in the health workforce. In 2016 the World Health Assembly adopted *Workforce 2030: the Global Strategy on human resources for health* (HRH) [10]. This strategy has the overall goal "to improve health, social and economic development outcomes by ensuring universal availability, accessibility, acceptability and quality of the health workforce", and sets out four main objectives:

1. To optimize performance, quality and impact of the health workforce through evidence-informed policies on HRH, contributing to healthy lives and well-being, effective UHC, resilience and strengthened health systems at all levels.

2. To align investment in HRH with the current and future needs of the population and of health systems, taking into account labour market dynamics and education policies; to address shortages and improve distribution of health workers, so as to enable maximum improvements in health outcomes, social welfare, employment creation and economic growth.

3. To build the capacity of institutions at sub-national, national, regional and global levels for effective public policy stewardship, leadership and governance of actions on HRH.

4. To strengthen data on HRH, for monitoring and ensuring accountability for the implementation of national and regional strategies, and the Global Strategy.

In addition to the global plans and strategies mentioned above, a number of regional plans and strategies that are relevant to the SRMNAH workforce have been developed, including: the *Africa Health Strategy* for 2016-2030 [11], the *Maputo Plan of Action for the Operationalisation of*

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the Continental Policy Framework for Sexual and Reproductive Health and Rights [12] and the *Road Map for Scaling up HRH in the African Region 2012-2025* [13]. The *Africa Health Strategy* calls on all African Union member states to develop an HRH management plan which addresses "policies, strategic plans, information, training, recruitment, deployment and retention, administration, working and living conditions and the health of staff". The *Road Map* identifies six strategic areas that require strengthening: (1) health workforce leadership and governance capacity, (2) HRH regulatory capacity, (3) education and training of health workers, (4) optimizing the utilization, retention and performance of health workers, (5) improving health workforce information and generation of evidence for decision-making, and (6) health workforce dialogue and partnership.

The 2014 *State of the World's Midwifery* (SoWMy) report concluded that midwives, when educated and regulated to international standards, can meet 87% of the global need for essential SRMNAH services [14]. There is evidence to indicate that investment in midwives and midwifery is a cost-effective approach to the reduction of maternal and neonatal mortality and stillbirth [15], and that midwife-led models of care result in excellent maternal and neonatal outcomes [16]. Midwives are therefore considered key to the achievement of the ambitious global targets described above, and their specific role within SRMNAH care means that a strong midwifery profession is critical to meeting the sexual and reproductive health needs of women and adolescents. On the basis of this body of evidence, integrated midwifery services are seen as fundamental to the provision of quality care for women and newborns, as they achieve excellent outcomes with fewer interventions and are cost-effective [17]. The Director General of the World Health Organization (WHO) has urged "... midwives to continue to make a difference through the provision of high-impact and low-cost interventions. Strengthening nursing and midwifery to support universal health coverage is a key imperative for improving the health of populations" [18]. Similarly, UNFPA is prioritizing investment in midwives and nurse-midwives to help achieve its goals. Its current strategic plan includes a target for the number of countries in which the development of workforce policies is based on current global standards [19].

Recent research indicates that many midwives and nurse-midwives (particularly in Africa) feel disrespected and undervalued in the workplace and/or the community, which limits their ability to meet the needs of women, adolescents and babies [20]. There is also evidence that midwives are not valued professionally due to the socio-cultural feminization of midwifery, which has led to under-investment in midwifery education, regulation and services [21]. This is despite the wealth of recent, high-quality evidence of the importance and effectiveness of midwives.

In this global and regional context, UNFPA's East and Southern Africa Regional Office commissioned this report to assess the state of the SRMNAH workforce in the region. All 23 countries in the region were invited to complete a questionnaire, which covered the SRMNAH workforce, education, regulation, professional associations, policy and planning frameworks, and progress since 2013. Of these, 21 returned a completed questionnaire and therefore are included in the analysis shown in this report: Angola, Botswana, Burundi, Comoros, Democratic Republic of Congo (DRC), Eritrea, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Rwanda, South Africa, South Sudan, Swaziland, Tanzania (mainland and Zanzibar[1]), Uganda, Zambia and Zimbabwe. Nearly all of these countries also featured in the 2014 SoWMy report, the exception being Namibia.

1 Although part of the United Republic of Tanzania, Zanzibar has a separate ministry of health and completed a separate questionnaire. Therefore, the SRMNAH workforces of mainland Tanzania and Zanzibar were analyzed separately.

The primary objective of this report is to present an up-to-date, comprehensive and region-specific picture of the SRMNAH workforce in East and Southern Africa, by:

- Providing country-specific information on the status of the SRMNAH workforce and need for SRMNAH services, which are converted into estimates of need for the SRMNAH workforce
- Assessing accessibility of the minimum universal SRMNAH benefits package in the region
- Assessing acceptability of SRMNAH services in the region
- Analyzing the status of the education, regulation and association of midwives and nurse-midwives: the three pillars of a strong profession as defined by the International Confederation of Midwives (ICM) [22]

This report provides pointers for the future strengthening of the SRMNAH workforce as a key part of the health system and SRMNAH policy framework, and should therefore be used to stimulate policy discussions and evidence-based decision-making at regional, national and sub-national levels. The country briefs in Chapter 3 of this report can be used as a basis for policy briefs. Used in these ways, this report will assist countries in the region to invest appropriately in the SRMNAH workforce with a view to enabling women, adolescents and newborns to obtain the SRMNAH care that they need and thus enabling countries in the region to meet the targets set via global architecture such as the SDGs. Regular updating of this SRMNAH workforce analysis is recommended for progress monitoring. It is also hoped that this report will enable midwives and other health professionals to advocate for midwives and nurse-midwives to be accorded the respect and investment that they deserve.

Figures 1-3 indicate considerable variation in health system performance across the countries in the region, and thus suggest that solutions to poor performance should be context-specific rather than being based on a 'one size fits all' approach. This report aims to be a valuable addition to the toolkit of those charged with strengthening health systems and improving SRMNAH outcomes, by providing both a regional overview and country-specific assessments of the SRMNAH workforce which take into account each country's demographic and epidemiological conditions and thus enable tailored solutions to be considered.

What is the SRMNAH workforce? The workforce considered in this report includes all health workers engaged in providing SRMNAH care for women, adolescents and newborns, across the full continuum of care from sexual health and family planning through pregnancy to the neonatal period. Although this report is part of the *State of the World's Midwifery* series, it considers physicians, non-physician clinicians, nurses and other relevant health professionals in addition to midwives and nurse-midwives. Midwives and nurse-midwives are, however, a key SRMNAH cadre, so sections of the report — particularly those looking at acceptability and quality — do focus specifically on them.

How was this report compiled? Each UNFPA country office appointed a focal person to coordinate the completion of the questionnaire, which was made available in both French and English. A verbal briefing was given to the focal points during a workshop in Johannesburg in November 2016. Focal points were instructed to involve relevant national stakeholders and experts during the process of questionnaire completion (e.g. government ministries, professional associations, heads of professional schools, private sector providers), and the final data were validated by national ministries of health. Data collection took place between November 2016 and March 2017. Countries

were requested to provide data on workforce numbers from the year 2015, as the most recent complete calendar year before the commencement of data collection. Chapter 2 provides an analysis of the availability, accessibility, acceptability and quality of the workforce across the 21 participating countries, and Chapter 3 includes a two-page "country brief" for each of these countries. More detail on the methods used for data collection and analysis can be found in Annex 1.

How to use the country briefs. The country briefs contain a mix of current data and needs-based projections for the period from 2015 to 2030. All projections are sensitive to the quality of data informing them, and involve a number of assumptions, including the assumption that tasks are allocated to health workers according to the principle of economic efficiency, which may or may not reflect the reality in any given country. The briefs should therefore be used, not as fact-sheets, but as a focus for discussion to review and improve the quality of data, and to stimulate debate about different policy options within countries. The guidance at the beginning of Chapter 3 explains more about how to read, understand and use the country briefs. It should be noted that the data in the country briefs are not directly comparable to the data in *SoWMy 2014*, for reasons explained in Annex 1.

CHAPTER 2

THE CURRENT SRMNAH WORKFORCE IN EAST AND SOUTHERN AFRICA

This chapter contains a broad assessment of the state of the region's SRMNAH workforce, including an account of progress since 2013 (the year of data collection for *SoWMy 2014*). The chapter is based on 21 country responses, so it includes nearly all countries in the UNFPA East and Southern Africa region. It gives an in-depth description of what women and newborns need in the 21 countries, the characteristics of the workforce that should serve them, and a detailed breakdown of what is actually available to them. The concept of "effective coverage" is used to examine the SRMNAH workforce (see Box 1). Effective coverage is defined as the proportion of the population who need an intervention, receive that intervention and benefit from it [23]. It can be measured by considering the availability, accessibility, acceptability and quality of health services and of the personnel providing those services. This chapter uses these four dimensions to examine the readiness of the workforce to deliver universal access to SRMNAH care.

Evidence of progress since 2013

Countries were asked to report on new initiatives or significant events affecting the SRMNAH workforce since 2013, and their responses are shown in Table 1. It is clear that many countries in the region have recognized the need for improvements to the effective coverage of SRMNAH workers. Of particular note is the fact that 15 of the 21 participating countries reported initiatives to increase the production of SRMNAH workers, either through expansion of capacity at existing schools or opening of new ones, and nine countries gave examples of actions to improve the accessibility of the workforce for underserved communities. The acceptability domain of effective coverage is starting to receive attention in some countries, and there are examples from nearly all participating countries of initiatives to improve the quality of the SRMNAH workforce.

What women and newborns need

Table 2 shows that there is a very high level of need for SRMNAH services in East and Southern Africa: collectively, the 21 countries covered by this report are home to 130 million women of reproductive age, who in 2015 had approximately 27 million pregnancies and 19 million live births. As these figures imply, fertility rates tend to be high in the region, with 13 of the 21 countries having a total fertility rate (total number of children born per woman) of 4 or more. This indicates that need for SRMNAH services will remain high for the foreseeable future.

For the analysis shown in the country briefs in Chapter 3, estimates were made of the amount of health worker time that would be needed to meet the need for SRMNAH services in each country, taking into account the country's demography (e.g. number of women of reproductive age, fertility rate) and epidemiology (e.g. HIV and malaria prevalence) (see Annexes 1 and 4 for full details). Variation in demography and epidemiology results in varying amount of need for SRMNAH services. For example, a high prevalence of HIV and AIDS will result a high level of need for HIV counselling, testing and treatment, which in turn has implications for the number and skill mix of SRMNAH workers needed.

BOX 1

Examining the SRMNAH workforce using the concept of effective coverage

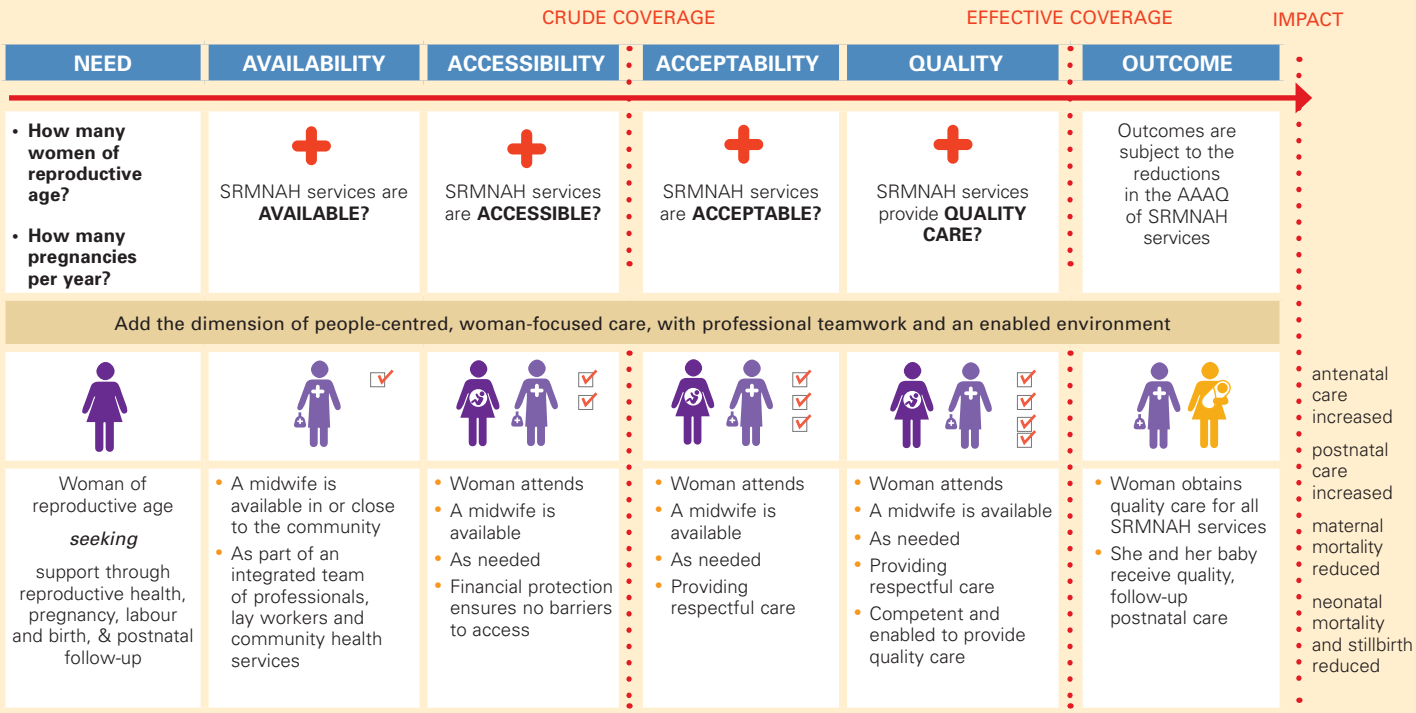
The concept of "effective coverage" was developed by the World Health Organization (WHO) in the 1970s to explore the delivery of health services. In 1978 Tanahashi published a conceptual framework in the Bulletin of the WHO [23], which captured the simple logic of how each domain of availability, accessibility and acceptability influences whether the population obtains health services that meet their requirements. Tanahashi argued that the simplicity of the logic could be applied to consider the effective coverage of all health services, or particular services and components of service delivery: for example SRMNAH services and the workforce providing them.

General Comment No. 14 [24] on the right to health, published in 2000, mirrored the Tanahashi domains of availability, accessibility and acceptability, adding quality as the fourth domain (AAAQ). Article 12 states that "the right to health in all its forms and at all levels contains the following interrelated and essential elements, the precise application of which will depend on the conditions prevailing in a particular State Party", before listing each of the AAAQ domains and the obligations for all States. The use of the AAAQ domains is therefore of immediate value in exploring effective coverage, but also reinforces the right to health.

The use of the Tanahashi framework to explore human resources for health, and the AAAQ of the health workers who are at the core of service delivery, is enabling new policy insights across countries [10, 25–28]. Similar insights have been achieved when analysing SRMNAH services [29–30] and the SRMNAH workforce [14, 32, 33]. New opportunities have thus been created to review barriers, challenges and opportunities in the delivery of effective coverage and are complementary to similar domains to measure quality of care in health systems.

The figure below illustrates the need to focus on measuring whether women obtain health services in relation to need and how the AAAQ of the SRMNAH workforce influences this. This logic underpins the discussion in Chapter 2, and echoes the latest guidance on monitoring progress towards universal health coverage [34].

Effective coverage as applied to SRMNAH services and the workforce



Source: Adapted from Campbell et al, 2013 [25] and Colston, 2011 [29]

TABLE 1

Examples of new initiatives or significant events since 2013 relating to the effective coverage of the SRMNAH workforce

Action	No. of countries (/21)	Examples
AVAILABILITY		
Increased production of workers with midwifery skills	15	• The government of **Comoros** organized a recruitment competition in 2014, resulting in members of the public recruiting 200 additional midwives • Between 2013 and 2016, 10 new midwifery schools opened in **Ethiopia**, 4 new midwifery schools opened in **Rwanda** and 5 new midwifery schools opened in **Zimbabwe**
Task shifting/ sharing initiatives	5	• Scope of practice of non-midwife cadres expanded to include more midwifery tasks in **South Africa** and **Zimbabwe** • Task sharing policy guidelines launched in **Tanzania** to enable midwives to perform tasks previously only performed by physicians
Improvements to workforce information	4	• New human resources information system launched in **Ethiopia** • SRMNAH workforce assessments/audits conducted in **Mozambique** and **South Africa**
Encouraging young people to become midwives	2	• Awareness-raising activities in **DR Congo** to encourage youth to consider a career in midwifery • **Zanzibar** Nurses Association visited secondary schools to motivate students to consider training as nurse-midwives
ACCESSIBILITY		
Free care at point of access	14	• Voucher scheme in **Uganda** to encourage women to access midwifery services
Focused deployment to underserved areas	9	• Efforts have been made in **Comoros** to deploy at least one midwife to all rural health posts • Deployment of midwives in **Zambia** gives preference to rural areas
Rural placements for students or newly-qualified workers	3	• Student midwives in **Lesotho** are given rural work placements • SRMNAH workers in **Namibia** are contracted to serve in their community of origin for a minimum period
Maternity waiting homes for rural women	3	• Establishment of new waiting homes in **South Sudan** • Maternity waiting homes in **Zimbabwe** have increased in number and existing homes upgraded
Extended opening hours	2	• Some hospitals and clinics in **Botswana** provide a 24-hour service • Early morning opening (7am) of some health centres and hospitals in **Lesotho**
Devolved decision-making	2	• Local governments in **Ethiopia** decide how many health workers to enrol in provincial schools • County governments in **Kenya** make decisions about health worker deployment
ACCEPTABILITY		
Revised education curricula	2	• Curricula in **DR Congo** and **South Africa** were revised to emphasize the importance of respectful care
In-service training on respectful care	2	• Midwifery associations in **Zambia** and **Zimbabwe** have provided training on respectful care
New policy/plan on acceptability	2	• All health facilities in **Mozambique** are required to have a 'humanization of care' committee with community participation
Client surveys	1	• In **Tanzania** (mainland) and **Zanzibar**, information is being collected on user satisfaction with midwifery services

(continued)

TABLE 1

Examples of new initiatives or significant events since 2013 relating to the effective coverage of the SRMNAH workforce (continued)

QUALITY

Improvements to M+E systems	16	• **Zambia's** Routine Enhanced Monitoring System now includes RMNCH indicators and is used to monitor performance • In **Swaziland**, quality of care has been formally evaluated
CPD/in-service training initiatives	9	• In **Kenya**, elements of the CPD programme are now available online • In **Tanzania**, CPD points are now a requirement for re-licencing and re-registration
Quality assurance initiatives	5	• Quality assurance committees have been established at all health facilities in **Rwanda** • **South Sudan** has developed a Quality Assurance Framework for SRMNAH
Mentorship/ supervision initiatives	3	• **Kenya**, **Lesotho** and **Malawi** have developed mentorship programmes for SRMNAH workers
MDSR initiatives	2	• **Rwanda** and **Zimbabwe** have improved their systems for recording and reviewing maternal and perinatal deaths and 'near misses'

TABLE 2

Demographic data relevant to SRMNAH services for 21 East and Southern Africa countries, 2015

	Women aged 15-49	Total fertility rate	Live births	Pregnancies
Source:	United Nations Population Division [5]			WorldPop [35]
Angola	5,569,843	5.79	1,068,004	1,385,784
Botswana	627,997	2.67	55,095	64,757
Burundi	2,623,657	5.66	456,078	664,669
Comoros	193,060	4.23	25,699	40,641
DR Congo	17,320,111	5.66	3,049,647	4,261,775
Eritrea	1,269,374	4.02	173,790	325,533
Ethiopia	24,103,160	3.99	3,107,466	4,590,078
Kenya	11,175,156	4.10	1,530,325	2,388,641
Lesotho	554,745	3.01	59,863	80,795
Madagascar	5,866,996	4.21	789,163	1,085,788
Malawi	3,960,662	4.88	633,164	1,007,907
Mozambique	6,447,822	5.12	1,044,771	1,385,056
Namibia	654,357	3.31	70,235	86,151
Rwanda	2,982,264	3.62	360,627	625,392
South Africa	14,677,442	2.28	1,115,308	1,508,750
South Sudan	2,934,739	4.73	417,520	638,972
Swaziland	334,442	3.06	37,501	54,844
Tanzania (mainland + Zanzibar)	12,306,065	4.92	1,966,418	2,727,901
Uganda	8,698,650	5.46	1,576,319	2,591,236
Zambia	3,733,348	5.14	611,303	981,865
Zimbabwe	4,001,236	3.65	533,373	655,214
Total	**130,035,126**	**NA**	**18,681,669**	**27,151,749**

FIGURE 4 **Estimated number of full-time equivalent SRMNAH workers needed to meet 100% of the need for SRMNAH services in 21 East and Southern Africa countries, 2015**

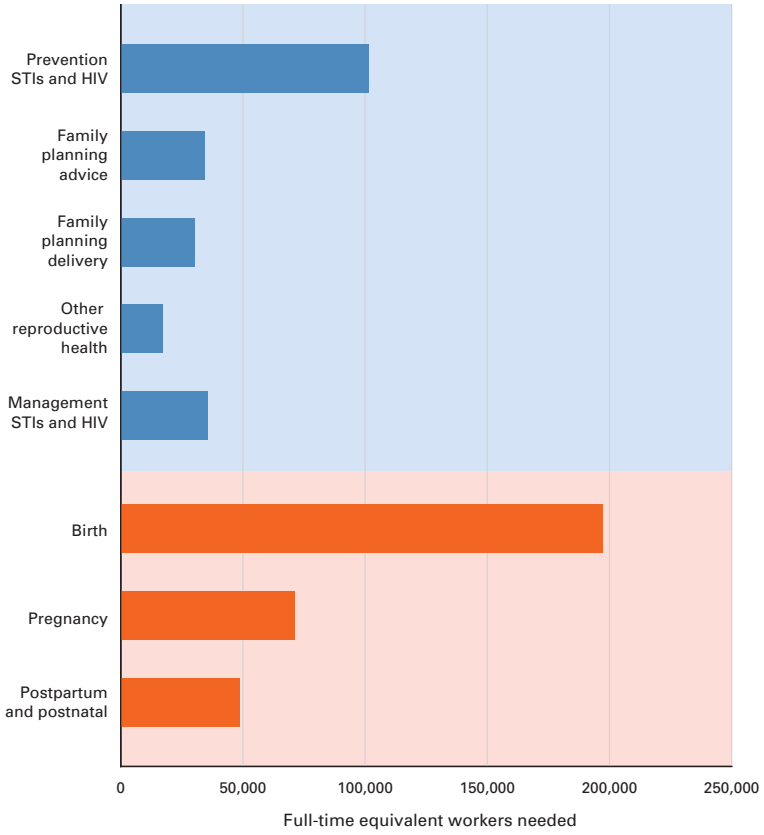
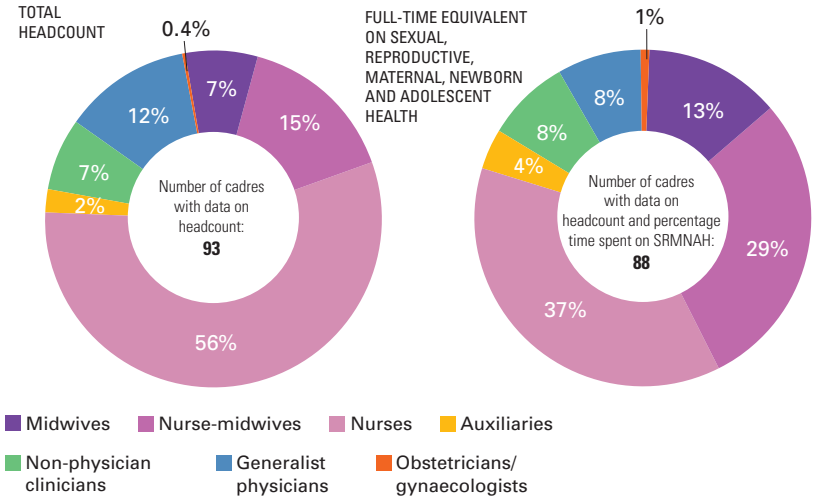


FIGURE 5 **SRMNAH workforce distribution in 18 East and Southern Africa countries, 2015**



* For the 12 cadres with data on headcount but not on % time spent on SRMNAH, it was assumed that the regional average for that cadre applied – see Annex 5 for details.

Figure 4 sums these estimates across all 21 countries, and shows the number of full-time equivalent SRMNAH workers needed to meet all the need in 2015 across the different stages of the continuum of care. This highlights the point that, although most of the need for SRMNAH workers in the region is due to pregnancy and birth, a large proportion of the need is for care outside of pregnancy, as represented by the blue bars. Midwives, when educated and regulated to international standards such as those set out by ICM [36–38] have the competencies to deliver 87% of the need for essential SRMNAH across the whole continuum of care [14].

What is the SRMNAH workforce?

The participating countries were asked to provide detailed information on the SRMNAH workforce, including cadre names, headcounts, duration of education, roles and responsibilities, and proportion of working time spent on providing SRMNAH services. As an initial stage of the analysis, SRMNAH workers in the region were grouped into one of 8 categories based on their cadre name: midwives, auxiliary midwives, nurse-midwives, nurses, auxiliary nurses, non-physician clinicians (e.g. clinical officers), generalist physicians, and obstetricians/gynaecologists. It should be noted that community health workers (CHWs) were not counted as part of the SRMNAH workforce, even though many countries in the region deploy CHWs to perform SRMNAH tasks. They were excluded from the analysis because there is no standard definition of a CHW, nor a standard expectation of which SRMNAH tasks they are competent and authorized to deliver. This limitation should be borne in mind when interpreting the analysis of workforce availability. WHO is currently working towards addressing this issue [39], so in future years it may be feasible to include CHWs in modelling exercises such as this.

Based on these cadre groupings, Figure 5 shows the distribution of the SRMNAH workforce in the 18 countries who were able to provide head-

counts for at least one cadre (i.e. all except Angola, Namibia and South Sudan). The first chart shows the composition of the workforce by headcount: the number of workers in each category. The second chart shows the composition by full-time equivalent, which was calculated by multiplying the headcount by the percentage of working time spent on SRMNAH. The fact that these two charts are so different shows that headcount alone is an inadequate measure of the size of the SRMNAH workforce, because some cadres (most notably nurses and generalist physicians) are required to provide other health services as well as SRMNAH services. These cadres therefore make up a relatively large proportion of the workforce by headcount, but a relatively small proportion by full-time equivalent. Conversely, midwives and nurse-midwives account for just 22% of the headcount, but almost half (42%) of the full-time equivalent SRMNAH workforce.

Health workers who share a cadre name are not necessarily comparable in terms of their roles, responsibilities and competencies, and sometimes the opposite is true, i.e. those who do not share a cadre name have a comparable role. There are global standards defining a skilled birth attendant [40] which are currently being updated [41], but the scope of practice for midwifery extends beyond attending births. The International Labour Organization publishes guidance on the International Standard Classification of Occupations (ISCO), specifying the tasks within the scope of midwifery professionals [42]. Figure 6 shows, for each category of SRMNAH worker, how many countries with that cadre name have all the ISCO midwifery tasks in their job description. It is encouraging that all the midwife and nurse-midwife cadres in the 21 participating countries have all these tasks in their job descriptions. The same is not true of the other SRMNAH cadres included in this assessment, which limits their ability to meet the need for services across the whole continuum of SRMNAH care.

Availability

The first dimension of effective coverage is avail-

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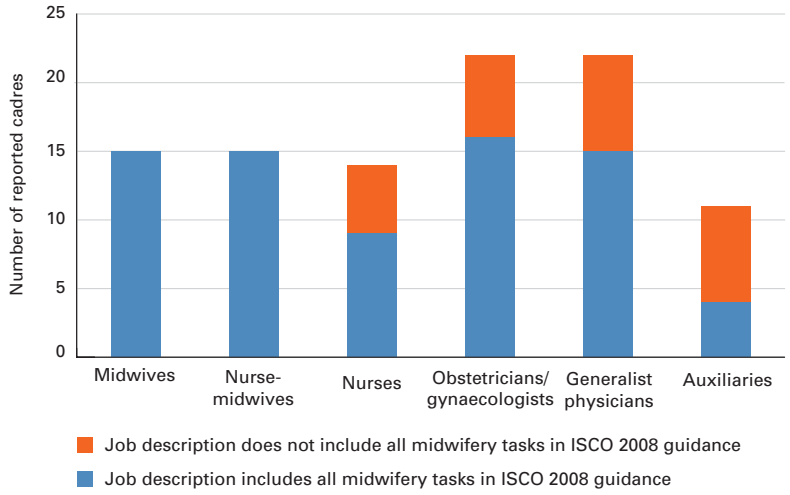
FIGURE 6 **Job descriptions for SRMNAH cadres in 21 countries: do they include all midwifery tasks specified in International Standard Classification of Occupations (ISCO)?**



Notes: Malawi has recently introduced a new cadre of midwife, which is not included here because the first cohort is still in education. South Sudan's nurses and nurse-midwives are also excluded because of lack of data on their job descriptions.

FIGURE 7 **SRMNAH workforce in 18 countries: headcount versus full-time equivalent**

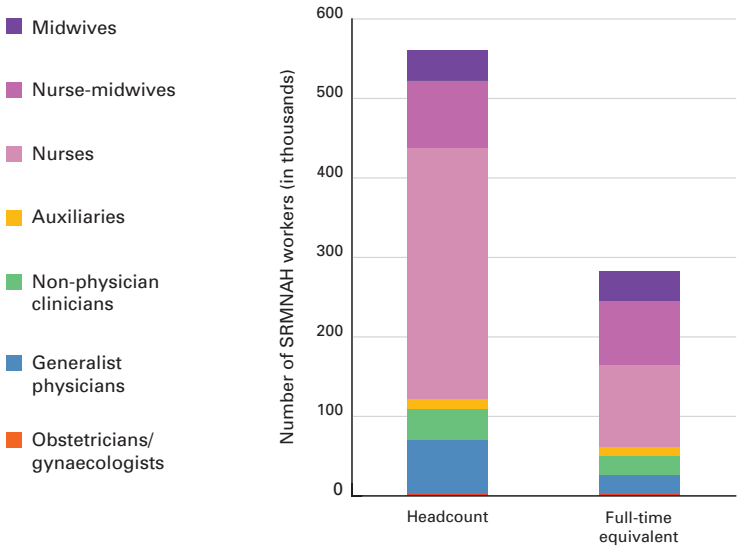
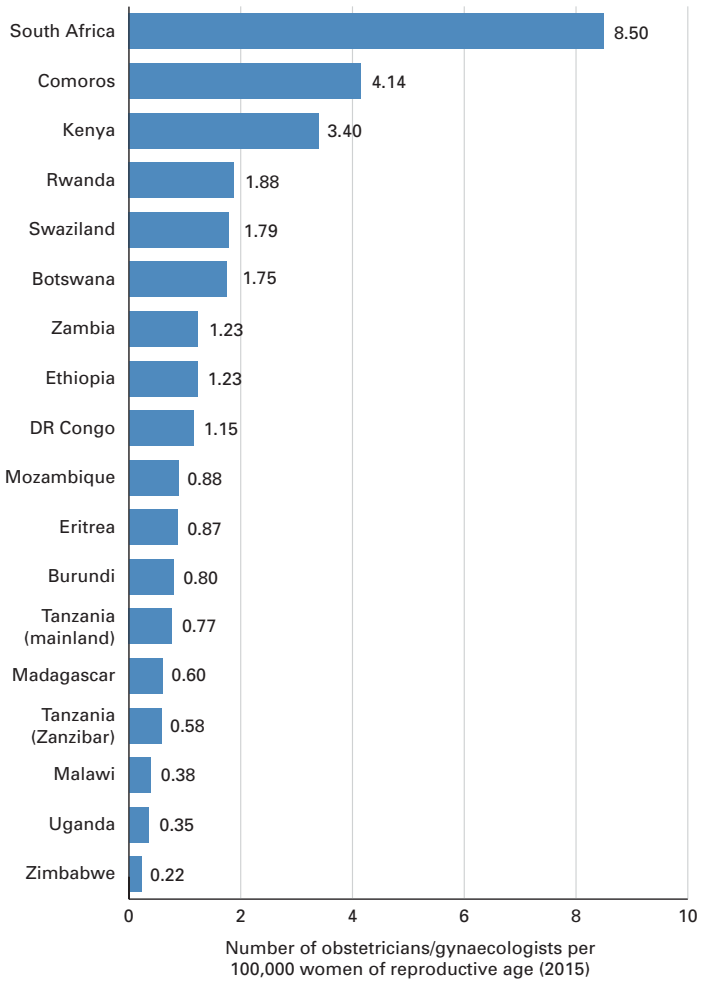


FIGURE 8 **Obstetricians/gynaecologists per 100,000 women of reproductive age, 18 countries, 2015**



ability, i.e. are there enough health workers to meet the need for SRMNAH services?

Workforce size

An initial estimate of SRMNAH workforce availability can be gained from a headcount. Across the 18 countries that provided headcounts for at least some cadres, over half a million (561,194) health professionals were engaged in providing SRMNAH services[2]. As noted earlier, however, a headcount alone is a flawed measure of SRMNAH workforce availability because many workers have clinical responsibilities outside of SRMNAH care. Figure 7 shows the difference between the workforce headcount and the size of the 'full-time equivalent on SRMNAH' workforce. The smaller column gives a more accurate estimate of availability, because it takes into account the proportion of working time spent on providing SRMNAH care (as opposed to other types of health care). For the 18 countries providing headcounts, the full-time equivalent workforce is just 55% of the entire SRMNAH workforce. Most of this difference is due to nursing cadres, which tend to be large in terms of headcount, but spend a relatively small proportion of their time on SRMNAH.

It is striking that obstetricians/gynaecologists account for such a small proportion of the SRMNAH workforce, whether by headcount or FTE. Furthermore, half of the region's obstetricians/gynaecologists work in a single country (South Africa) and most of the remainder work in DRC, Ethiopia and Kenya. It has been estimated that countries with high levels of fertility and HIV prevalence including Malawi and Zambia need 12 obstetricians/gynaecologists per 100,000 women of reproductive age [31]. This indicates an extremely severe shortage of this crucial SRMNAH cadre in the region, as illustrated by Figure 8.

Data requirements and data gaps

2 The extent to which this figure includes both public and private sector workers is not clear. Countries were asked to include both, but some noted that they were unable to obtain figures for the private sector.

The analysis of current and future workforce availability depends on 10 essential pieces of information that all countries should collect (Box 2). The routine collection of these 10 data items is essential to facilitate effective workforce planning, yet none of the 21 participating countries provided all of these data items for all of their SRMNAH cadres, although Madagascar and Zimbabwe came very close, missing only one or two data items.

Workforce planning requires an understanding of the education pipeline, as this directly determines the future availability of health workers. However, enrolment, graduation and student attrition data from countries in the region are often missing or inconsistent, indicating a possible disconnect between HRH management systems and health education planning systems. Pathways from education into the workforce must also be appropriately managed. Educating health workers for whom there is no job, or whose postings are delayed, is a poor use of resources and demotivating for the people concerned. Some countries in the survey reported that a significant proportion of graduates do not join the SRMNAH workforce within a year of graduation, which can lead to them choosing alternative career paths or to a deterioration of their clinical skills while they wait to join the workforce.

BOX 2

10 essential data items for SRMNAH workforce planning:

1. Headcount
2. Percentage time spent on SRMNAH
3. Roles of each cadre
4. Age distribution of current workforce
5. Retirement age
6. Duration of education
7. Number of students enrolling per year
8. Education attrition rate
9. Number of new graduates joining the workforce each year
10. Voluntary attrition from the workforce

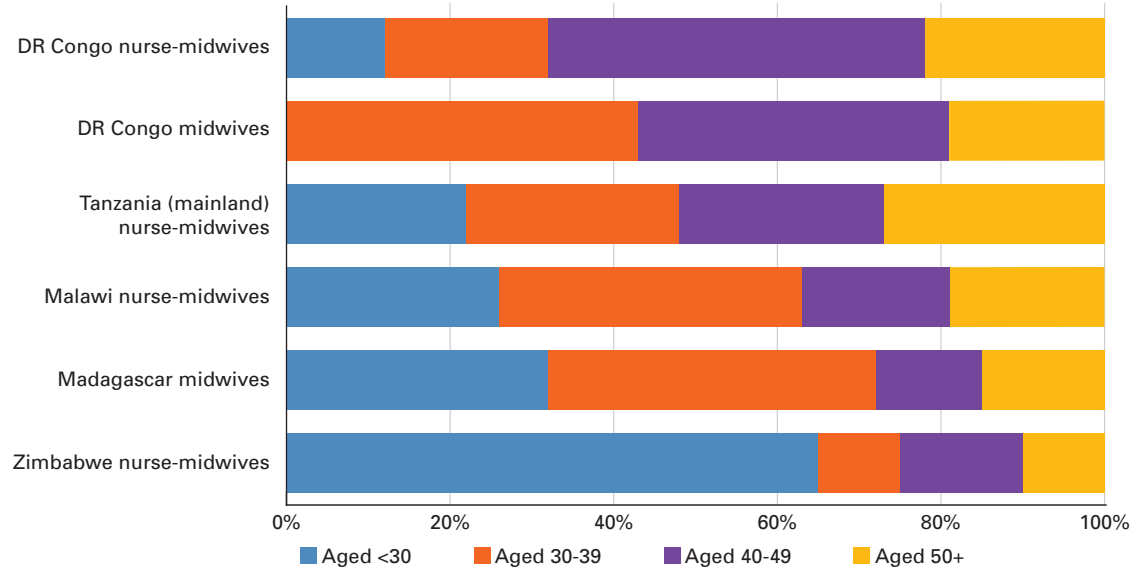
Source: Adapted from World Health Organization [43]

The two key data items most commonly missing were voluntary attrition (i.e. the number of workers choosing to leave the workforce each year) and the age distribution of the current workforce. Voluntary attrition data were provided for only a tiny minority of cadres, creating a significant barrier to making accurate projections of future workforce availability. Furthermore, many of those countries that did respond to this question indicated that the response was based on expert estimates rather than empirical data. Recent research indicates that lack of data on attrition is a widespread issue requiring urgent attention for effective workforce planning [44]. These key data gaps are perhaps an indication of a weakness in regulation of the workforce: countries with a strong regulatory body that keeps an up-to-date workforce register would be able to provide this essential information.

Data on the age distribution of the workforce are important for future projections of workforce availability, because they allow analysts to estimate when health workers are likely to retire. However, this information was provided for only 21 out of 112 reported cadres (19%). Sixteen countries did not provide this information for any of their SRMNAH cadres, four (DRC, Malawi, South Africa and Zimbabwe) provided it for some cadres, and just two (Madagascar and mainland Tanzania) provided it for all their cadres[3]. Figure 9 shows the age distribution of midwives and nurse-midwives in the five countries able to provide an age breakdown for these cadres. It indicates that

3 This adds up to 22 countries because Tanzania mainland and Zanzibar were counted separately.

FIGURE 9 **Age profile of midwives and nurse-midwives in 5 countries**



midwives (*sages-femmes*) and especially nurse-midwives (*accoucheuses*) are slightly aging cadres in DRC, but that midwife and nurse-midwife cadres in Malawi, Madagascar and Zimbabwe are relatively youthful, which bodes well for future availability if voluntary attrition can be minimized.

Countries in the region have recognized that data availability is a crucial component of health service (including workforce) planning: 19 of the 21 participating countries reported that at least one national policy document specifically addresses how the country will improve the data, information systems, monitoring and accountability of SRMNAH services (the exceptions are Eritrea and Kenya, and such a policy is also lacking in Zanzibar). Many countries report policies focusing on strengthening existing health management information systems. The focus now must be on strategies for putting the policies into practice [10].

Needs-based analysis of availability

To determine whether availability is sufficient to deliver universal coverage, it is necessary to examine each country's need for SRMNAH services. This need is driven by multiple demographic and epidemiological factors (e.g. fertility rate, HIV prevalence, contraceptive method mix), and therefore cannot be reduced to global benchmarks that suggest a minimum number of health workers per 1,000 population, especially when such numbers tend to be interpreted as targets. Workforce planning in relation to need must take account of the country context [31].

The country briefs in Chapter 3 present country-specific needs-based analyses of the availability of the current and projected future SRMNAH workforce, expressed as a 'potential met need' percentage. It should be noted that the 2015 estimate does not indicate the proportion of the country's need that was *actually* being met. It is a measure of the *potential* of the workforce to meet the need for essential SRMNAH services: in other words, the percentage of the clinical time required to provide the essential SRMNAH interventions that could be provided by the current workforce (with its current skill-mix) if the workload were allocated in an economically efficient manner. Across the 17 countries for which this analysis was possible, Figure 10 shows that potential met need estimates for 2015 ranged from 100% in South Africa to 25% in Mozambique.

Figure 10 also shows the results of the modelling of future projections if countries continue on their current trajectories of workforce recruitment and development. For many countries, this analysis is extremely encouraging: 10 countries are projected to achieve an increase in potential met need by 2030, and 8 are projected to have potential met need figures of over 90% (as is Zanzibar). This is an indication that these countries have recognized the need to take action to increase domestic production of health workers with SRMNAH skills. However, for 3 countries, the level of potential met need is projected to remain unchanged, and for 4 countries it is projected to decrease.

Focus on availability of midwives and nurse-midwives

Across the 18 countries able to provide headcount data for all or some cadres, midwives and nurse-midwives make up 22% of the SRMNAH workforce by headcount, and 42% by full-time equivalent (see Figure 5). Although not the only type of health worker needed to provide SRMNAH services, they are an essential element of the workforce due to their unique contribution to the physiological process of "normal" birth and the fact that they provide services across the entire continuum of SRMNAH care [45]. Research has shown that even a modest scale-up

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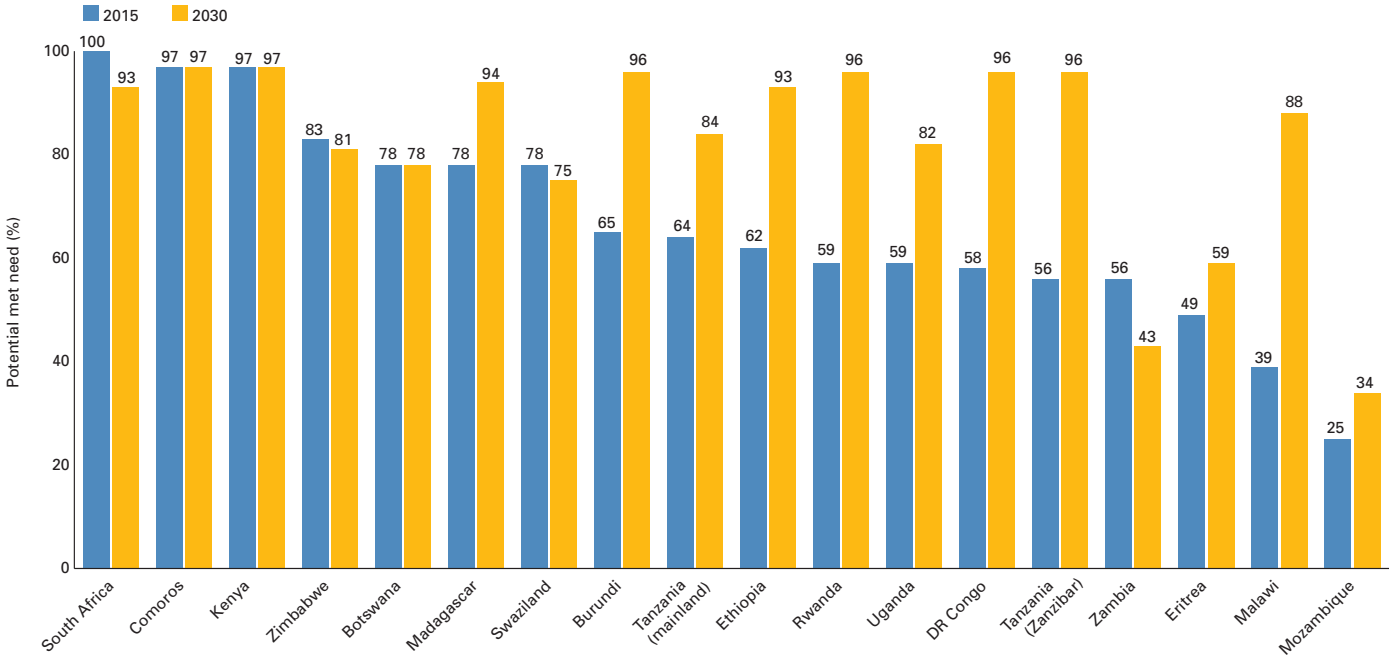
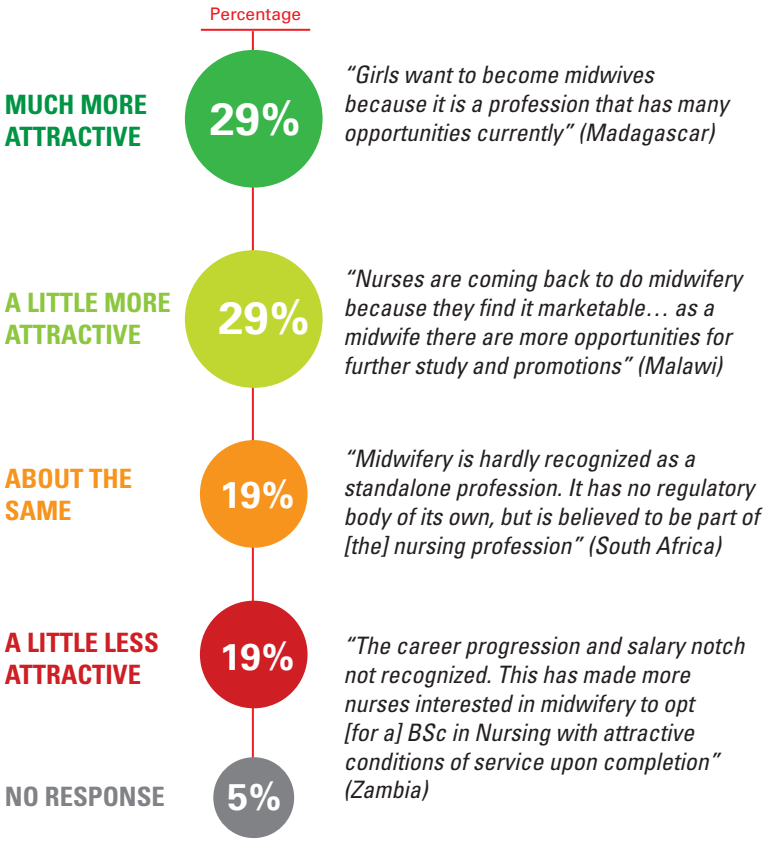
FIGURE 10 **'Potential met need' estimates for 17 countries, 2015 and 2030**



Note: the 2015 estimate of 25% for Mozambique is lower than the estimate of 34% from Mozambique's own SRMNAH workforce assessment in 2015, because (a) the country's own assessment included a wider range of health worker cadres, and (b) the country's own sources of demographic and epidemiological data were used for estimating the level of need for SRMNAH workers, rather than estimates from global databases.

FIGURE 11 **Perceptions among survey respondents of the comparative attractiveness of a career as a midwife (21 countries)**



of midwife numbers can save many lives [15]. Furthermore, given the shorter duration of education for midwives and nurse-midwives compared to physicians and other specialists, the impact of scaling up these cadres can be realized in a relatively short time-frame.

Scaling up of midwife numbers can be achieved more easily if the profession is viewed as an attractive one, because this will help to encourage high-calibre school leavers to consider it as a career. Figure 11 shows that, in 12 out of the 21 participating countries, being a midwife or nurse-midwife is perceived as a much more attractive or a more attractive career choice than others open to people with a similar level of education. Reasons given for this rating include: professional satisfaction, good rates of pay, opportunities for career progression and increasing recognition of the value of midwives and nurse-midwives. On the other hand, four countries (Botswana, Rwanda, South Sudan and Zambia) reported that it is a little less attractive, because of long working hours, low status or lack of opportunities for career progression. No country said that it was much less attractive.

KEY MESSAGES

Availability

The real availability of the SRMNAH workforce can only be measured by reference to the full-time equivalent, rather than the headcount. Headcounts (and analyses based on them) do not reflect the real availability, as the full-time equivalent workforce represents just 55% of the headcount.

Ten pieces of workforce information that all countries should collect can be seen in Box 2. None of the 21 participating countries was able to provide all 10 pieces of information for all of its SRMNAH cadres, indicating widespread challenges in the collection and collation of workforce data, which will negatively affect countries' ability to plan and deploy the workforce effectively.

A needs-based analysis of SRMNAH workforce availability shows that South Africa is the only country in the region with a workforce containing sufficient workers with the right skill mix to meet all of the country's need for essential SRMNAH interventions. The SRMNAH workforces in Comoros and Kenya have the potential to meet nearly all of the need, but are prevented from reaching 100% by not having enough obstetricians/gynaecologists to perform interventions only they are competent to provide.

Midwives and nurse-midwives account for 22% of the SRMNAH workforce headcount but 42% of the full-time equivalent workforce, making them a key cadre.

Scaling up the availability of midwives and nurse-midwives would be a cost-effective method of improving SRMNAH outcomes.

Being a midwife or nurse-midwife is generally viewed as an attractive career option, but in some countries it is not, due to lack of opportunities for career progression, long working hours or low status.

Accessibility

Even if there are enough health workers, people still need to be able to access the care that they provide. Accessibility is a multi-dimensional concept [46], and two of these dimensions are: geographical accessibility (i.e. whether or not people can physically get to a health worker, quickly in cases of emergency) and financial accessibility (i.e. whether or not people can afford to pay the direct or indirect costs of consulting a health worker).

It is encouraging that nearly all of the participating countries report that at least one of their national policy documents specifically addresses how the country will reduce or remove financial, geographical and other barriers to accessing SRMNAH care. The exceptions are Comoros, Eritrea and Madagascar (also Zanzibar, although such a policy exists for mainland Tanzania).

Geographical accessibility

The accessibility of the health workforce is underpinned by an adequate geographical spread of health facilities (and, by extension, health workers), backed up by good transport and communication networks. Achieving this geographical spread depends heavily on good information and good planning. Good information includes knowing where the country's health workers are located, so that assessments can be made of how well the supply of health workers meets the need (as measured by, for example, population density, number of women of reproductive age, fertility rates), taking into account travel times which can be influenced by topography and transport networks as well as physical distance. Recent advances in spatial mapping systems offer great potential for improving the strategic intelligence available to those responsible for deploying the SRMNAH workforce (see Box 3).

It should be noted that the 'potential met need' estimates shown above take into account only the availability domain of effective coverage and therefore almost certainly overestimate the actual amount of need being met. However, because comparable data on accessibility are not available for all the participating countries, it was not possible to adjust the 'potential met need' estimates to take accessibility into account. It is recommended that harmonized measures of accessibility be introduced across the region so that future workforce modelling exercises can build this aspect of effective coverage into the estimates of met need.

Planning should address the allocation of resources according to need. Of the 21 participating countries, 6 reported that they make decisions about where to deploy their SRMNAH workforce according to the type of health facilities existing in various locations. A further 3 countries base this decision solely on population size, and 8 countries combine the two. The remaining 4 countries use a different method, or did not submit a response.

Of the 11 countries who said that decisions were at least partly based on population size, 6 provided at least some information about the number of SRMNAH workers allocated to a certain size of population (e.g. the number of physicians per 10,000 population), but none provided this information for all cadres. Of the 14 countries who said that decisions were at least partly based on facility type, 13 provided at least some information about the numbers of SRMNAH workers deployed to each type of facility, but only 3 provided this information for all cadres, and in many cases only designated numbers were provided because actual numbers were not available. It was not therefore possible to conduct meaningful regional analyses of these data.

Participating countries were asked to provide a list of health facilities with geo-location codes, which would permit analysis of health facility location. In conjunction with information provided about the numbers of health workers at each type of health facility, this would have enabled an estimation of the geographical

BOX 3

Mapping the accessibility of SRMNAH services: Advances in geo-statistical approaches

There is evidence from population surveys that significant proportions of women perceive the distance to their nearest health facility (and by extension, health worker) as a barrier to accessing health care, as illustrated by Figure 12.

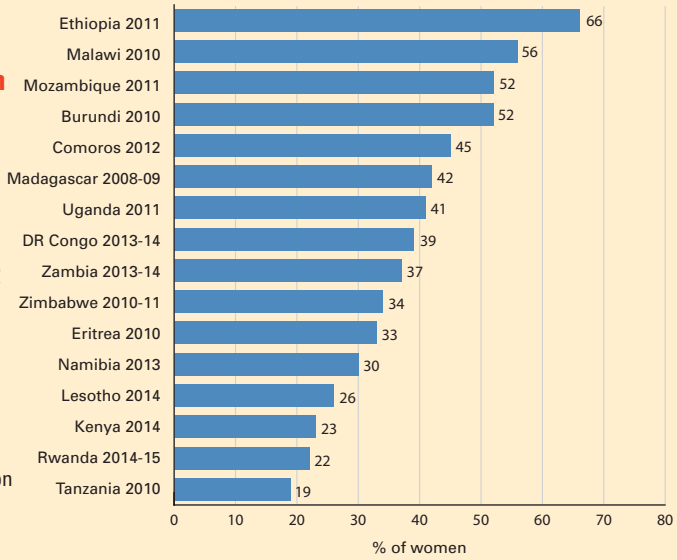
Geographic Information Systems (GIS) are becoming an increasingly recognized tool to provide more sophisticated analyses of the extent to which physical distance and geography are barriers to accessibility, highlighting sub-national inequalities at a geographically high resolution.

With funds from the Norwegian Development Agency (NORAD), researchers at the University of Southampton and ICS Integrare worked together with policymakers at the East African Community (EAC), an intergovernmental organization representing Burundi, Kenya, Rwanda, Tanzania, Uganda, and most recently, South Sudan. Together, they utilized novel GIS approaches with an increasing availability of geo-located health data, with aims to address localized SRMNAH disparities within a geographical framework. Specifically, with input from the EAC about which indicators were most relevant in resource allocation and decision making efforts, researchers sought to highlight inequalities in SRMNAH service utilization as an emergent property of geographic accessibility to health facilities. To do this, researchers travelled to EAC Headquarters in Arusha, Tanzania and discussed analytic needs and knowledge gaps policy makers needed to address for the EAC's newly launched Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) Scorecard Initiative, an innovative tool for visualizing intervention progress on key SRMNAH initiatives in the EAC region.

With input and feedback from EAC colleagues, researchers employed statistical models and health data from the Demographic and Health Surveys (DHS) to map the probabilities of obtaining critical SRMNAH services, including skilled birth attendance, antenatal care and postnatal care. These maps represent the probability of obtaining each service for a given birth within the EAC, and will be included in region-specific policy briefs. Finally, GIS workshops were hosted at EAC headquarters, with over 25 delegates represented from five EAC countries. These capacity-building efforts are ongoing, with newly awarded funds to refine workshop material based on user feedback from the initial workshop, and continue hosting workshops within the EAC. The strong collaborative relationships built during this effort have been the primary cause of its success and ongoing activities, and should be encouraged throughout the remainder of East and Southern Africa, as well as in other countries and regions.

FIGURE 12

Percentage of women of reproductive age who cite 'distance to health facility' as a barrier to accessing health care in 16 East and Southern Africa countries



Source: most recent population survey, e.g. demographic and health survey

FIGURE 13

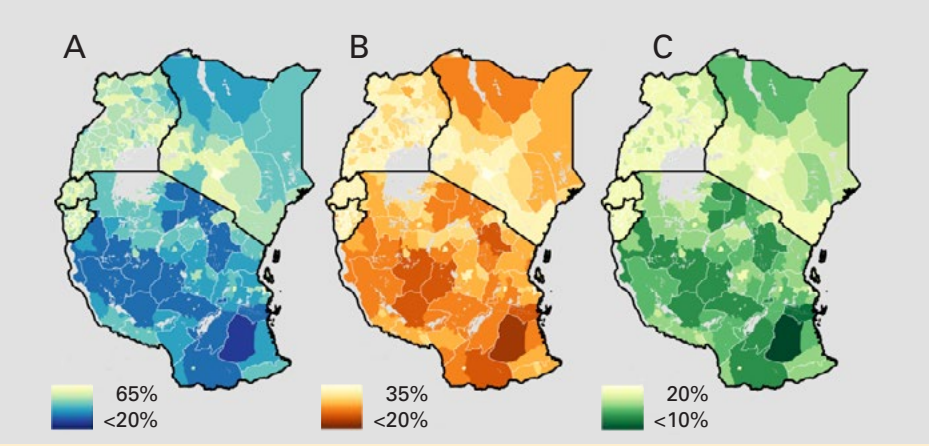
Births adjusted probability maps representing the probability of obtaining care for a given birth

A) Delivery with a skilled birth attendant (SBA) present,

B) Four or more antenatal care (ANC) visits at time of delivery, and

C) Postnatal care (PNC) received within 48 hours of delivery. [47]

Source: Corinne Ruktanonchai, Andy Tatem and Zoë Matthews (University of Southampton); Andrea Nove and Sofia Castro Lopes (ICS Integrare); Rogers Ayiko and Andrew Charles (EAC).



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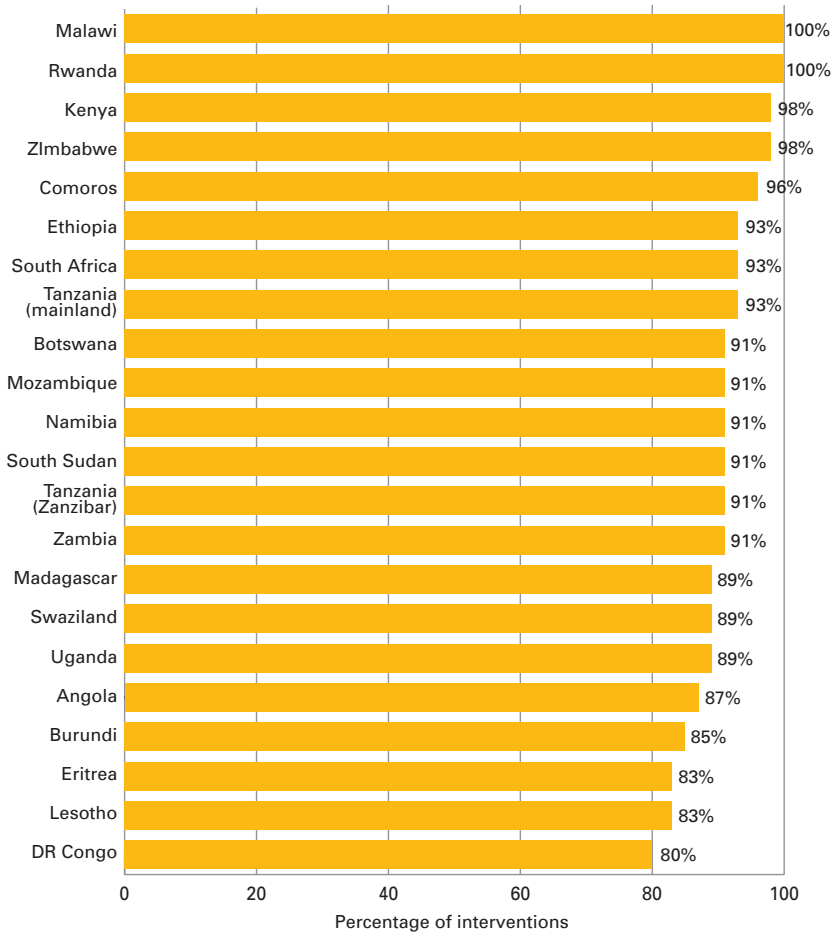
locations of SRMNAH workers and thus the identification of specific areas that are under-served and which may require additional intervention to improve the accessibility of SRMNAH workers. However, only 5 countries were able to provide a health facility list, and only 3 (Comoros, Rwanda and Swaziland) were able to provide both the health facility list and information about the number of SRMNAH workers deployed to each health facility, meaning that such an analysis was not possible. Furthermore, geo-location codes were not included in any of the lists provided. This again points to a lack of high-quality data collection and information systems in most countries in the region, which limits the availability of strategic intelligence and thus countries' ability to make evidence-based decisions about workforce planning.

Global guidance on accessibility recommends a minimum of five fully functioning emergency obstetric and newborn care (EmONC) facilities per 500,000 population, including at least one comprehensive EmONC facility [48]. Although this is an established benchmark, improved information on births and pregnancies has led to discussion about revising these standards, and extending them to include signal functions relating to non-emergency care [49]. Most of the participating countries reported that all or nearly all of their health facilities providing labour and birth services are designated as EmONC facilities. However, designation as an EmONC facility, meaning that it *should* be able to provide emergency life-saving interventions and resources with the necessary staff, equipment, drugs and supplies, can be dramatically misleading. In reality, a facility may not be in a state of readiness and fully functioning.

Although countries were not asked to assess EmONC readiness in the survey, South Sudan and Tanzania provided results from recent EmONC needs assessments [50] showing that only a small minority of facilities designated as EmONC providers were fully functioning as EmONC facilities. While designation can be used as a policy tool to prioritize resource

FIGURE 14 **Percentage of 46 essential interventions included in minimum guaranteed benefits package**



allocation and service improvement, these data underline the points that readiness needs to be actively managed (by ensuring that health facilities have the necessary human and other resources) and functionality needs to be regularly monitored to ensure that all women and newborns have access to EmONC when required.

Financial accessibility/affordability

In many countries, financial barriers are known to have a significant impact on accessibility so it is encouraging that all 21 countries reported the existence of a minimum guaranteed benefits package for SRMNAH, defined as "a set of health services that the government has committed itself to making available to all, free at the point of access". Such commitments are the first step towards achieving free access, but there is evidence from some countries to show that the policy is not always fully implemented [51], e.g. if health worker salaries are not reliably paid, health workers may feel they have no choice but to charge user fees.

Furthermore, accessibility is influenced by the content of the benefits package as well as its existence. Guidance has been issued on 46 interventions that are deemed essential to meet the basic need for SRMNAH care [52]. Figure 14 shows that, of the 21 participating countries, Malawi and Rwanda are the only two with a package that officially includes all 46 of these essential interventions.

Table 3 lists the interventions that are most commonly excluded from the packages of the countries providing data, showing that the main gaps relate to antenatal interventions. Addressing these gaps could save lives. Hypertensive disorders, obstructed labour and unsafe abortion have been identified as leading causes of maternal death [53], yet calcium supplementation and low-dose aspirin to prevent pre-eclampsia, interventions for cessation of smoking, reduction of malpresentation at term with external cephalic version and safe abortion are among the interventions commonly excluded from minimum benefits packages. Similarly, although preterm birth is a leading cause of newborn death [54], antenatal corticosteroids[4] and use of surfactant to prevent respiratory distress syndrome in preterm babies are among the interventions most commonly missing.

Equity of access

One indicator of equitable accessibility of SRMNAH workers is a comparison of skilled birth attendance rates between urban and rural women. The country briefs in Chapter 3 show that, in every country in the region, rural women are less likely than urban women to give birth with a skilled

4 A recent study [70] raised concerns about the effectiveness of this intervention, but recent WHO guidance on preterm birth [71] recommends it under specific circumstances and currently it remains on the list of essential interventions.

TABLE 3

Essential interventions most commonly excluded from countries' minimum benefits packages

Intervention	Countries without this intervention in minimum benefits package
PRE-PREGNANCY	
Family planning (surgical methods)	Angola, DR Congo, Eritrea
Folic acid fortification/ supplementation to prevent neural tube defects	Namibia, Swaziland
ANTENATAL	
Low dose aspirin to prevent pre-eclampsia	Angola, Botswana, Burundi, Comoros, DR Congo, Eritrea, Lesotho, Madagascar, Mozambique, Namibia, South Africa, South Sudan, Swaziland, Uganda, Tanzania (Zanzibar only)
Reduce malpresentation at term with External Cephalic Version	Botswana, Burundi, DR Congo, Eritrea, Kenya, Lesotho, Madagascar, Mozambique, South Africa, Swaziland, Uganda, Zambia, Zimbabwe
Calcium supplementation to prevent hypertension (high blood pressure)	Angola, Burundi, Comoros, DR Congo, Eritrea, Ethiopia, Madagascar, Mozambique, Namibia, Uganda, Zambia, Tanzania (Zanzibar only)
Safe abortion	Angola, Botswana, Burundi, DR Congo, Eritrea, Lesotho, Madagascar, South Sudan, Swaziland, Tanzania (mainland only)*
Interventions for cessation of smoking	Botswana, DR Congo, Ethiopia, Madagascar, South Sudan, Uganda, Zambia
Corticosteroids to prevent respiratory distress syndrome in preterm babies	Eritrea, Ethiopia, Lesotho, Tanzania (mainland + Zanzibar)
Prevention and management of malaria with insecticide treated nets and antimalarial medicines	Lesotho
Antihypertensive drugs (to treat high blood pressure)	DR Congo
CHILDBIRTH	
Social support during childbirth	Angola, Lesotho, South Africa
Prophylactic uterotonics to prevent postpartum haemorrhage (excessive bleeding after birth)	Zanzibar
Caesarean section for maternal/foetal indication (to save the life of the mother/baby)	DR Congo
Prophylactic antibiotics for caesarean section	Burundi
POSTNATAL (newborn)	
Use of surfactant (respiratory medication) to prevent respiratory distress syndrome in preterm babies	Burundi, Eritrea, Lesotho, Mozambique, South Sudan, Tanzania (mainland only), Uganda, Zambia
Continuous positive airway pressure (CPAP) to manage babies with respiratory distress syndrome	Burundi, DR Congo, Lesotho
Kangaroo mother care for preterm (premature) and for less than 2000g babies	Eritrea
Extra support for feeding small and preterm babies	Angola
Presumptive antibiotic therapy for newborns at risk of bacterial infection	Swaziland

* Most of these countries have restrictive abortion laws [55], but all allow it under some circumstances (e.g. if the mother's life would be endangered by continuing with the pregnancy), which implies that it should be included in the minimum benefits package.

BOX 4

Young midwives' innovation makes a difference in young people's lives: the value of primary health care clinical placements in Lesotho

Maseru, Lesotho — Not long after arriving at the Matelile Health Centre (a Satellite Learning Centre for the Scott College of Nursing) for their clinical placement, five nursing-midwifery students learned of a need in the community that they felt they could uniquely meet. Youth at a local high school, including pregnant girls, were reluctant to seek reproductive health services for fear of recrimination from family, teachers and health care providers.

© Jhpiego/Machaha Taleng

The student nurse-midwives offered to set up an adolescent health corner and educate teenagers in the community so youth could access services freely and confidentially.

One of the students explained the reasoning behind their request: "If you are young and you have been seen by someone who is older than you, you become shy to say everything that brought you to the health centre. But if you are consulting with someone your age, I think you are free to say whatever you want to say in that moment. Your problems, even those you kept secret, you say them."

The high school principal, teachers and administration of the health centre enthusiastically supported the offer; the need to reach adolescents was already on their agenda. The student nurse-midwives carried out their plan to educate youth on reproductive health needs and services to address sexually transmitted infections (STIs), contraceptives, antenatal care and other issues. The number of adolescents who attended the health centre increased, and the nursing-midwifery students say that this is because they could see a health worker who is close to their own age.

Within the one month period of their clinical placement, the students screened more than 50 high-school students, most of whom were coming with STIs and pregnancy-related concerns. If necessary, they were referred to the nearby health centre for treatment. That's a remarkable number since none of the students was receiving health services before.

The high school students weren't the only beneficiaries. "When you get to teach people about services that they didn't know (about), when you have a chance to guide a person into something that you think is beneficial, that is very gratifying," said one of the students.

The nursing-midwifery students agreed that the clinical placements in a primary health care (PHC) centre enhanced their skills and confidence. "We didn't know (how to do) things that we were taught in class and though we practised them in the skills labs, when you got into the placement you had to practise them more and more and get competent," said one of the students. "Now I think we can do them without hesitation."

Since 2010, Jhpiego's Lesotho office has been working with the nursing education institutions, to support PHC clinical placements for nursing and midwifery students as well as to train and mentor clinical nursing and midwifery staff on skills to support students through support from the United States Agency for International Development. More than 1,000 nursing and midwifery students have been placed for 2-4 weeks in more than 60 rural PHC centres and more than 200 preceptors received training to assist students.

The students would like to encourage any aspiring nurse-midwife who participates in a clinical placement at a PHC to do their own community outreach for whatever health concern they feel is important. "They should not sit and wait for patients to come; they should go out to the schools and the village and give them a reason to go to the clinic," they said.

Source: Semakaleng Phafoli (Jhpiego), Jasmine Uysal (University of California), Stephanie Reinhardt (Jhpiego), Makhabiso Ramphoma Relebohile Macheli (Scott College of Nursing) and Peter Johnson (Jhpiego)

attendant. In many countries, it is not simply an 'urban/rural' divide; there are under-served areas even within many towns and cities.

To tackle inequity of access, countries need strategic intelligence to identify existing inequalities, and effective planning to address them. Of the 21 countries covered by this report, 19 reported that at least one of their national policy documents specifically addresses how the country will increase access to SRMNAH care for vulnerable and disadvantaged groups, such as those living in remote areas, adolescents (see Box 4), ethnic minority groups and those living in poverty (the exceptions are Comoros and Eritrea, and there is no such policy for Zanzibar either). Responses to the questions on workforce planning and deployment (see above) also indicate that some countries plan their SRMNAH workforce deployment according to population distribution, but few do so according to levels of need for SRMNAH services, which is not necessarily directly correlated with population size. The country briefs in Chapter 3 of this report estimate the potential of the SRMNAH workforce to meet the need for services at a national level only, and it is recommended that countries perform similar analyses for specific regions and subpopulations, so that inequities can be systematically highlighted and addressed.

An issue affecting some countries in the region (e.g. Ethiopia, Kenya, South Sudan, Uganda) is how to provide SRMNAH services to refugees and internally displaced persons, both in terms of ensuring that these women and newborns have equal opportunity to access care, and ensuring that the provision of this care does not overstretch the receiving country or region's health services such that existing residents can still access the same level of care. This is challenging to achieve and requires a 'whole health system' approach to planning [56]. Recent research from the UNFPA Arab States region found that midwives are more likely than other SRMNAH cadres to remain in post during a humanitarian crisis, which indicates that, if properly supported and equipped, they make a significant contribution to health system resilience during difficult times [57].

KEY MESSAGES

Accessibility

- Most countries in the region deploy their workforce using facility-based planning or work-force-to-population ratios; these may be inconsistent with population needs.
- Human resource information systems linked to geographical information systems would enable more effective workforce planning and deployment systems.
- The provision of EmONC services could benefit from new approaches to designation and readiness of health facilities that are capable of providing emergency care.
- All 21 countries have a national "minimum guaranteed benefits package", but only 2 have a package that includes all 46 of the essential SRMNAH interventions.
- Although most countries in the region recognize the importance of equitable access to SRMNAH care, many face significant challenges in providing equitable access. Improvements to the availability of strategic intelligence are required to tackle these challenges.
- Some countries in the region face additional challenges to accessibility due to large numbers of refugees and internally displaced persons.

Acceptability

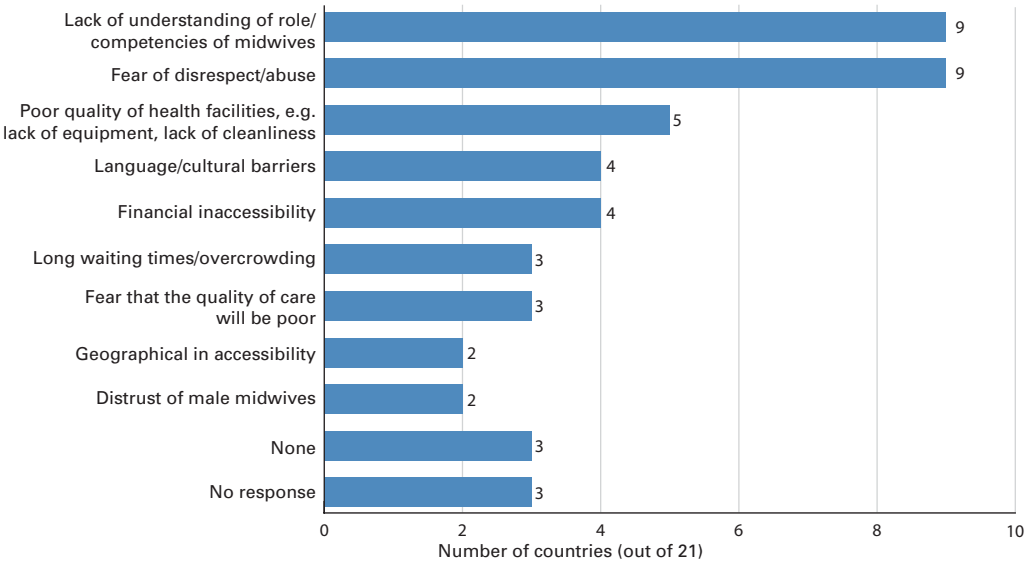
Even if care is available and accessible, effective coverage of SRMNAH care is reduced if either the care or the workforce is unacceptable to women, their families or communities. Even in countries with high levels of coverage of antenatal care and skilled birth attendance, lack of respect for service users and/or lack of sensitivity to social or cultural needs can be a disincentive to access [58]. Acceptable care requires that all health facilities, goods and services should be ethical, respectful, culturally appropriate and safe [24]. Respectful care should be sensitive to gender and life-cycle requirements, and designed to ensure confidentiality and improve the health status of service users.

Of the 21 participating countries, 16 said that at least one national policy document specifically addresses how the country will deliver SRMNAH care that is sensitive to social, cultural and traditional needs, e.g. in relation to age, gender, ethnicity, religion and language. The exceptions are Comoros, Eritrea, Madagascar, Malawi and South Africa (also Zanzibar). Examples provided by countries include: Botswana's *Patient Charter and Policy* which states that services should be sensitive to culture and tradition, Ethiopia's health service delivery guidelines which recommend the establishment of a "youth-friendly corner" in all health centres, and Zambia's *Scale up Family Planning 2020* plan which emphasizes that family planning services should be socially and culturally sensitive.

Improving acceptability involves listening to women, adolescents and their communities — preferably through participatory approaches — and building their preferences into policy and capacity-building initiatives, feedback loops and accountability measures. Of the 21 participating countries, just 7 reported that public perceptions of midwives/nurse-midwives had been studied in their country: Eritrea, Kenya, Malawi, South Africa, Swaziland, Tanzania and Zimbabwe. Some (e.g. Eritrea) found evidence that women were generally satisfied with their midwives, and some (e.g. Zimbabwe) that there was good understanding of the role of midwives, but others (e.g. Malawi) reported that instances of disrespect and abuse towards service users had negatively impacted on public perceptions of midwives.

In the survey, countries were asked to report any reasons why a woman might be uncomfortable seeking care from a midwife or nurse-midwife and the results are shown in Figure 15. Of the

FIGURE 15 **Reasons why a woman might be uncomfortable seeking care from a midwife or nurse-midwife**



21 participating countries, 15 gave at least one reason, and the two most common reasons were: a lack of public understanding of the role and/or competencies of a midwife, and fear of disrespect or abuse may dissuade women from seeking care from a midwife or nurse-midwife. It is clear therefore that in many countries in the region there is a need for: public education about midwives and nurse-midwives, efforts to educate midwives about the importance of respectful care, and advocacy for enabling, supportive environments that will motivate them to deliver respectful care.

© UNFPA South Sudan/Tim McKulka

KEY MESSAGES

Acceptability

- Most countries in the region recognize the importance of acceptability of SRMNAH care: 16 of the 21 participating countries have developed policies to promote care that is sensitive to social, cultural and traditional needs. However, implementation of these policies can be patchy and needs to be better monitored.
- Research has been conducted in a few countries to examine public perceptions of midwives and nurse-midwives, and although some found that the public has a good understanding of and is satisfied with the care they provide, others found examples of disrespect and abuse which makes women and adolescents reluctant to consult a midwife or nurse-midwife.

Quality

Even if the SRMNAH workforce is available, accessible and acceptable to the population, poor quality care can substantially limit its effectiveness. Quality of care is a multi-faceted concept [59] which has tended to be the last domain of effective coverage to be considered by countries working towards improved SRMNAH outcomes [60], but there is increasing recognition of its vital role. February 2017 saw the launch of the Network for Improving Quality of Care for Maternal, Newborn and Child Health [61]. At the launch, Ethiopia, Malawi, Tanzania and Uganda were among the first nine countries to commit to halving the number of preventable maternal and newborn deaths in their health facilities by 2022 through improvements to quality of care. The Network aims to strengthen the capacity and motivation of health professionals to plan and manage quality improvement based on new WHO guidance for quality of care [62]. The quality of care framework has "competent, motivated human resources" as one of its building blocks, and the Network is using a 'Quality, Equity and Dignity' (QED) framework to coordinate its efforts [63]. ICM has developed a Midwifery Services Framework tool to assist countries wishing to address quality of SRMNAH care [64], and Lesotho was one of the early adopters of the framework (see Box 5).

Competent, motivated human resources are reliant on many factors, including high-quality education, staffing levels, resources and work environment. ICM has identified education, regulation and association as the three pillars of a strong midwifery profession [22]; all three must be strong if countries are to provide high-quality midwifery

BOX 5

Improving the quality of midwifery care using the ICM Midwifery Services Framework

While many countries have expressed the will to improve maternal and newborn health and survival, and some have developed strategies and roadmaps on how to do this, there is a need for a standardized, step-by-step process for shared decision making about how to develop functional midwifery services to achieve optimal SRMNAH outcomes.

ICM developed the Midwifery Services Framework (MSF) to fill this gap by focusing on a quality midwifery workforce. The tool provides strategies to develop midwifery services where there are none, or to strengthen them where they exist. It guides decision makers through a process of identifying gaps or weaknesses in existing services, and to agree on the steps and activities they will take to develop feasible solutions with agreed time lines.

Characteristics of the tool

- Causes of poor SRMNAH are complex and multifaceted. The MSF tool is comprehensive and addresses all the aspects of a health care system, touching on a variety of issues that when not addressed contribute to poor outcomes.
- The country assessment process is collaborative and solution-based — involving all key stakeholders, different health care professionals, some of whom have never come together to discuss care before. This multi-stakeholder collaboration increases the sense of ownership of both the problems and their solutions among stakeholders.
- The tool provides a platform for analyzing the health care needs of the country against the services provided, and thus facilitates the critical analysis of both the breadth and the depth of care provision, providing unique information to policy makers and decision makers.
- The country assessment can be repeated and the results used for monitoring of progress.
- The MSF starts from the needs of the woman, newborn, adolescent and their families and not from the care provider; therefore, reduces the possibility of rivalries among different cadres of care providers. Instead, the process results in a clear to-do list that can be tackled collectively as per national, district and community capacity and expertise.
- It could be said that the MSF is developed on the doctrine of "Our problem — our solution". Every country has a unique set of challenges, however the core of problems and potential solutions remain analogous, as there is human element attached. MSF is adaptable and replicable to any country.

The MSF tool was first introduced and implemented in Lesotho, starting with a workshop attended by officials and experts from ministries of health, education and finance, and civil society organizations. The Ministry of Health (MoH) Department of Nursing and Midwifery developed a detailed orientation programme to ensure that all relevant policy- and decision-makers understood the tool and its implications before creating technical working groups (TWGs) to deal with the identified gaps. There was recognition of the need to strengthen the decentralization reforms first so that the MSF is integrated at all levels of the health system for relevance and sustainability.

To determine how the tool worked in Lesotho, the government and the Midwives Association (MA) were asked to respond to a short list of questions. This assessment exercise found that:

- Lesotho decided to implement the MSF tool because there was a recognized need to reduce maternal mortality and improve SRMNAH outcomes, and a desire to bring all stakeholders together to work out how best to achieve this.
- Those involved in the process felt that the MSF is innovative because it encourages all relevant stakeholders to take responsibility for finding and implementing solutions, rather than shifting all the responsibility onto the MoH
- Participants expect implementation of the MSF to contribute significantly to the country's efforts to meet SDG targets for maternal and newborn mortality, and would like to see the process adapted and replicated for other aspects of health such as HIV/AIDS and non-communicable diseases
- The tool recognizes and emphasizes the importance of the midwifery workforce, and facilitates midwives working to their full scope of practice via a focus on continuing education and improving the confidence and accountability of midwives.

Source: International Confederation of Midwives

care. An enabling policy environment is also important, and is also discussed in this section.

Education

Global standards for midwifery education suggest a minimum of 3 years for direct entry midwifery programmes and 1.5 years for post-nursing programmes [36]. All participating East and Southern Africa countries meet this global standard for midwives and nurse-midwives, and all have a standard curriculum for their midwives and/or nurse-midwives (although it is not followed by all schools in Burundi, Malawi and Rwanda). ICM recommends regular

TABLE 4

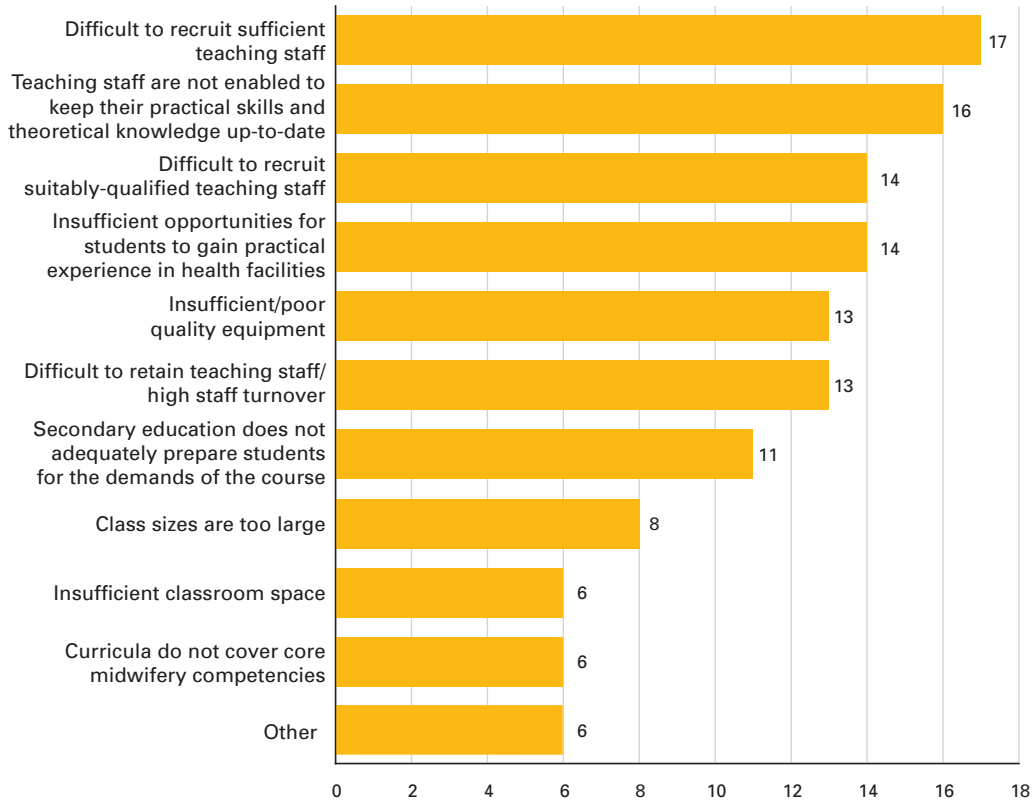
Standard education curricula for midwife and nurse cadres (21 countries)

	Number of countries with this cadre in SRMNAH workforce	Standard curriculum followed by all schools	Standard curriculum followed by some schools	No standard curriculum	No response	Standard curriculum updated within last 5 years (since 2011)
Midwives	16	11	3	0	2	13
Nurse-midwives	16	12	1	0	3	8
Nurses	14	10	0	1	3	4

curriculum reviews, and Table 4 shows that most countries with a midwife cadre had updated the curriculum since 2011 (the exception being Kenya), but only half of those with a nurse-midwife cadre and a quarter of those with a nursing cadre had done so.

Additionally, there remain significant challenges to the provision of high-quality education in the region, as illustrated by Figure 16. The availability of competent teaching staff is a problem for most countries, and most also report that it is difficult for teaching staff to keep their skills and knowledge up-to-date. Another common problem is a lack of opportunity for student midwives and nurse-midwives to gain practical experience. These issues limit the quality of the education provided and leads to

FIGURE 16 **Perceived challenges to providing high-quality education to midwives and nurse-midwives**



schools relying too heavily on lectures and didactic teaching styles rather than practical experience, so that new graduates may not always have the full range of skills and competencies. These data indicate that, in terms of improving the education of midwives and nurse-midwives, the main focus should not only be on the curriculum, but also on how best to deliver it.

The number of births a midwife must conduct under supervision prior to graduation ranges from 20 in Ethiopia to 70 in Uganda. The range for nurse-midwives is from 0 in Botswana, Ethiopia and South Sudan to 70 in Uganda. (Those countries saying '0' tended to report that there was no specified minimum, which does not necessarily mean that their nurse-midwives were not required to attend any supervised births.) As a guideline, ICM suggests at least 50 supervised births [65] although some students will require more and some fewer than this. Figure 17 shows that just four of the 21 participating countries specify at least 50 supervised births for midwives, and just two do so for nurse-midwives.

Legislation, regulation and licensing mechanisms

Supporting and protecting midwives and consumers by law (providing a legal right to practise) is an important acknowledgement of the worth of the profession. Eleven of the 21 countries featured in this report have legislation that recognizes midwifery as an autonomous profession, although in two of them (Mozambique and mainland Tanzania) the legislation is not applied. The remaining 10 countries (Angola, Burundi, Comoros, DRC, Eritrea, Ethiopia, Kenya, South Sudan, Swaziland and Zambia, plus Zanzibar) said that such legislation does not exist, although in 4 of these countries (Burundi, DRC, South Sudan and Swaziland) it is being created.

All 21 countries have at least one organization with responsibility for regulating the practice of midwives and nurse-midwives. This is usually a government-approved regulatory Board or Council, but in three countries (Burundi,

FIGURE 17 **Minimum number of births to be conducted under clinical supervision before graduation**

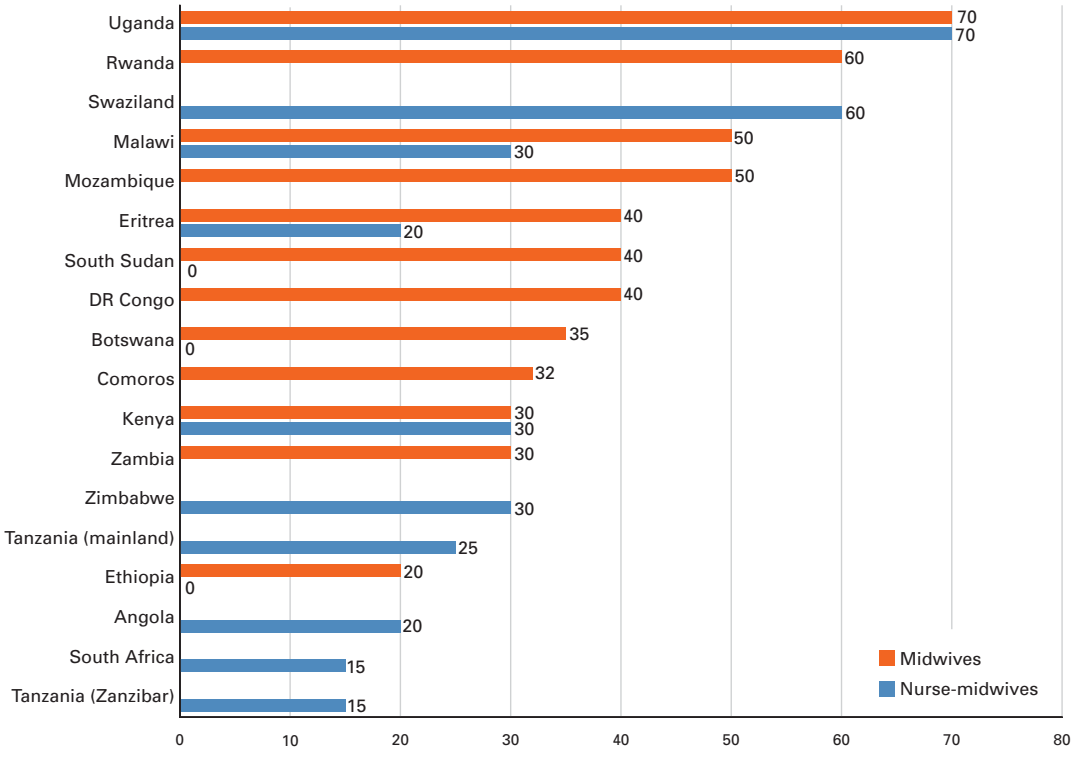


TABLE 5

Functions and responsibilities of regulatory bodies

Function/responsibility	Number of countries with a body performing this function	Countries without a body performing this function
Setting standards for midwifery practice	19	Eritrea, South Sudan
Continuing professional development	19	DR Congo, South Sudan
Verification of midwives (nurse-midwives) joining the workforce from other countries	19	DR Congo, Eritrea
Registration of practising midwives (nurse-midwives)	18	DR Congo, Eritrea, South Sudan
Applying sanctions to midwives (nurse-midwives) found to have been guilty of misconduct	18	Eritrea, Madagascar, South Sudan
Setting standards for professional ethics	18	DR Congo, Eritrea, South Sudan
Investigating alleged misconduct or incompetence	18	DR Congo, Eritrea, South Sudan
Establishing the scope of midwifery practice	17	Comoros, DR Congo, Eritrea, South Sudan
Setting standards for education	16	Comoros, DR Congo, Ethiopia, South Sudan, Uganda
Ensuring the quality of education	16	Comoros, DR Congo, Ethiopia, South Sudan, Swaziland
Assessing competency prior to registration	16	Comoros, DR Congo, Eritrea, Ethiopia, South Sudan
Protection of the professional title 'midwife'	15	Comoros, DR Congo, Eritrea, Namibia, South Sudan, Swaziland
Advising the government on maternal and newborn health (MNH) care policy	14	Botswana, Comoros, Ethiopia, Madagascar, Malawi, South Sudan, Swaziland
Accreditation of education providers	14	Botswana, Comoros, DR Congo, Ethiopia, South Sudan, Swaziland, Uganda

Eritrea and South Sudan) this function is performed by the ministry of health. The existence of a regulatory body is necessary, but not sufficient, to ensure effective regulation. Survey respondents were asked to state the responsibilities of their regulatory organization, and the results can be seen in Table 5. Overall, regulatory bodies in the region perform a wide range of functions, although in a few countries (notably Comoros, DRC, Eritrea and South Sudan) they perform only a small number of functions.

The scope of practice for different cadres of the SRMNAH workforce should be laid down by regulatory mechanisms. In the survey, countries were asked which of the seven BEmONC signal functions[5] midwives were authorized to perform. Most countries authorize their midwives/nurse-midwives to perform all seven signal functions. The exceptions are: (1) neither Angola nor Swaziland authorizes midwives/nurse-midwives to perform manual vacuum aspiration for retained products of conception, and (2) Angola, Botswana, Rwanda, Swaziland, Tanzania, Uganda and Zimbabwe do not authorize them to perform assisted instrumental delivery by vacuum extractor.

5 The 7 BEmONC signal functions are: parenteral administration of antibiotics, administration of anticonvulsants, administration of oxytocics, manual removal of placenta, manual vacuum aspiration for retained products of conception, assisted instrumental delivery by vacuum extractor, and newborn resuscitation with bag and mask.

In nearly all of the responding countries, midwives are authorized to provide a wide range of family planning products including: injectables, oral contraceptives, intra-uterine devices (IUDs) and the "morning-after pill". The only exceptions are that midwives/nurse-midwives in Rwanda and South Africa are not authorized to provide IUDs. Most countries also indicated that midwives are authorized to provide contraceptive implants, although this was not one of the methods listed on the questionnaire.

Neither service users nor health workers are protected or supported without appropriate regulation, registration and licensing. Licensing systems for midwives and nurse-midwives exist in 16 of the 21 participating countries, and such a system is being developed in DRC, leaving four countries with no system and no plans to create one: Comoros, Madagascar, Mozambique and South Sudan. Of the 16 countries with a licensing system, 13 report that a midwife is required to have a licence before (s)he can begin to practise, and the remaining three (Burundi, Eritrea, South Africa) did not answer the question. The same 13 countries reported that midwives/nurse-midwives must re-license on a regular basis: annually in Botswana, Lesotho, Malawi, Namibia, Swaziland, Zambia and Zimbabwe, every three years in Kenya, Rwanda, Tanzania (mainland and Zanzibar) and Uganda, and every five years in Angola and Ethiopia. Most countries with a licensing system say that CPD is a condition of re-licensing: the only clear exception is Tanzania (mainland), but Angola and Zanzibar did not answer the question. CPD can be challenging in low-resource settings, especially for health workers deployed to remote areas; Box 6 describes an innovative solution to this challenge that has been piloted in Ethiopia and Tanzania.

A register of licensed midwives exists in 16 of the 21 participating countries, of which 12 are electronic and 4 are solely paper-based. A further 4 countries (DRC, Eritrea, Mozambique and South Sudan) have plans to create a register, leaving only Comoros with no register and no plans to create one. Most countries with a register say that it is updated at least once a month, the exceptions being: Burundi, Madagascar, Malawi, Swaziland and Tanzania.

Professional associations

According to the ICM, "midwives associations need to be strong and empowered organizations. They are powerful stakeholders for their country's ministry of health and can work collaboratively and advise the ministry of current trends in maternal, newborn and child health" [66]. It is therefore encouraging that all 21 participating countries have at least one professional association, college or union that is open to midwives/nurse-midwives. Because several countries (DRC, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania (mainland) and Uganda) have more than one association, in total there are 33 associations across the 21 countries. In all countries except Angola, Botswana, Eritrea (and Zanzibar), there is at least one association with the word "midwife" in its title, which is important for the recognition of midwifery as an independent profession.

Figure 18 shows that most of the region's professional associations play a role in CPD, advising members of quality standards for SRMNAH care, and advising the government on SRMNAH policy documents. Only half, however, are involved in negotiating work or salary issues with their government.

Policy and planning

Cohesive policy and planning instruments are essential to deliver effective coverage of high-quality SRMNAH care. Across the 21 countries, respondents reported 106 different policies, plans and statutes for organizing, delivering and monitoring SRMNAH services (5 per country on average). All countries reported at least one policy/plan/statute currently in force: 19 reported a national health plan (the exceptions were Eritrea and Zimbabwe), and 19 a national SRMNAH plan/strategy/roadmap or similar (the

BOX 6

Mobile Learning System — breaking new ground in training health workers in remote areas

The portable Mobile Learning System (MLS) is an innovative approach to improve access to quality training for midwives and health workers in remote low-resource settings with poor infrastructure, erratic electricity, poor internet connectivity and lack of trained tutors, thereby improving the health outcomes in communities.

The project was launched as a one-year pilot in 2016 at 22 health facilities and midwifery training and education institutions in Ethiopia (7) and Tanzania (15) to improve the knowledge and skills of midwives and auxiliary midwives in key obstetric emergencies such as pre-eclampsia/eclampsia, post-partum haemorrhage, obstructed labour, post-abortion care and sepsis, and also in essential newborn care. In addition, there are modules intended for community health workers on prevention of female genital mutilation, danger signs in pregnancy and family planning. Midwifery associations and ministries of health were engaged in the initiative from the start of the project.

The MLS uses a technology kit that contains: a battery-operated palm-sized projector, portable speakers and a solar charger, and comes with a built-in Android tablet and flash drive, SIM card, micro SD card and speaker ports. The projectors come preloaded with 10 interactive multi-media training modules on key life-saving skills with built-in videos. The projector is lightweight and allows for any blank wall to become a screen, thus making the MLS an innovative way to bring current multi-media training solutions to health workers regardless of location. The solar charger provides an additional 8 hours of charge for the projector, so the sessions are not impacted by electricity outages. Since there is a built-in tablet and SIM/internet capability, additional presentations can be made, which means the MLS platform can be deployed for any kind of training. It is highly cost-effective with a one-off cost of USD 700, and health workers need not be removed from their posts to attend costly trainings.

© UNFPA Tanzania

The initial objective was to target 8-10 health facilities/training institutions in two countries and to train about 80 health workers in total, yet between May and November 2016, Ethiopia and Tanzania conducted a total of 116 pre-service, in-service and other trainings at the 22 sites and helped improve the skills, knowledge and awareness of over 3,000 midwives, health care workers and members of the community. The countries also used the MLS to deliver trainings on additional topics such as antenatal care, acute watery diarrhoea, and food preparation.

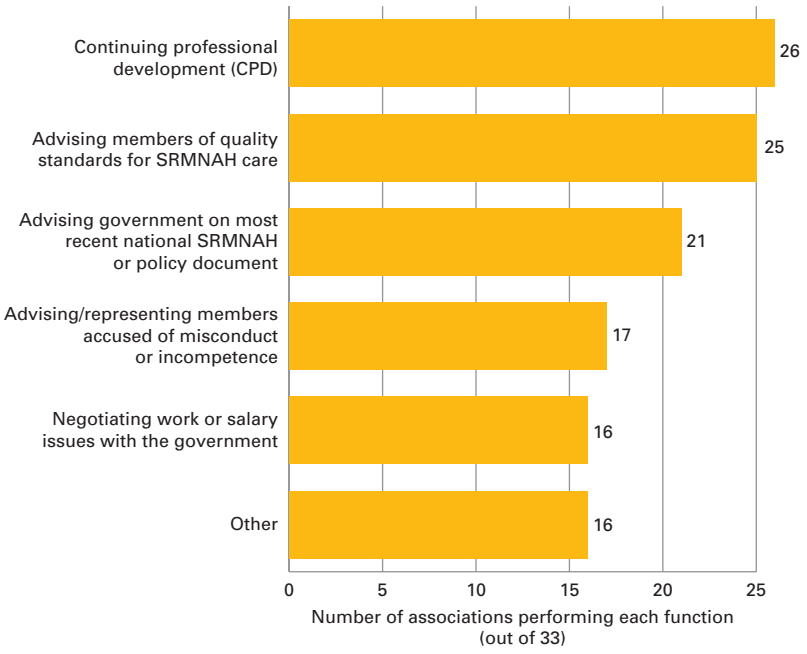
Very few implementation challenges were noted, but at remote sites without an in-house ICT person, there was occasional difficulty when staff were not familiar with Android technology. No kit breakages have so far been reported. Impressed by the quality of training content, the midwifery associations have included these courses as a requirement for their in-service curriculum in Ethiopia and these will be used for continuous professional development.

The evaluation from the training sites has reaffirmed the cost-effectiveness and usefulness of both the training materials and the technology kit. The health workers have reported improvements in their knowledge in dealing with clients and providing compassionate and respectful care. Ministries of health in both countries now want to scale up this initiative, which means that additional resources and partnerships are required for a sustained scale-up strategy.

Note: This project was made possible through a generous grant by the Government of Denmark to UNFPA to find innovative ideas and solutions to address sexual and reproductive health issues.

Source: Geeta Lal (UNFPA)

FIGURE 18 **Functions of professional associations open to midwives**



exceptions were Eritrea and Malawi, and Zanzibar does not have one either). National HRH plans were reported in 20 countries (the exception being Burundi), and of these, 14 reported that the targets in the HRH plan are based on or linked to the SRMNAH service coverage targets in the national SRMNAH or health plans.

The policies, plans and statutes reported by respondents tend to be recent: 28% were published in or after 2015, and 74% were still current at the time of data collection, covering a period up to or beyond 2016. This does, however, mean that one in four of them either were no longer current, or the country did not provide information about dates.

Costed plans are important to help guarantee the allocation of resources to deal with the priority SRMNAH issues. Of the 106 policy documents reported, 68 contain plans that are fully costed, with national health plans the most frequently costed.

KEY MESSAGES

Quality

- Education curricula for midwives and nurse-midwives in the region generally align with global and national standards, but there remain pervasive gaps in the delivery of the curricula, such as insufficient competent teaching staff, lack of opportunities for students to gain practical experience in facilities providing high-quality care, and insufficient or poor quality equipment in schools.
- The number of births a midwife or nurse-midwife must conduct under supervision prior to graduation varies across countries, and in several countries fails to meet international guidelines.
- Only 9 of the 21 countries apply legislation that recognizes midwifery as an autonomous profession.
- All countries have a regulatory body for midwifery and these organizations have a wide range of functions, but some lack effective regulatory processes.
- In most countries in the region, midwives and nurse-midwives are authorized to provide all BEmONC signal functions and a wide range of family planning products. In a few countries, however, their scope of practice is more restricted.
- Most countries in the region have a licensing system for midwives and nurse-midwives, but licensing is not always a requirement before starting to practise. Most countries with a functional licensing system make CPD a condition of re-licensing.
- All countries have at least one professional association that is open to midwives and nurse-midwives, and in most countries there is an association specifically for them.
- The policy environment in the region is strong, but there are challenges to the implementation of national policies affecting the SRMNAH workforce.

Conclusion

A strong SRMNAH workforce is essential if countries are to achieve the SRMNAH targets set under the SDGs and the *Global Strategy for Women's, Children's and Adolescents' Health*. To provide universal, effective coverage of SRMNAH services to all women, adolescents and newborns, action is needed to address the availability, accessibility, acceptability and quality (AAAQ) of these services and the health workers providing them. The analysis in this report shows that countries in the region have made significant progress on AAAQ in recent years and there is increasing recognition of the key role that midwives and nurse-midwives have to play in improving SRMNAH outcomes. However, there are still gaps in effective coverage which limit the amount of progress that can be made.

Most countries in the region are taking action to make the necessary workforce **available**, but many will need to take additional steps if 2030 targets are to be achieved, especially in the context of population growth in most countries in the region. When assessing SRMNAH workforce availability, a simple headcount can be misleading because some SRMNAH cadres spend a large proportion of their time on non-midwifery tasks. Countries must therefore find a robust way to estimate the proportion of health worker time spent on different tasks. This information, along with other workforce data, is required to provide strategic intelligence to inform policy and planning processes. Yet the necessary data are often missing or incomplete, which limits countries' ability to plan and deploy their workforce such that it meets the needs of the population it serves today and will serve in the future.

There are strong indications that the **accessibility** of SRMNAH workers is uneven, which affects equity and the right to health for all women, newborns and adolescents regardless of their location or ability to pay for services. Again, there is widespread recognition of this issue and action is being taken in many countries to address it, but again data availability is a challenge. Accessibility can be assessed using geographical information systems and equity-based planning tools, as well as ensuring that national guaranteed benefits packages include all essential SRMNAH interventions.

Acceptability should be recognized as an important element of care: steps should be taken to decrease the incidence of disrespectful care or mistreatment, and countries should ensure that women and adolescents can contribute to service planning processes by seeking their views and inviting their participation. It seems that only a few countries in the region are taking action to promote the concept of respectful care.

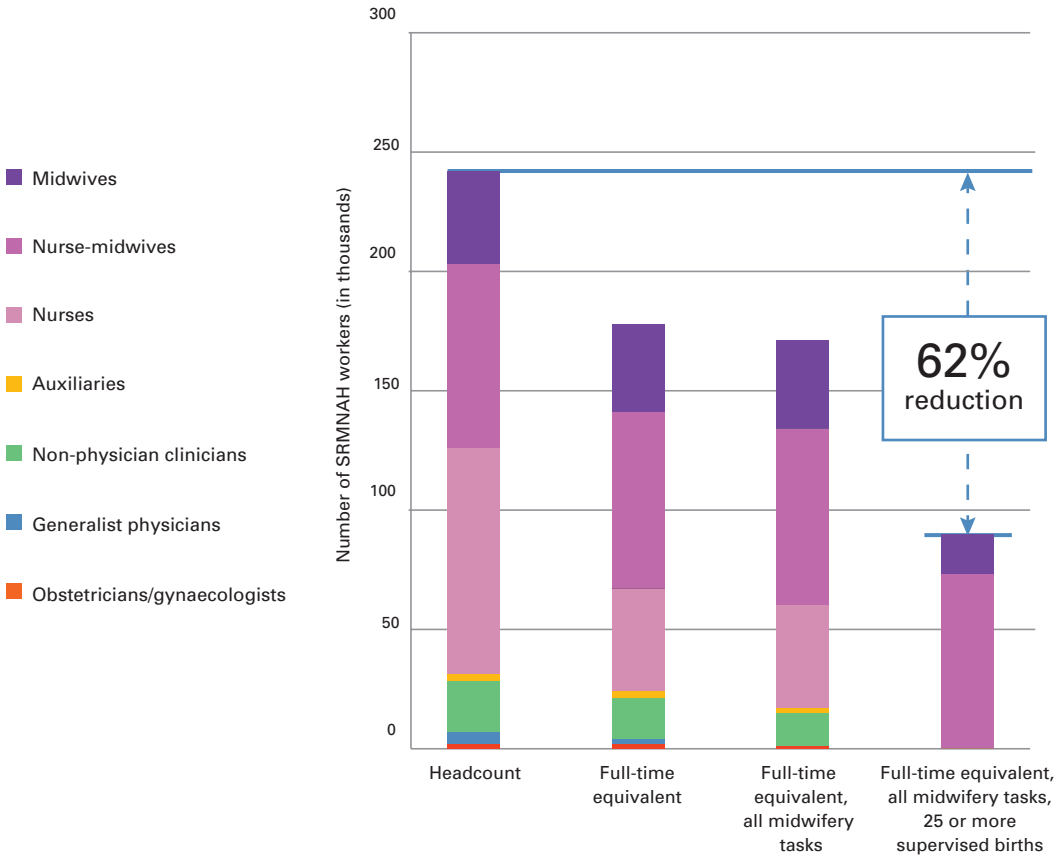
Improvements to SRMNAH will be limited unless **quality** of midwifery care is addressed through removing barriers to the full implementation of midwifery curricula and through strengthening the existing regulatory bodies and professional associations.

Countries wishing to gain a more detailed, country-specific understanding of the AAAQ of their workforce have the option to conduct a comprehensive SRMNAH workforce assessment. A Handbook has been developed for this purpose by a number of organizations [67], which has been applied in several countries including Mozambique. This assessment allows countries to go beyond the information presented in this report to calculate, among other things, sub-national estimates of need, densities of health workers and gaps in supply, detailed information on the national policy and financing context, a country-specific analysis of which health workers provide which essential SRMNAH interventions, and country-specific costed policy options and estimates of impact.

Figure 19 shows how the apparent level of workforce availability in this region can be deceptive if only the headcount is taken into account. In this figure, the ability to perform all midwifery tasks and the requirement to conduct at least 25 supervised births before graduation have been taken as proxy indicators of quality. For the cadres where data for all these dimensions were available (n=40 out of 112), the figure shows the increasingly accurate picture of effective coverage that is gained by moving from a simple headcount (first column), to the full-time equivalent based on the percentage time spent on SRMNAH (second column), to counting those who can perform all the ISCO midwifery tasks (third column), to counting those whose educational curriculum requires at least 25 supervised births before graduation (fourth column). There is a 62% overall reduction from the first column to the fourth, which is evidence that the constraints to coverage within the dimensions of availability and quality alone are considerable (quite apart from other issues in the dimensions of accessibility and acceptability).

This analysis starts to unpack the gap between workforce numbers and effective coverage. Reducing the size of this gap requires the collection and use of data on: the proportion of time spent on SRMNAH, the number of new graduates or in-migrants likely to join the workforce in the future, where health workers are located, how women and adolescents (and their communities) feel about the available SRMNAH services, and how the HRH plan furthers SRMNAH strategies. To achieve this, strong leadership is needed to prioritize SRMNAH and to secure resources to implement a needs-based approach to workforce and service planning.

FIGURE 19 **SRMNAH workforce in East and Southern Africa: from availability to quality**



CHAPTER 3

COUNTRY BRIEFS

HOW TO USE THE EAST AND SOUTHERN AFRICA COUNTRY BRIEFS

The country briefs have been designed to prompt and inform policy discussions on how the composition, skill-mix, deployment and enabling environment of the SRMNAH workforce impacts on the delivery of SRMNAH services for all women, adolescents and newborns who need them. This guide describes the graphics and data presented on the two-page country briefs. For more information on using the country briefs to promote advocacy for improved SRMNAH services in your country, see the SoWMy toolkit, *Making the Case for Midwifery: A Toolkit for Using Evidence from the State of the World's Midwifery 2014 Report to Create Policy Change at the Country Level.*[1]

First page: Where are we now?

The first page of the country brief can be used as a basis for discussing the extent to which the workforce is currently able to deliver SRMNAH services for all women, adolescents and newborns who need them. Proxies for availability, accessibility and quality are presented to facilitate these discussions. All data are from 2015.

WHAT DO WOMEN, ADOLESCENTS AND NEWBORNS NEED?

The brief starts by showing the current level of need for SRMNAH services in the population. The number of pregnancies, their geographical distribution and the volume of services (in pre-pregnancy, antenatal, birth and post-partum/postnatal care) that must be provided to meet this need are shown in this section.

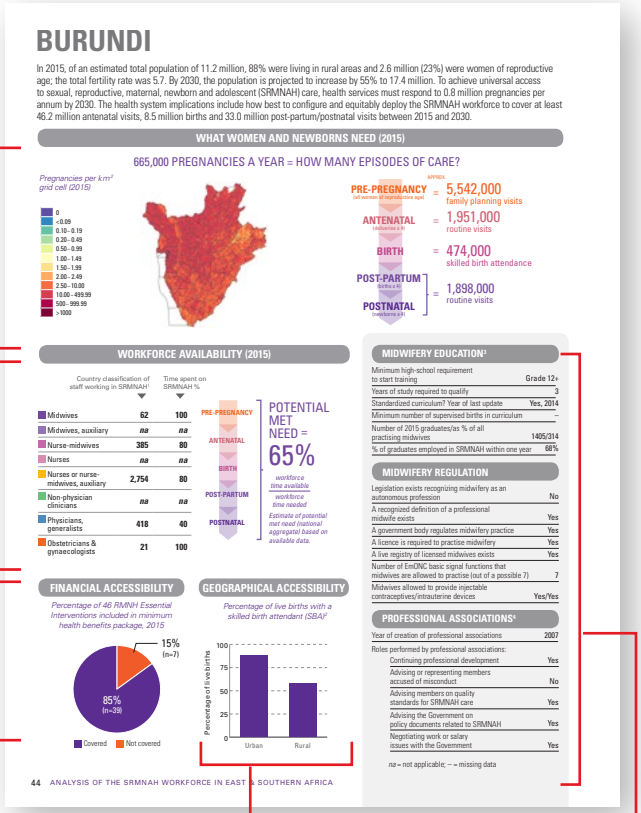
WORKFORCE AVAILABILITY AND POTENTIAL MET NEED

The brief then considers how many health workers are available to meet this need, using country data reported in the survey. The number (by headcount) of all workers reported and the percentage time each cadre spends on SRMNAH services are shown. This information makes it possible to calculate the number of available health workers by their full-time equivalent. For example, if there are 100 midwives in the country, each spending 70% of their time on SRMNAH, this equates to 70 full-time equivalent midwives. Only by considering the number of full-time equivalent workers can a true picture of availability be obtained.

In this section, health workers are grouped by broad category, with details of the country cadre names included in each category provided in footnote 1 on the opposite page.

The **'potential met need'** figure provides a national aggregate estimate of the extent to which the current SRMNAH workforce, taking into account which health workers provide which services, has enough time to deliver the package of 46 essential interventions (see Annex 4) to all women, adolescents and newborns who need them in the country. The estimate of potential met need is highly sensitive to the package of care (i.e. the 46 essential interventions), the number of health workers reported, the percentage of time they spend on SRMNAH services, and the roles they perform. Full details of the methodology for calculating this estimate are found in Annex 1.

It is important to note that the **potential met need** is an indicator of *availability,* calculated as a national average, and does not take into account, firstly, subnational variations or inequities, and secondly, whether the SRMNAH workforce and services are accessible to the population (geographically and financially), acceptable, and of high quality.



FINANCIAL ACCESSIBILITY

Even if there are sufficient health workers, the services they provide may not be affordable. This graph shows the proportion of the 46 essential SRMNAH interventions that are included in the country's minimum health benefits package (and therefore should be available free at the point of delivery) as an indication of the degree of financial protection offered to women, adolescents and newborns in accessing SRMNAH care. The data are from the survey.

GEOGRAPHICAL ACCESSIBILITY

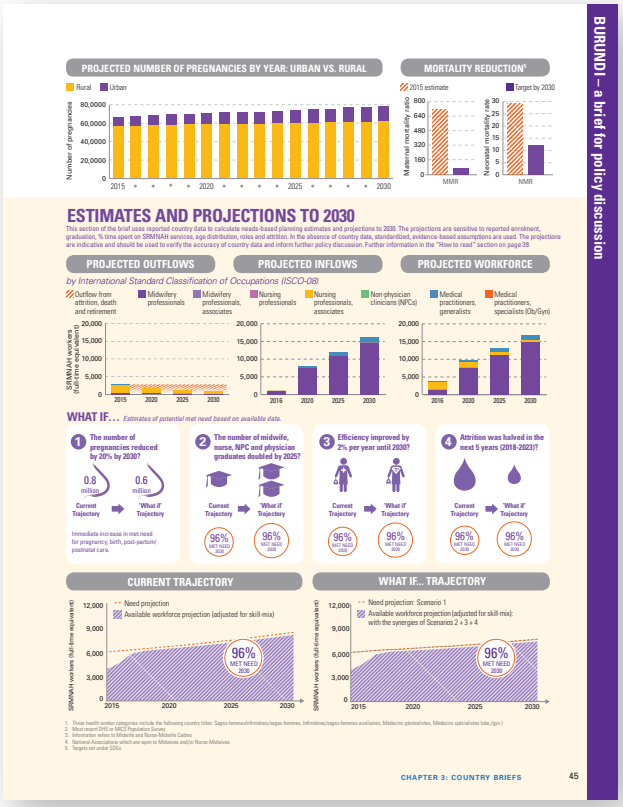
Health workers, and the facilities from which they work, may not be distributed where they are most needed. This graph shows the percentage of live births with a skilled birth attendant, and how this varies by urban or rural location, and thus provides an indicative measure of geographical accessibility of SRMNAH workers. The data are from the most recent nationally representative population survey, e.g. DHS or MICS.

EDUCATION, REGULATION, ASSOCIATION

These are all crucial to support midwives/nurse-midwives in delivering quality SRMNAH care. This section provides information on the strength of the enabling environment for quality of care within a country. The data are from the survey.

Second page: What might 2030 look like?

The second page of the country brief aims to prompt policy discussion concerning the future evolution of the SRMNAH workforce compared with the future scale of population need. The last section, "Estimates and projections to 2030", compares projections of the future availability of the health workforce and future needs for SRMNAH services in a variety of scenarios. Given the absence of data in some countries and the nature of projections, this analysis includes a number of assumptions, so it should be seen as a starting point for policy discussion (including around the availability and quality of national data) rather than as a statement of fact.



PROJECTED PREGNANCIES AND MORTALITY REDUCTION

Achieving universal coverage of SRMNAH services means anticipating and responding to future needs. This section shows the evolution of need (expressed as the annual number of pregnancies in urban and rural areas) in the period 2015–2030 (see Annex 1 for methodology). Other needs for sexual and reproductive health services will be determined by changes in the number of women of reproductive age, including adolescents.

The section also provides an indication of the targets for reductions in maternal and neonatal mortality, as proposed in the SDGs. These proposed targets are subject to national policy priorities and decisions.

ESTIMATES AND PROJECTIONS TO 2030

This section illustrates the potential evolution of the midwifery workforce under "business as usual" assumptions and according to different policy scenarios. No projections are shown for countries unable to provide 2015 headcounts for their SRMNAH workers.

The first row of three graphs considers the number of health workers who will enter and exit the SRMNAH workforce in the period 2015–2030, using data from the survey, and a standard set of decision rules (see Annex 5). The differently coloured sections of the bars represent different cadres within the workforce. For this section of the brief, the health worker cadres reported by the countries were reclassified into categories according to the international standard of classifications (ISCO-2008 revision).[2] This reclassification is based on the roles and responsibilities that the countries reported in the questionnaire for each cadre. In some cases this results in workers "changing category": for example, a cadre that in one country is called "midwives" may be reclassified as midwifery associate professionals, or auxiliaries, according to the ISCO code, if they do not perform all the essential roles and responsibilities of midwives. This reclassification allows an accurate estimate of potential met need based on the actual roles and responsibilities of each cadre.

The graph labelled "**Projected outflows**" shows how the full-time equivalent number of health workers will reduce over time, due to death, attrition and retirement, with the red shaded area representing the volume of outflows each year.

The graph labelled "**Projected inflows**" shows the number of health workers who will enter the workforce each year following graduation from national educational institutions.

The graph labelled "**Projected workforce**" shows the cumulative effect of the exits in the first graph and the entries in the second graph, and thus projects how the total size of the workforce will change over time.

The "**What If**" section presents examples of policy scenarios. These illustrate the potential impact of policy decisions and the changes in **potential met need** that could be realized through four different scenarios: 1) reducing the number of pregnancies per annum; 2) increasing the supply of key SRMNAH cadres; 3) improving efficiency; and 4) reducing voluntary attrition.

The bottom two graphs show the difference between the country continuing on its current trajectory and applying the policy changes from the scenarios. The graph labelled "**Current trajectory**" shows the projections of workforce availability and need with no policy changes in the country, while the graph labelled "**What if… trajectory**" shows the projections of workforce availability and need if the four policy scenarios indicated above are applied. These projections and the changes in **potential met need** are based on country data reported in the survey, as well as demographic and epidemiological data from international published sources (see Annex 4).

1 Available from http://www.familycareintl.org/en/resources/publications/110
2 World Health Organization. Classifying health workers: Mapping occupations to the international standard classification. Geneva, 2014. Available from: http://www.who.int/hrh/statistics/Health_workers_classification.pdf

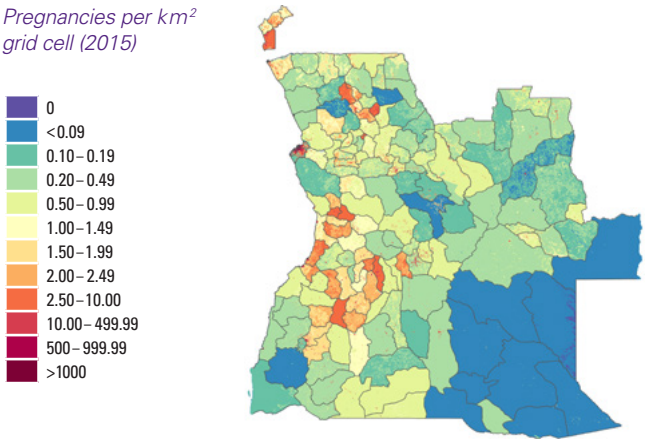
ANGOLA

In 2015, of an estimated total population of 25.0 million, 57% were living in rural areas and 5.6 million (22%) were women of reproductive age; the total fertility rate was 5.8. By 2030, the population is projected to increase by 57% to 39.4 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 1.8 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 100.8 million antenatal visits, 18.3 million births and 71.4 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

1,386,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	12,030,000 family planning visits
ANTENATAL (deliveries x 4)	=	4,029,000 routine visits
BIRTH	=	982,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	3,926,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	*na*	*na*
Midwives, auxiliary	*na*	*na*
Nurse-midwives	–	–
Nurses	–	–
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	*na*	*na*
Physicians, generalists	–	–
Obstetricians & gynaecologists	–	–

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

POTENTIAL MET NEED =

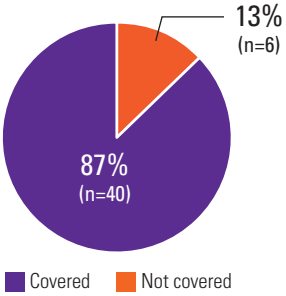
NO DATA

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

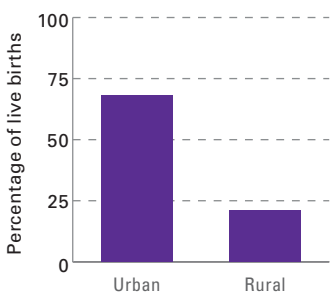
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	4.5
Standardized curriculum? Year of last update	Yes, In process
Minimum number of supervised births in curriculum	20
Number of 2015 graduates/as % of all practising midwives	-/-
% of graduates employed in SRMNAH within one year	-%

MIDWIFERY REGULATION

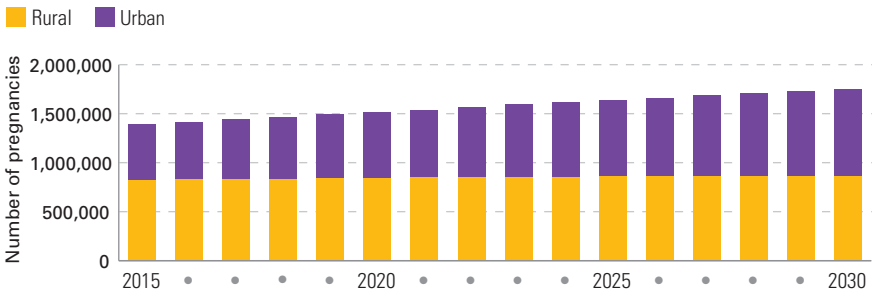
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	5
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

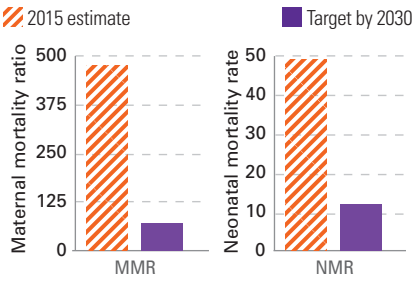
Year of creation of professional associations	2002
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

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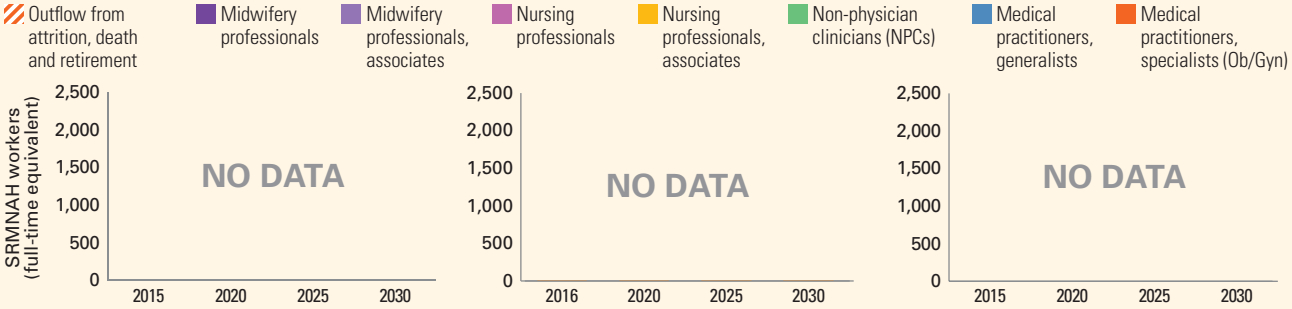
PROJECTED OUTFLOWS

PROJECTED INFLOWS

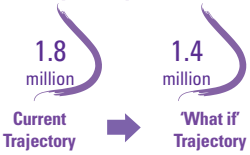
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



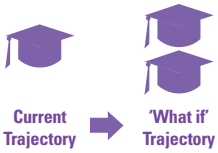
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?



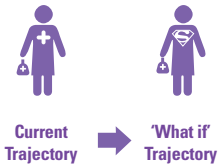
Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



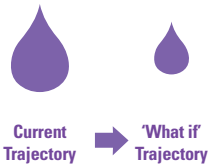
NO DATA

3 Efficiency improved by 2% per year until 2030?



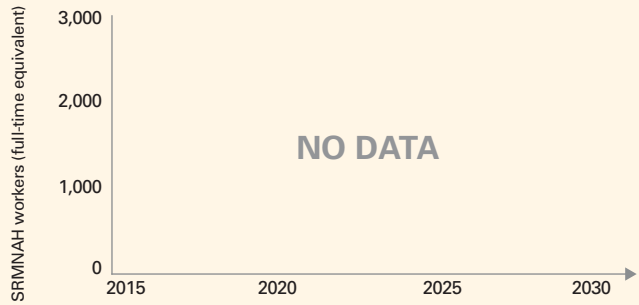
NO DATA

4 Attrition was halved in the next 5 years (2018-2023)?

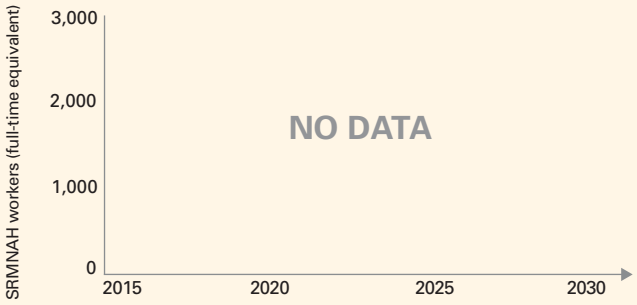


NO DATA

CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Nurse-midwives, Basic nurses, Graduate nurses, Physicians (general), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

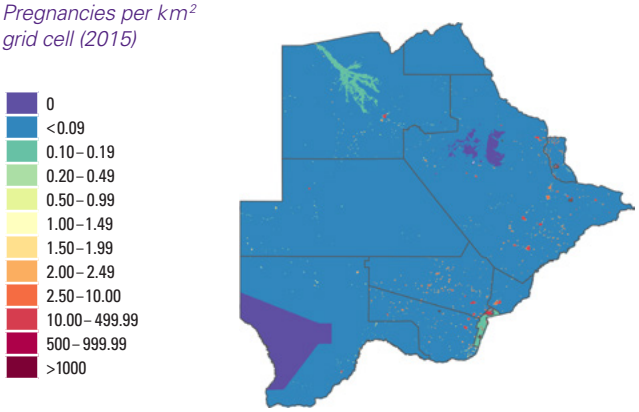
BOTSWANA

In 2015, of an estimated total population of 2.3 million, 43% were living in rural areas and 0.6 million (26%) were women of reproductive age; the total fertility rate was 2.7. By 2030, the population is projected to increase by 25% to 2.8 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.06 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 4.0 million antenatal visits, 0.7 million births and 2.9 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

65,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	2,054,000 family planning visits
ANTENATAL (deliveries x 4)	=	193,000 routine visits
BIRTH	=	47,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	190,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	*na*	*na*
Midwives, auxiliary	*na*	*na*
Nurse-midwives	1,461	100
Nurses	2,988	–
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	*na*	*na*
Physicians, generalists	308	20
Obstetricians & gynaecologists	11	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

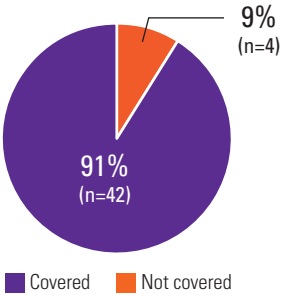
POTENTIAL MET NEED = 78%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

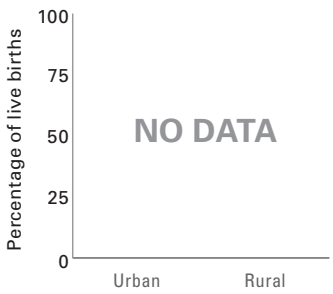
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	4.5
Standardized curriculum? Year of last update	Yes, 2011
Minimum number of supervised births in curriculum	35
Number of 2015 graduates/as % of all practising midwives	47/3.2
% of graduates employed in SRMNAH within one year	100%

MIDWIFERY REGULATION

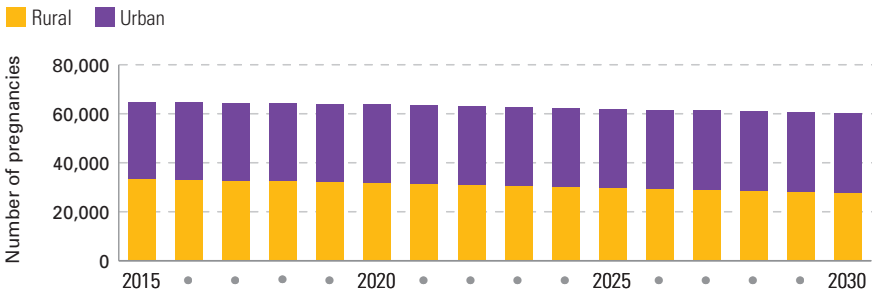
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	6
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

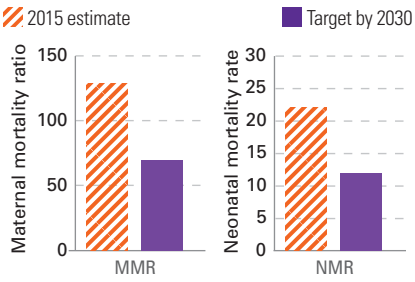
Year of creation of professional associations	2012
Roles performed by professional associations:	
Continuing professional development	No
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	No
Advising the Government on policy documents related to SRMNAH	No
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

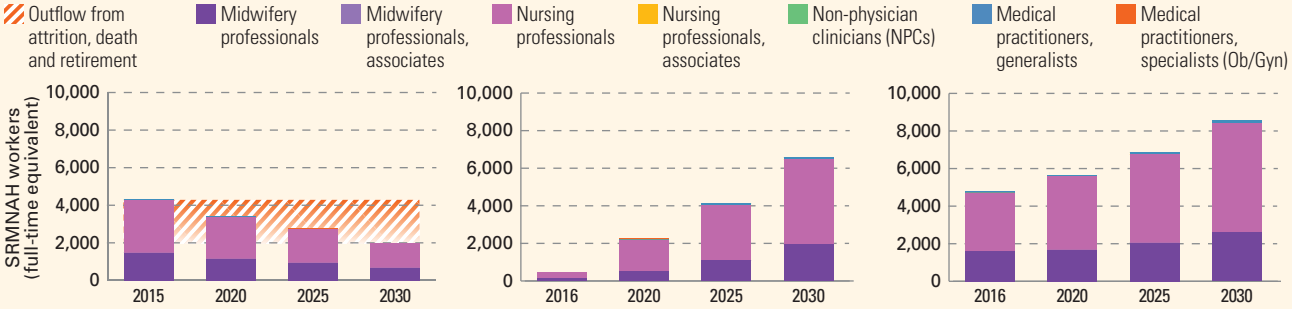
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

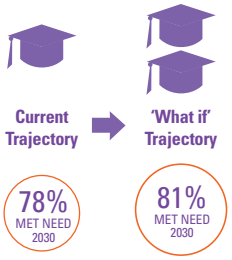


WHAT IF... *Estimates of potential met need based on available data.*

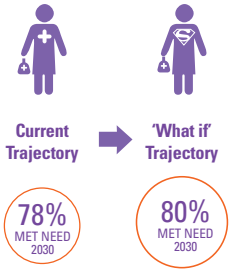
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

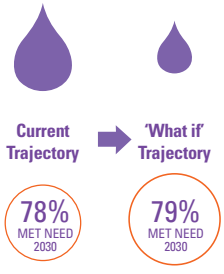
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



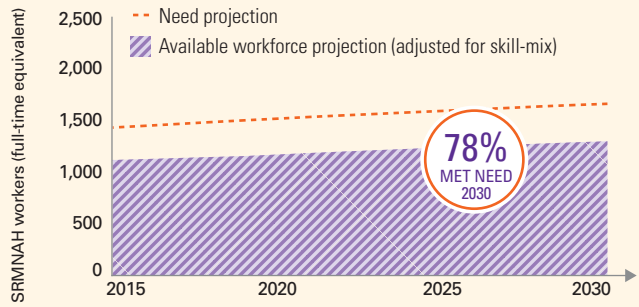
3 Efficiency improved by 2% per year until 2030?



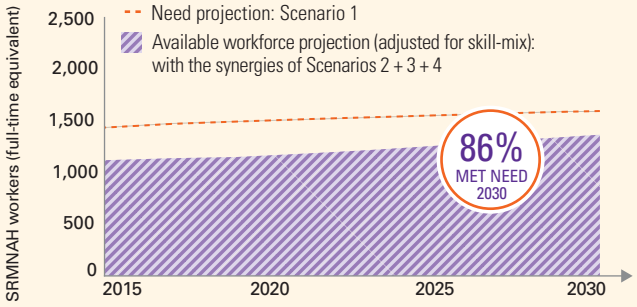
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Nurse-midwives, General nurses, Physicians (general), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

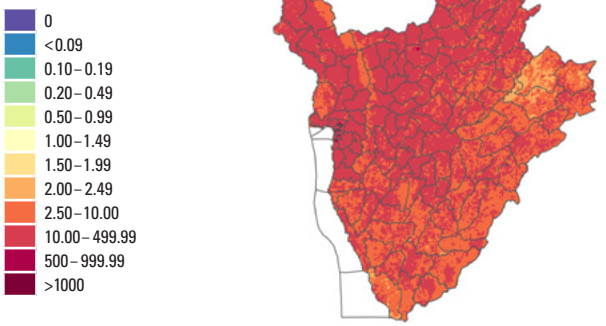
BURUNDI

In 2015, of an estimated total population of 11.2 million, 88% were living in rural areas and 2.6 million (23%) were women of reproductive age; the total fertility rate was 5.7. By 2030, the population is projected to increase by 55% to 17.4 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.8 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 46.2 million antenatal visits, 8.5 million births and 33.0 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

665,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	5,542,000 family planning visits
ANTENATAL (deliveries x 4)	=	1,951,000 routine visits
BIRTH	=	474,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	1,898,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	62	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	385	80
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	2,754	80
Non-physician clinicians	*na*	*na*
Physicians, generalists	418	40
Obstetricians & gynaecologists	21	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

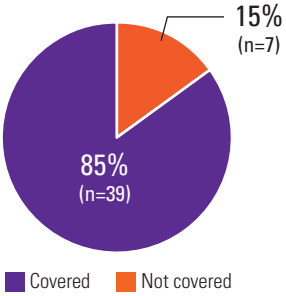
POTENTIAL MET NEED = 65%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

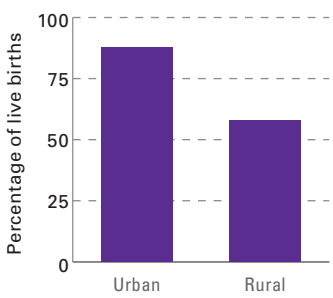
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2014
Minimum number of supervised births in curriculum	–
Number of 2015 graduates/as % of all practising midwives	1405/314
% of graduates employed in SRMNAH within one year	68%

MIDWIFERY REGULATION

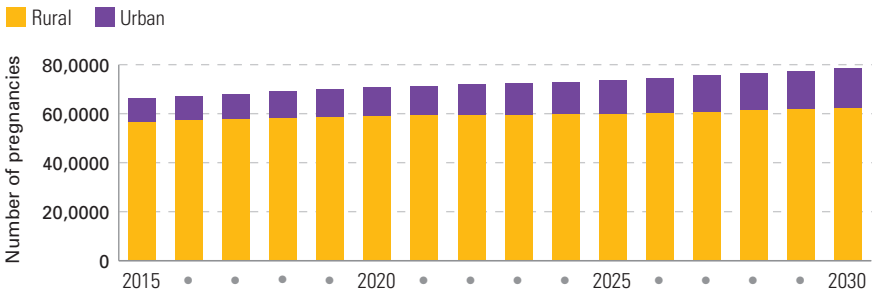
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

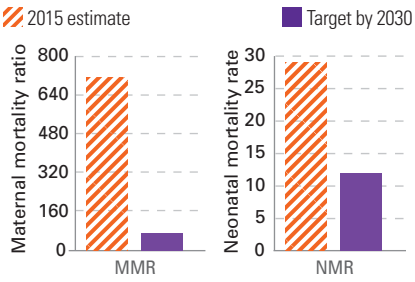
Year of creation of professional associations	2007
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

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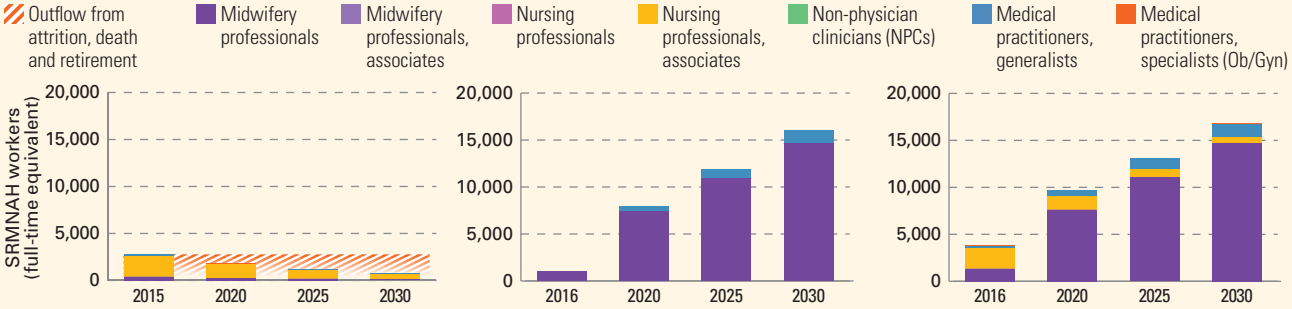
PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

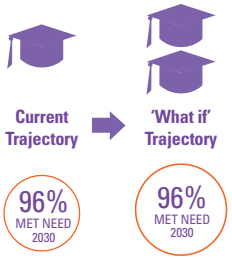


WHAT IF... *Estimates of potential met need based on available data.*

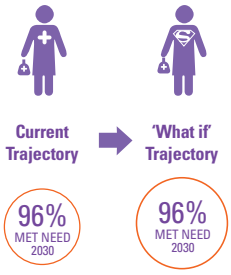
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



3 Efficiency improved by 2% per year until 2030?



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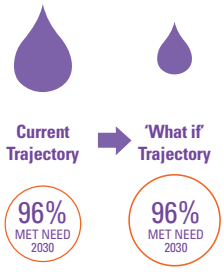
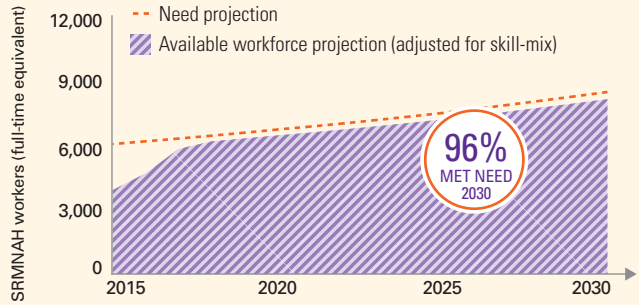
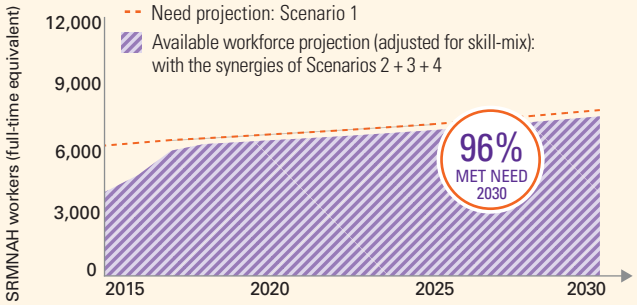


CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Sages-femmesInfirmières/sages-femmes, Infirmières/sages-femmes auxiliaires, Médecins généralistes, Médecins spécialistes (obs./gyn.)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

COMOROS (THE)

In 2015, of an estimated total population of 0.8 million, 72% were living in rural areas and 0.2 million (25%) were women of reproductive age; the total fertility rate was 4.2. By 2030, the population is projected to increase by 37% to 1.1 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.05 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 3.0 million antenatal visits, 0.6 million births and 2.1 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

43,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)

APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	371,000 family planning visits
ANTENATAL (deliveries x 4)	=	127,000 routine visits
BIRTH	=	31,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	123,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	475	100
Midwives, auxiliary	25	100
Nurse-midwives	na	na
Nurses	na	na
Nurses or nurse-midwives, auxiliary	na	na
Non-physician clinicians	na	na
Physicians, generalists	216	80
Obstetricians & gynaecologists	8	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

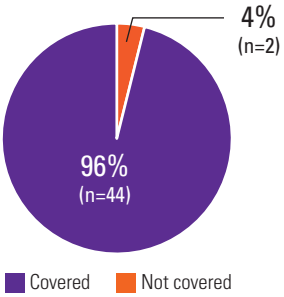
POTENTIAL MET NEED = 97%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

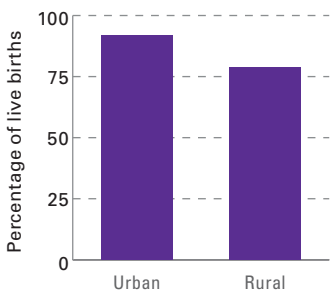
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2014
Minimum number of supervised births in curriculum	32
Number of 2015 graduates/as % of all practising midwives	21/4
% of graduates employed in SRMNAH within one year	20%

MIDWIFERY REGULATION

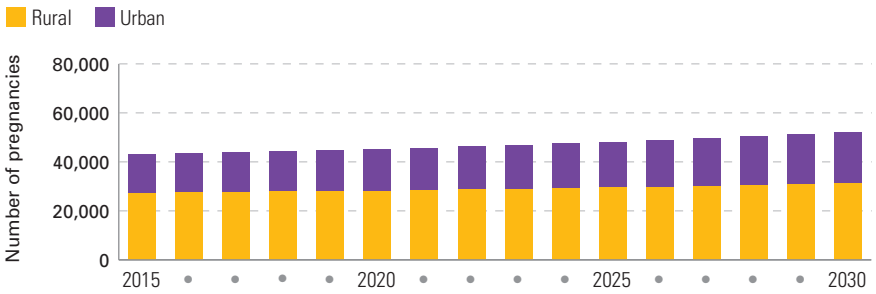
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	No
A government body regulates midwifery practice	No
A licence is required to practise midwifery	No
A live registry of licensed midwives exists	No
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

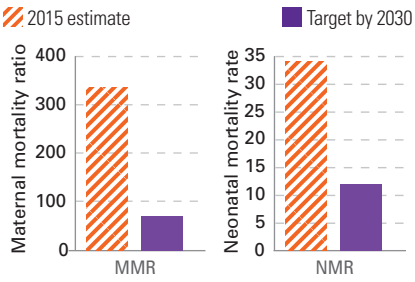
Year of creation of professional associations	2012
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

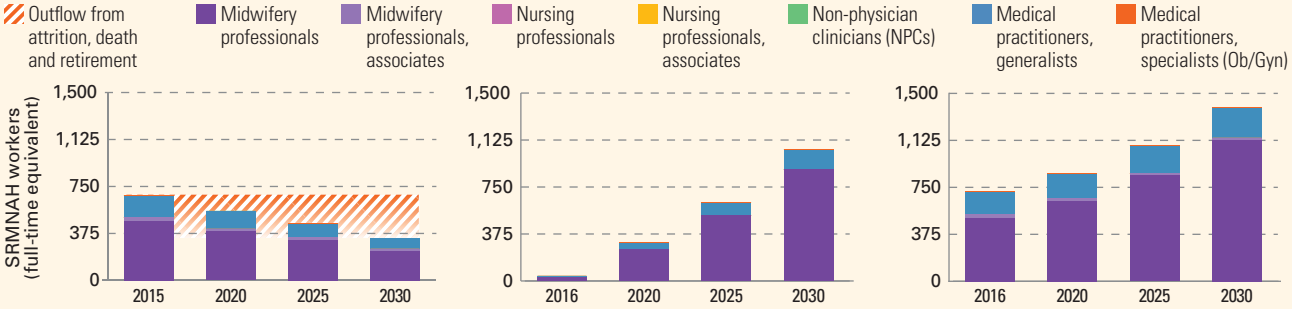
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

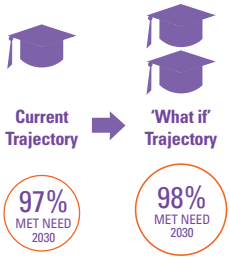


WHAT IF... *Estimates of potential met need based on available data.*

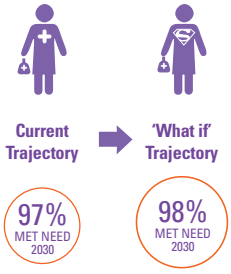
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

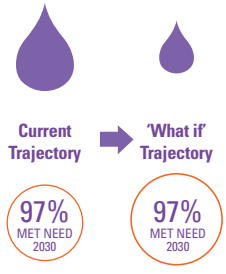
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



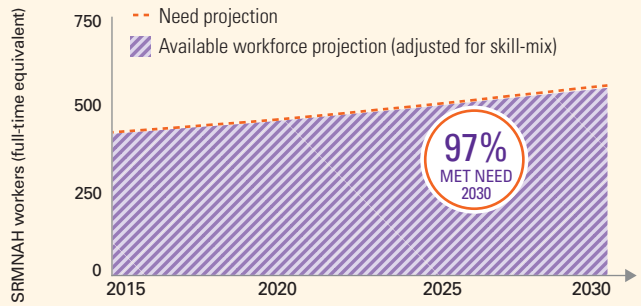
3 Efficiency improved by 2% per year until 2030?



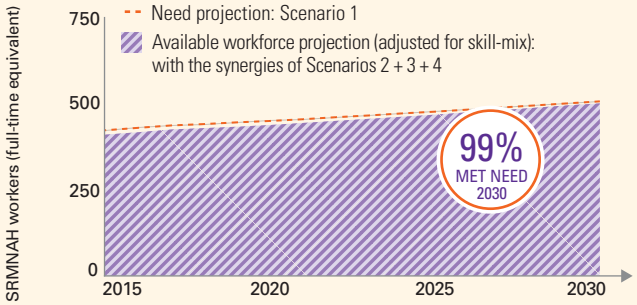
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Sages-femmes d'Etat, Sages-femmes auxiliaires, Médecins généralistes, Médecins spécialistes (obs./gyn.)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

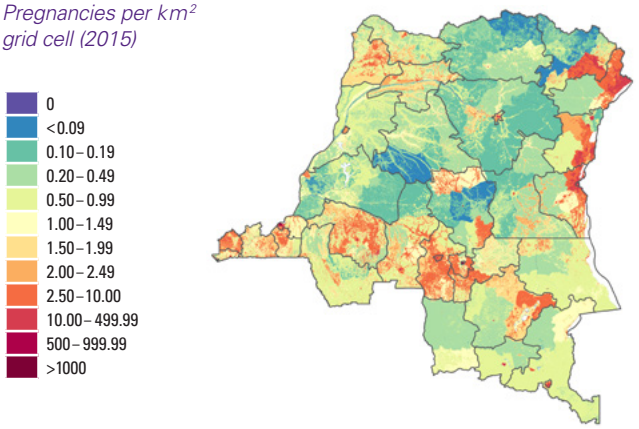
CONGO, DEMOCRATIC REPUBLIC OF THE

In 2015, of an estimated total population of 77.3 million, 58% were living in rural areas and 17.3 million (22%) were women of reproductive age; the total fertility rate was 5.7. By 2030, the population is projected to increase by 56% to 120.3 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 5.2 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 303.4 million antenatal visits, 54.8 million births and 212.7 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

4,262,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	25,856,000 family planning visits
ANTENATAL (deliveries x 4)	=	12,311,000 routine visits
BIRTH	=	2,988,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	11,951,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	40	95
Midwives, auxiliary	1,753	95
Nurse-midwives	650	85
Nurses	72,270	40
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	*na*	*na*
Physicians, generalists	5,832	25
Obstetricians & gynaecologists	200	95

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

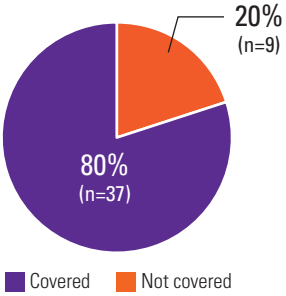
POTENTIAL MET NEED = 58%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

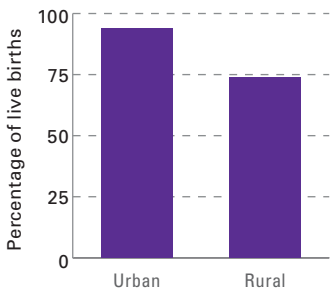
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2013
Minimum number of supervised births in curriculum	40
Number of 2015 graduates/as % of all practising midwives	886/128
% of graduates employed in SRMNAH within one year	na%

MIDWIFERY REGULATION

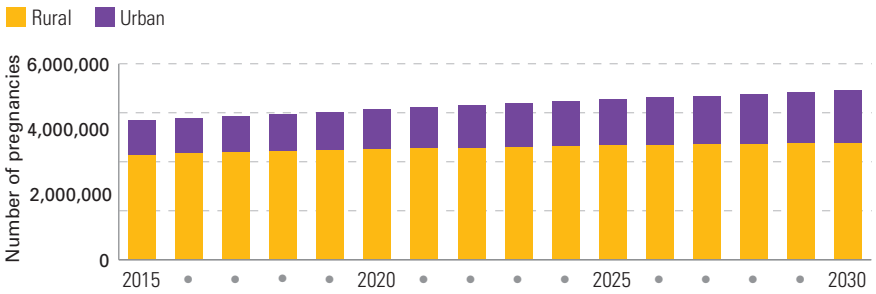
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	No
A licence is required to practise midwifery	No
A live registry of licensed midwives exists	No
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

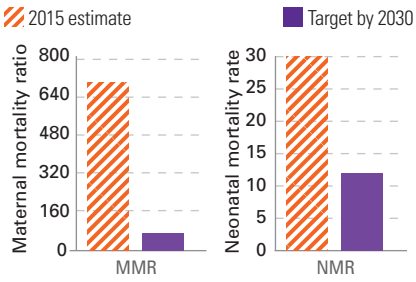
Year of creation of professional associations	1992, 2008, 2012, 2000
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

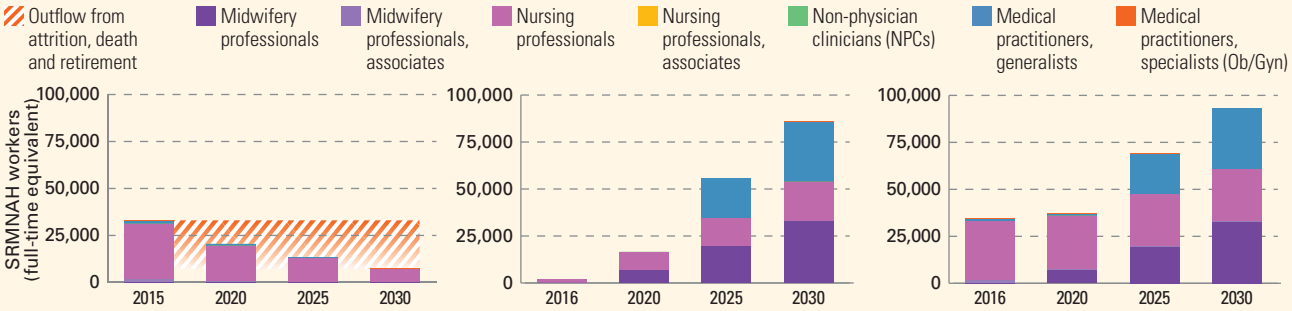
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

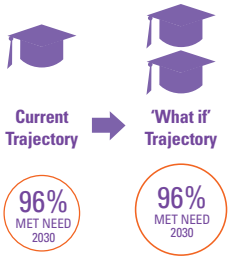


WHAT IF... *Estimates of potential met need based on available data.*

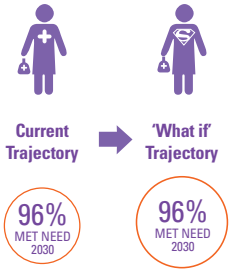
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

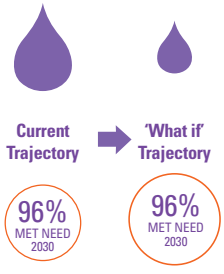
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



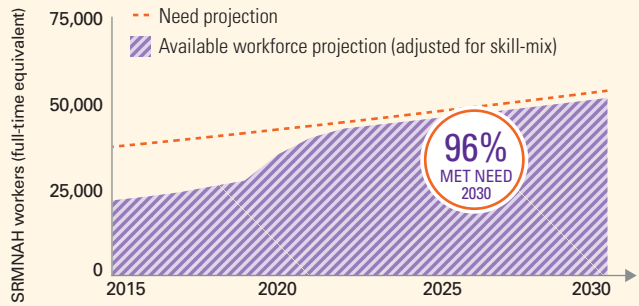
3 Efficiency improved by 2% per year until 2030?



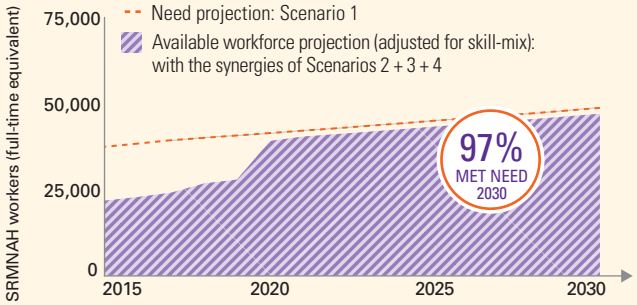
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Sages-femmes, Aide Accoucheuse, Accoucheuse graduée and Accoucheuse brevetée, Infirmière Polyvalente (IP), Médecins généralistes, Médecins spécialistes (obs./gyn.)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

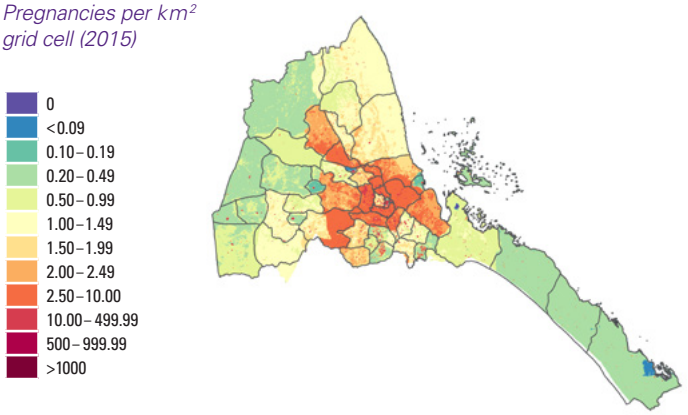
ERITREA

In 2015, of an estimated total population of 5.2 million, 78% were living in rural areas and 1.3 million (25%) were women of reproductive age; the total fertility rate was 4.0. By 2030, the population is projected to increase by 40% to 7.3 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.4 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 21.6 million antenatal visits, 4.0 million births and 15.8 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

326,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	2,389,000 family planning visits
ANTENATAL (deliveries x 4)	=	970,000 routine visits
BIRTH	=	238,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	950,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	376	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	*na*	*na*
Nurses	687	–
Nurses or nurse-midwives, auxiliary	2,658	–
Non-physician clinicians	*na*	*na*
Physicians, generalists	212	–
Obstetricians & gynaecologists	11	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

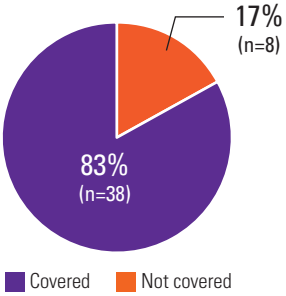
POTENTIAL MET NEED = 49%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

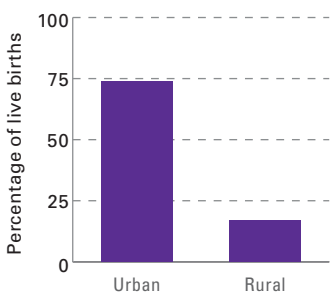
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2012
Minimum number of supervised births in curriculum	40
Number of 2015 graduates/as % of all practising midwives	15/4
% of graduates employed in SRMNAH within one year	100%

MIDWIFERY REGULATION

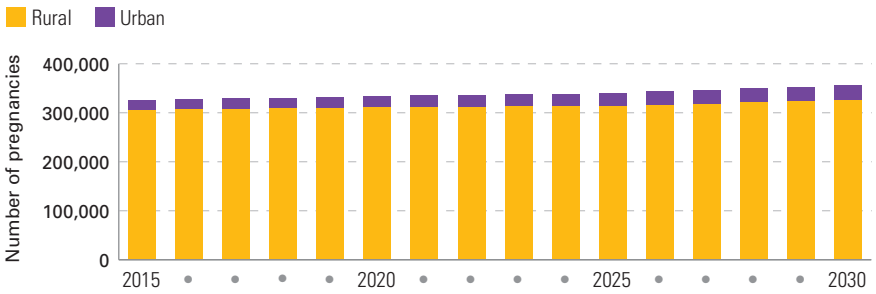
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	No
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

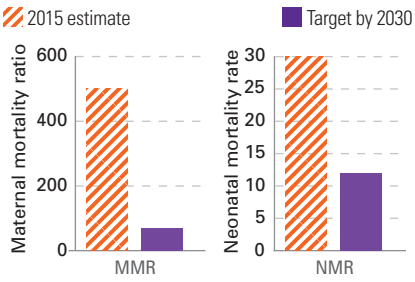
Year of creation of professional associations	-
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	No
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

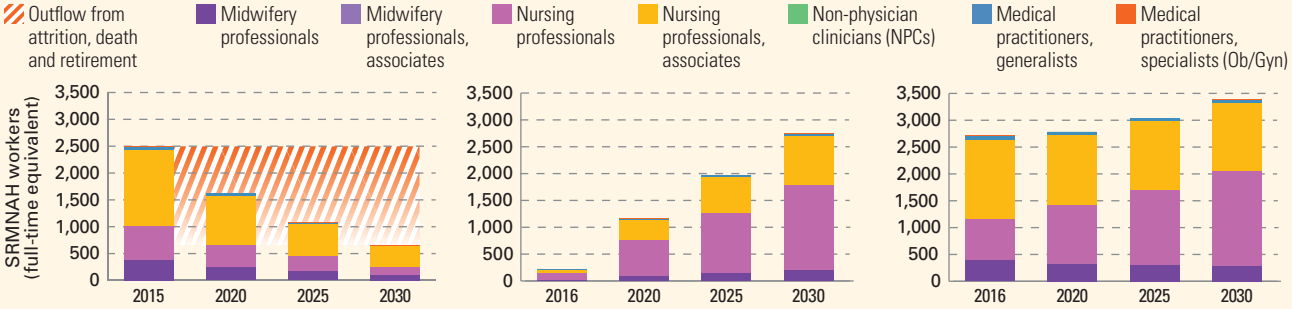
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

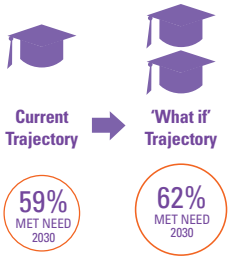


WHAT IF... *Estimates of potential met need based on available data.*

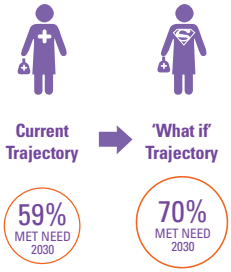
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

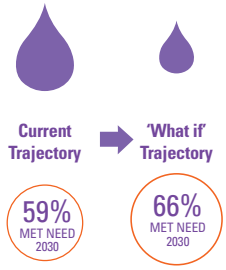
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



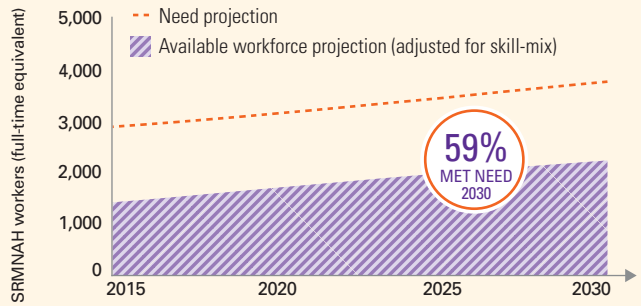
3 Efficiency improved by 2% per year until 2030?



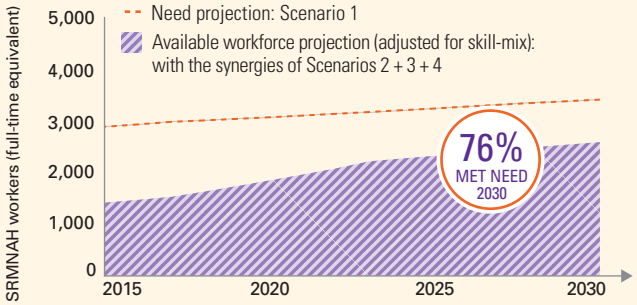
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Midwives, Registered Nurse (RN), Associate Nurse, General Medical Practitioner (GMP), Physicians (Ob/Gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

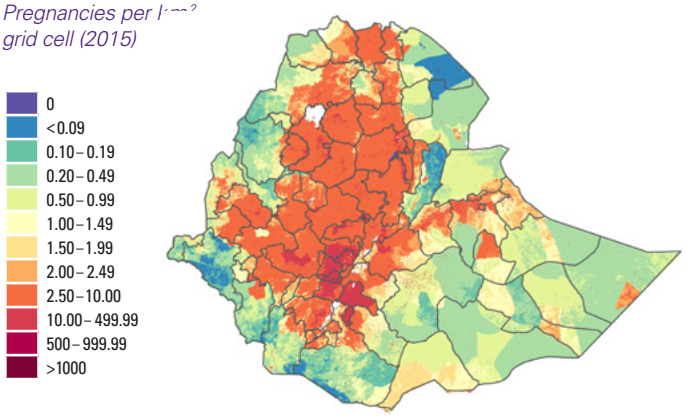
ETHIOPIA

In 2015, of an estimated total population of 99.4 million, 81% were living in rural areas and 24.1 million (24%) were women of reproductive age; the total fertility rate was 4.0. By 2030, the population is projected to increase by 39% to 138.3 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 4.9 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 306.0 million antenatal visits, 54.3 million births and 211.3 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

4,590,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	60,387,000 family planning visits
ANTENATAL (deliveries x 4)	=	13,021,000 routine visits
BIRTH	=	3,170,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	12,681,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	12,069	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	*na*	*na*
Nurses	50,295	40
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	10,065	37
Physicians, generalists	4,807	50
Obstetricians & gynaecologists	296	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

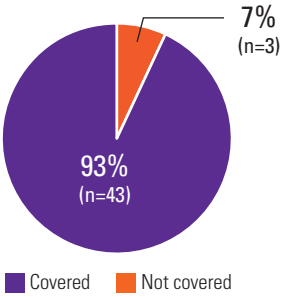
POTENTIAL MET NEED = 62%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

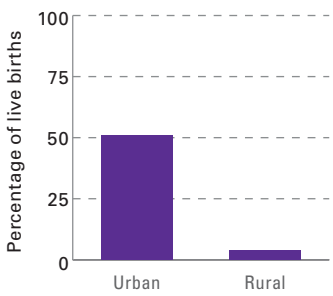
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2014
Minimum number of supervised births in curriculum	20
Number of 2015 graduates/as % of all practising midwives	2106/17
% of graduates employed in SRMNAH within one year	100%

MIDWIFERY REGULATION

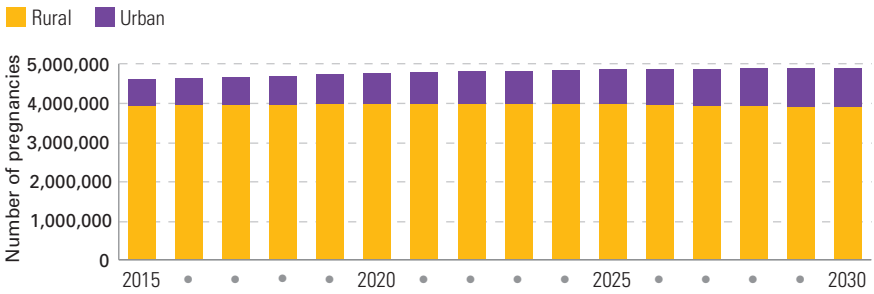
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

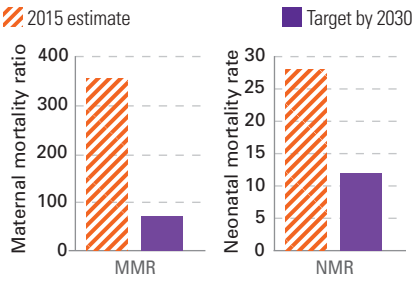
Year of creation of professional associations	1992
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

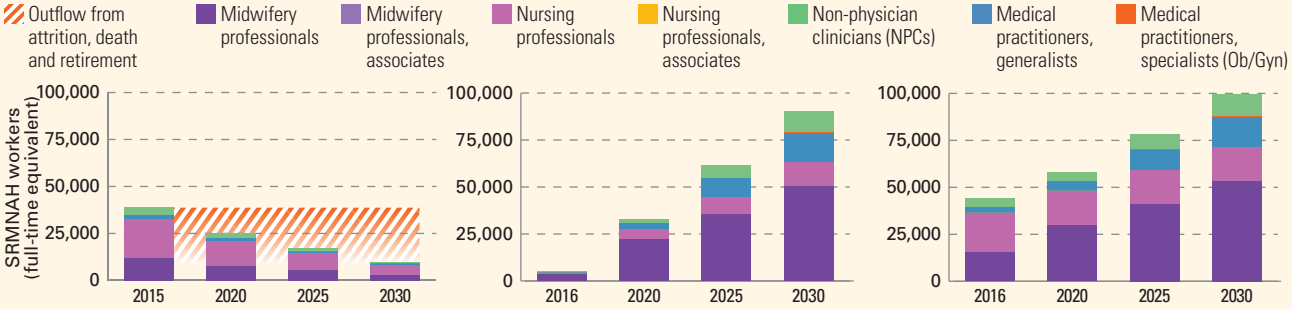
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

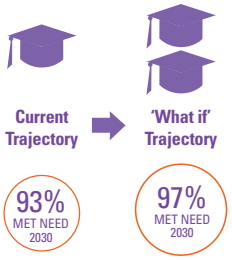


WHAT IF... *Estimates of potential met need based on available data.*

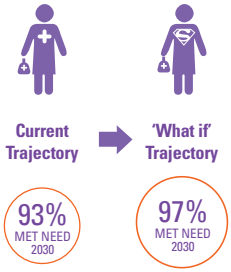
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

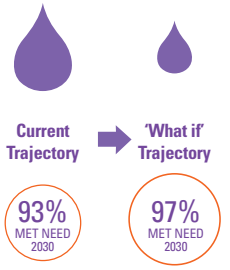
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



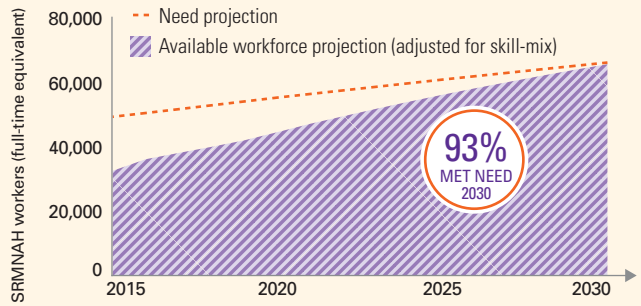
3 Efficiency improved by 2% per year until 2030?



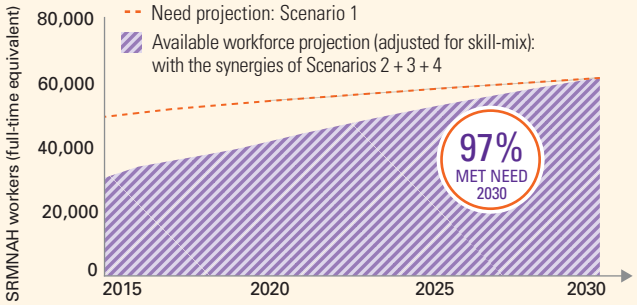
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Midwives, Nurses, Health Officers (HO) & Integrated Emergency Surgical Officers (IESO), General Practitioner, Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

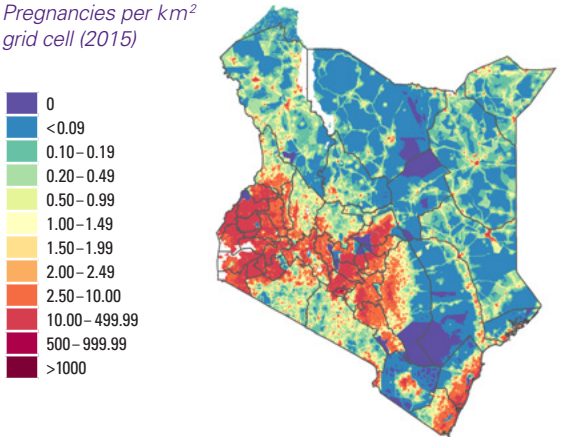
KENYA

In 2015, of an estimated total population of 46.1 million, 75% were living in rural areas and 11.2 million (24%) were women of reproductive age; the total fertility rate was 4.1. By 2030, the population is projected to increase by 42% to 65.4 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 2.8 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 166.2 million antenatal visits, 28.1 million births and 109.9 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

2,389,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	28,062,000 family planning visits
ANTENATAL (deliveries x 4)	=	6,465,000 routine visits
BIRTH	=	1,579,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	6,315,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	2,092	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	43,812	100
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	3,800	30
Physicians, generalists	3,445	60
Obstetricians & gynaecologists	380	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

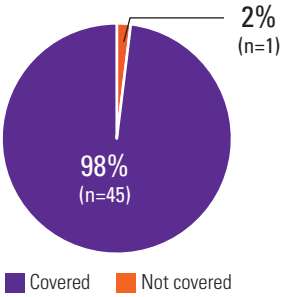
POTENTIAL MET NEED = 97%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

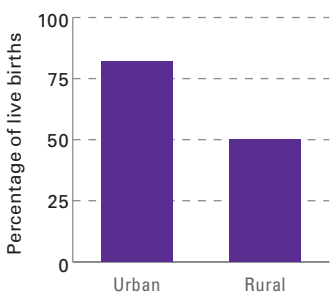
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2007
Minimum number of supervised births in curriculum	30
Number of 2015 graduates/as % of all practising midwives	2758/6
% of graduates employed in SRMNAH within one year	-%

MIDWIFERY REGULATION

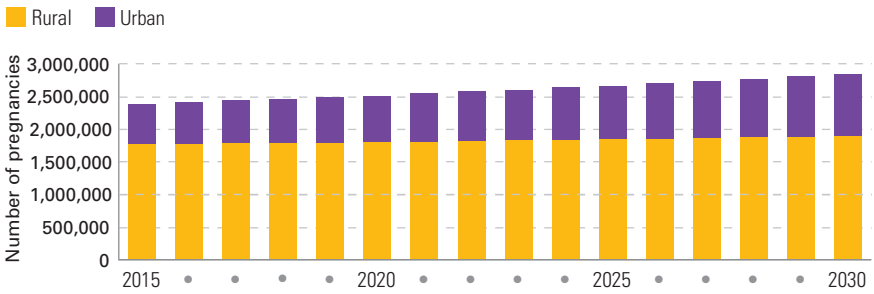
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

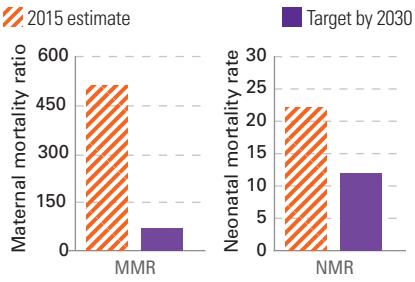
Year of creation of professional associations	2016
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

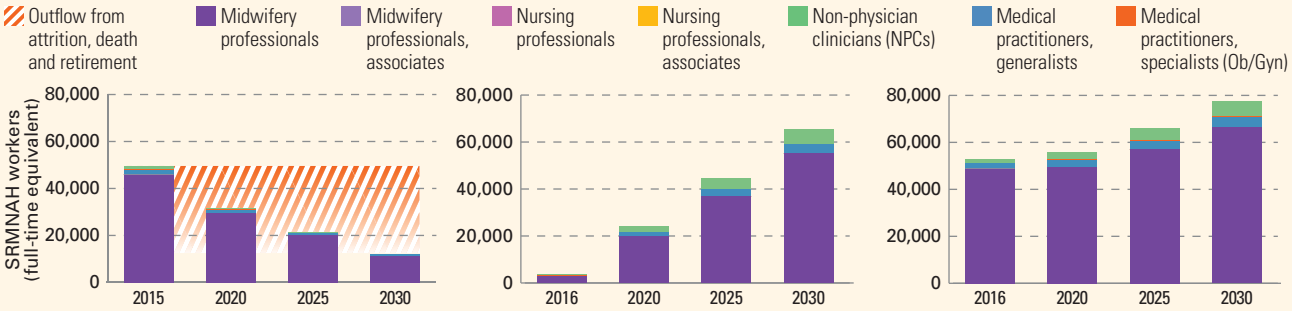
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

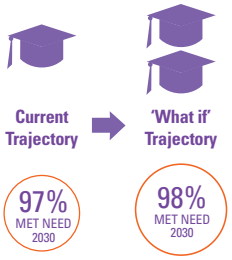


WHAT IF... *Estimates of potential met need based on available data.*

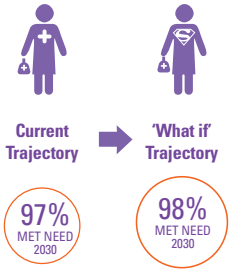
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

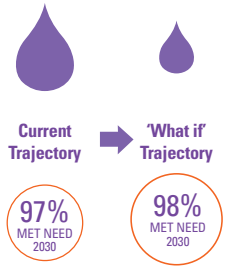
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



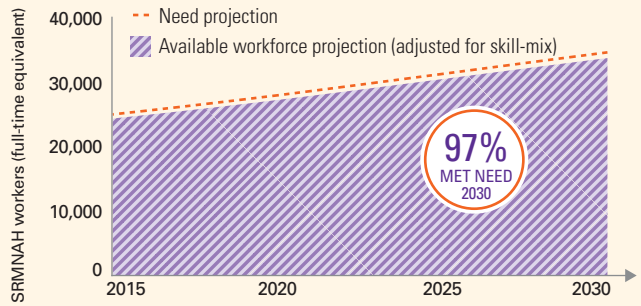
3 Efficiency improved by 2% per year until 2030?



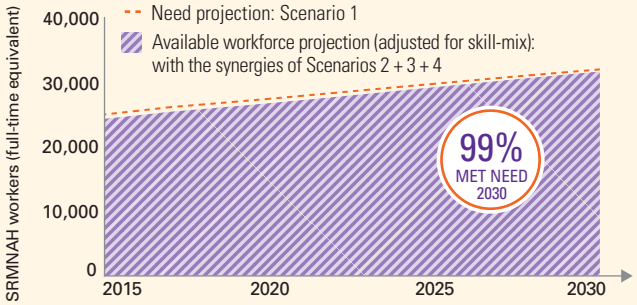
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Enrolled midwives (KEM), registered midwives (KRM), Nurse-midwives: Degree (BScN), Diploma (KRCHN & KRN/M), Certificate (KECHN) Registered Clinical Officers, Medical Officer, Obstetrician and Gynaecologist
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

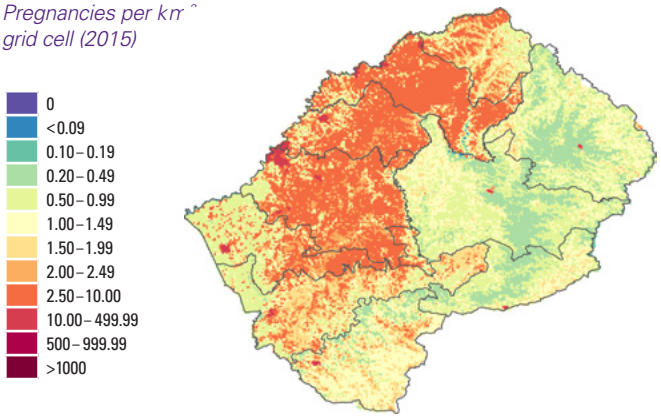
LESOTHO

In 2015, of an estimated total population of 2.1 million, 73% were living in rural areas and 0.6 million (29%) were women of reproductive age; the total fertility rate was 3.0. By 2030, the population is projected to increase by 16% to 2.5 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.07 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 5.0 million antenatal visits, 0.9 million births and 3.5 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

81,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age) = 1,763,000 family planning visits

ANTENATAL (deliveries x 4) = 235,000 routine visits

BIRTH = 57,000 skilled birth attendance

POST-PARTUM (births x 4) + **POSTNATAL** (newborns x 4) = 229,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	*na*	*na*
Midwives, auxiliary	*na*	*na*
Nurse-midwives	4,189	100
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	2,018	100
Non-physician clinicians	*na*	*na*
Physicians, generalists	–	–
Obstetricians & gynaecologists	–	–

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

POTENTIAL MET NEED =

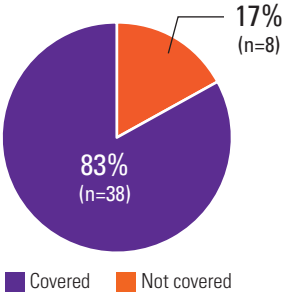
NO DATA

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

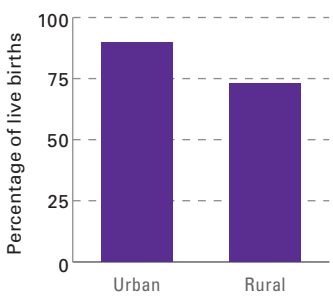
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	4
Standardized curriculum? Year of last update	Yes, 2016
Minimum number of supervised births in curriculum	35
Number of 2015 graduates/as % of all practising midwives	57/2
% of graduates employed in SRMNAH within one year	25%

MIDWIFERY REGULATION

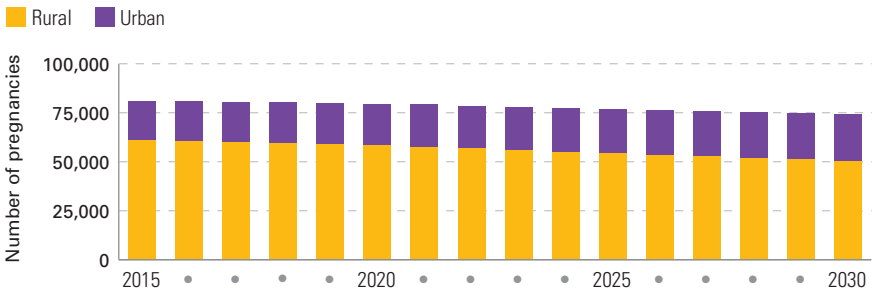
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

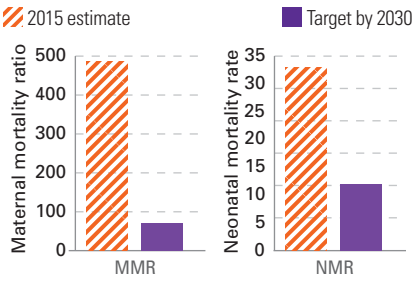
Year of creation of professional associations	1966
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	No
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

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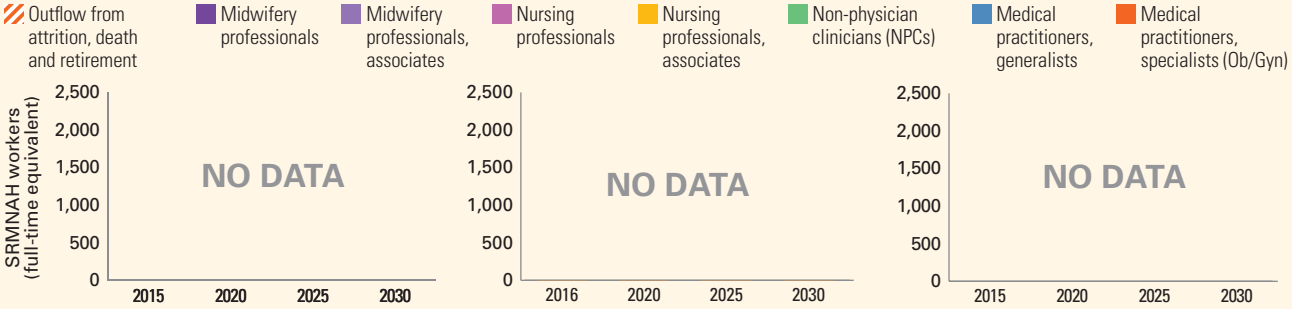
PROJECTED OUTFLOWS

PROJECTED INFLOWS

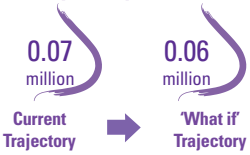
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



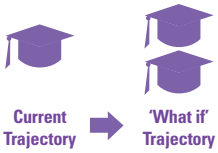
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?



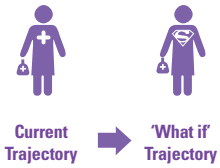
Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



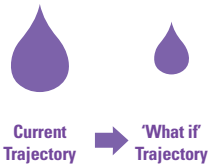
NO DATA

3 Efficiency improved by 2% per year until 2030?



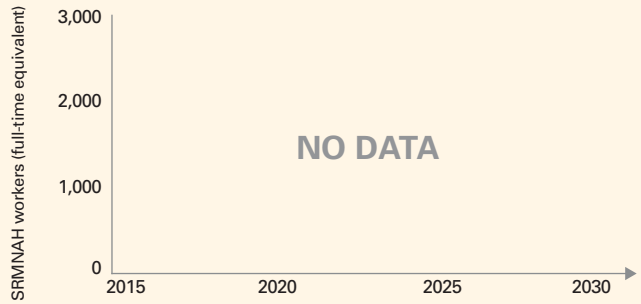
NO DATA

4 Attrition was halved in the next 5 years (2018-2023)?

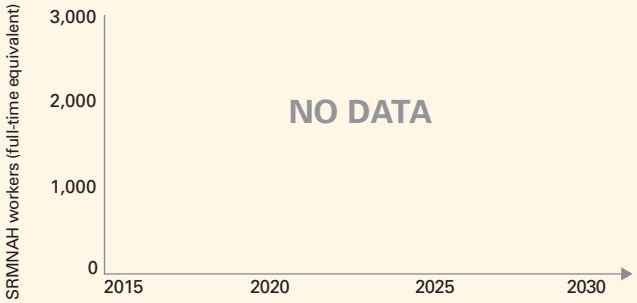


NO DATA

CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Nurse-Midwives, Nursing assistants, Physicians (general), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

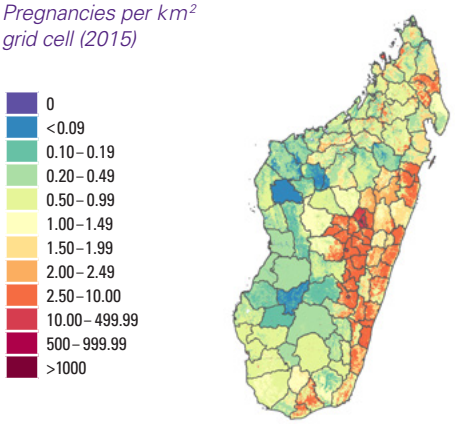
MADAGASCAR

In 2015, of an estimated total population of 24.2 million, 66% were living in rural areas and 5.9 million (24%) were women of reproductive age; the total fertility rate was 4.2. By 2030, the population is projected to increase by 48% to 36.0 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 1.4 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 79.4 million antenatal visits, 15.5 million births and 60.7 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

1,086,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	13,088,000 family planning visits
ANTENATAL (deliveries x 4)	=	3,384,000 routine visits
BIRTH	=	830,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	3,320,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	6,000	95
Midwives, auxiliary	*na*	*na*
Nurse-midwives	*na*	*na*
Nurses	7,000	85
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	*na*	*na*
Physicians, generalists	2,200	80
Obstetricians & gynaecologists	35	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

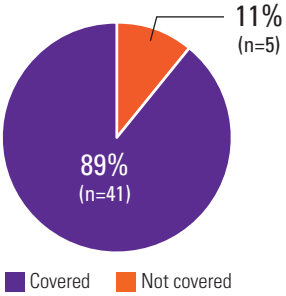
POTENTIAL MET NEED = 78%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

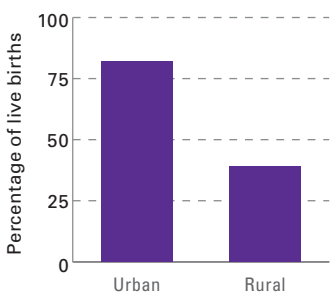
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2016
Minimum number of supervised births in curriculum	not defined
Number of 2015 graduates/as % of all practising midwives	34/1
% of graduates employed in SRMNAH within one year	100%

MIDWIFERY REGULATION

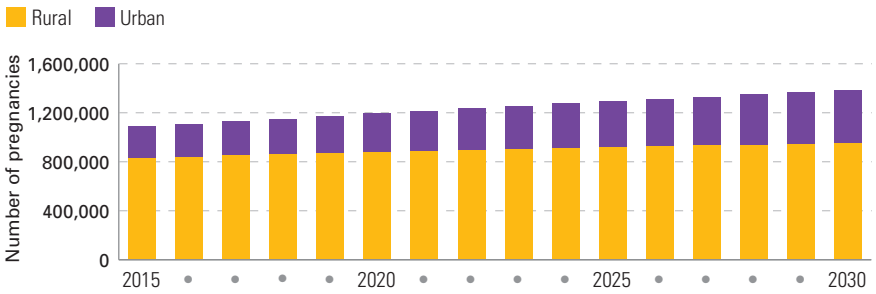
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	No
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

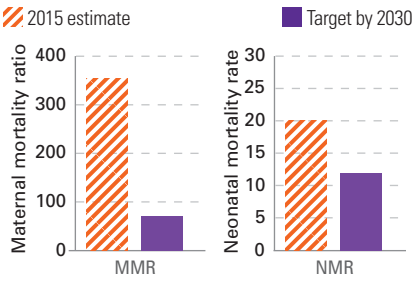
Year of creation of professional associations	1996
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	No
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

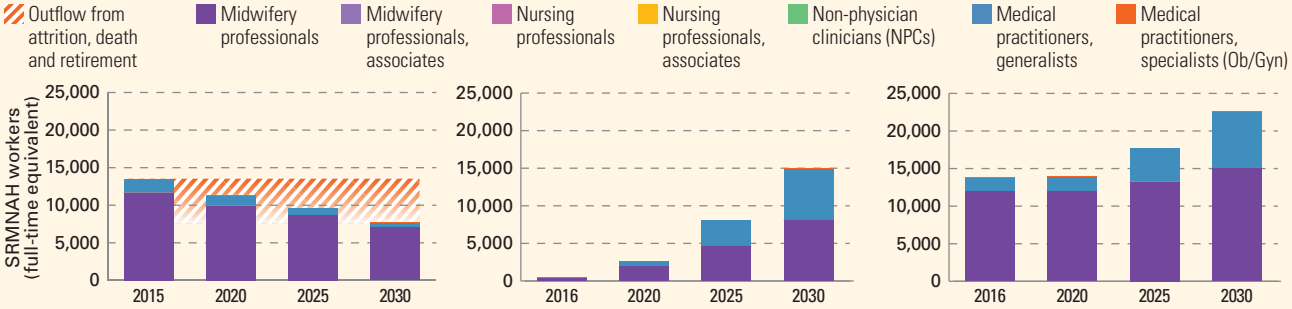
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

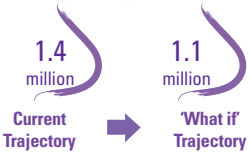
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



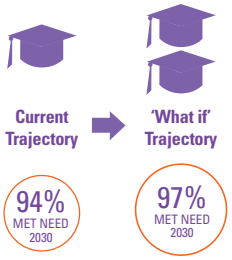
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?

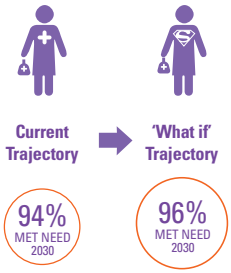


Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

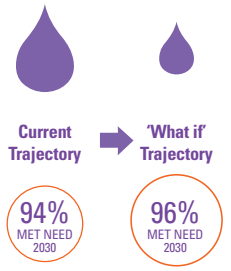
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



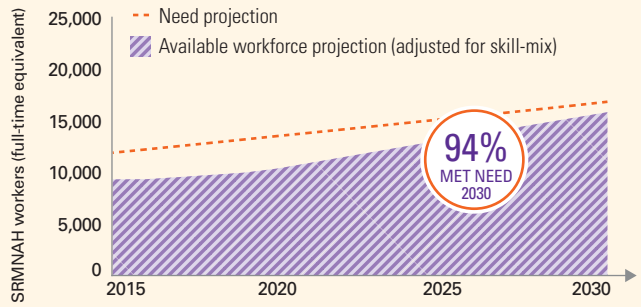
3 Efficiency improved by 2% per year until 2030?



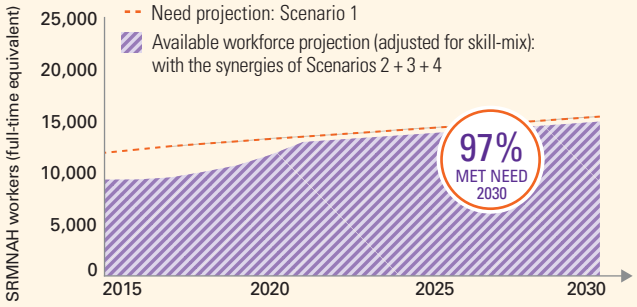
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Sages-femmes, Infirmier généraliste, Médecins généralistes, Médecins spécialistes (obs./gyn.)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

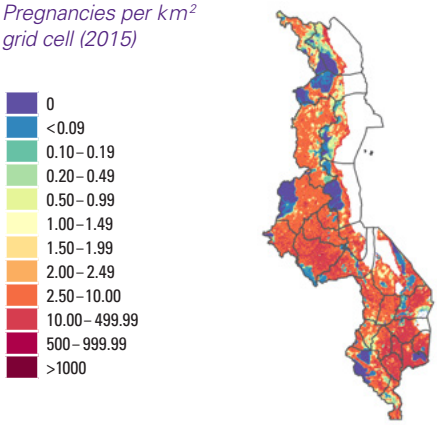
MALAWI

In 2015, of an estimated total population of 17.2 million, 84% were living in rural areas and 4.0 million (23%) were women of reproductive age; the total fertility rate was 4.9. By 2030, the population is projected to increase by 54% to 26.6 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 1.3 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 74.4 million antenatal visits, 12.8 million births and 50.0 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

1,008,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	10,154,000 family planning visits
ANTENATAL (deliveries x 4)	=	2,781,000 routine visits
BIRTH	=	678,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	2,711,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	0	–
Midwives, auxiliary	568	100
Nurse-midwives	4,013	75
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	838	25
Physicians, generalists	255	35
Obstetricians & gynaecologists	15	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

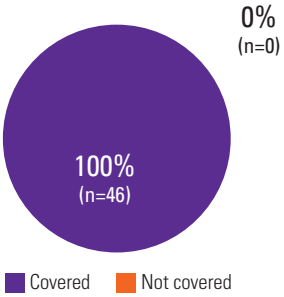
POTENTIAL MET NEED = 39%

workforce time available / *workforce time needed*

Estimate of potential met need (national aggregate) based on available data.

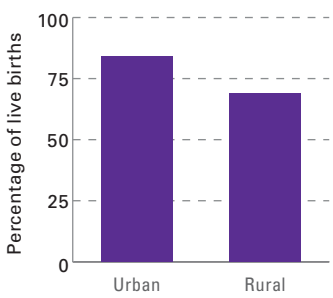
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2015
Minimum number of supervised births in curriculum	50
Number of 2015 graduates/as % of all practising midwives	804/20
% of graduates employed in SRMNAH within one year	na%

MIDWIFERY REGULATION

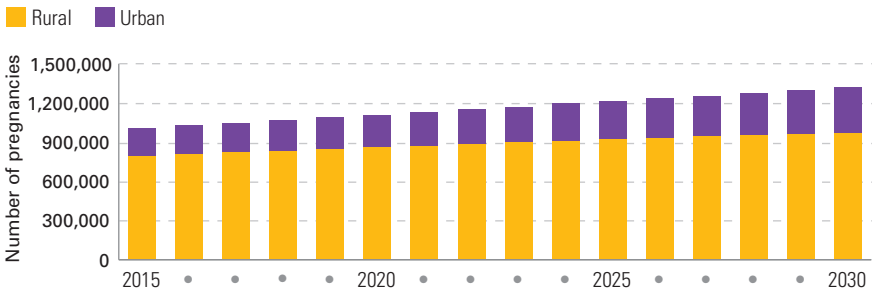
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

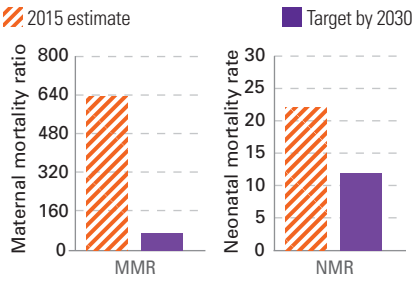
Year of creation of professional associations	1979, 1997
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	No
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

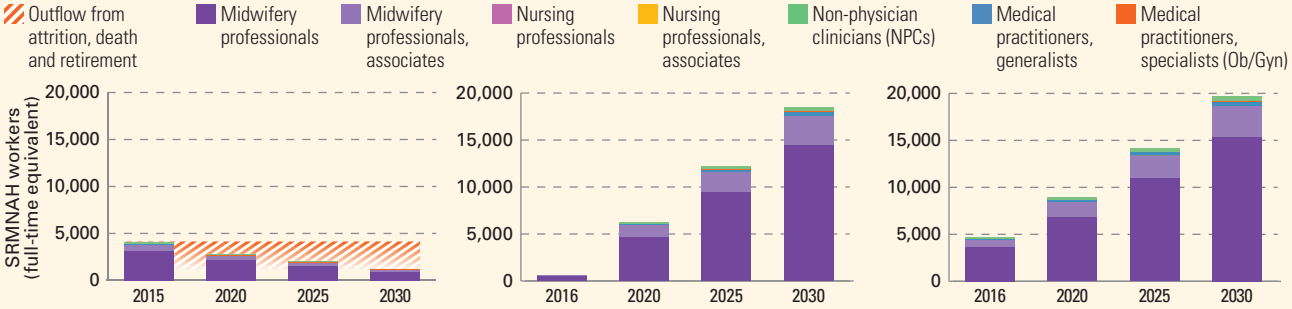
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

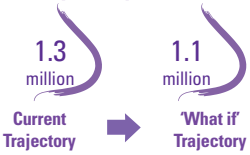
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



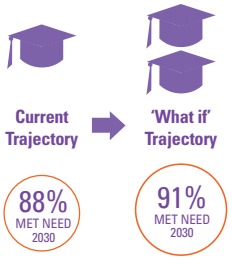
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?

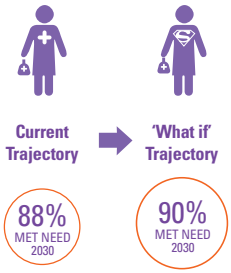


Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

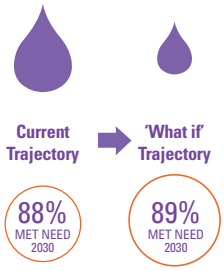
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



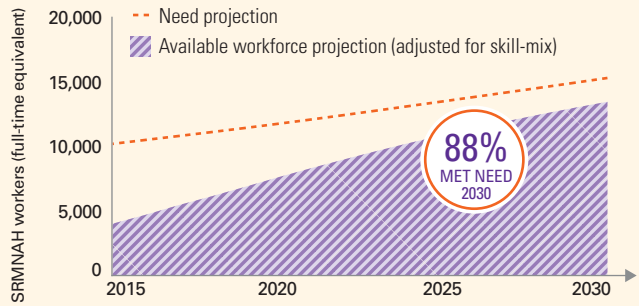
3 Efficiency improved by 2% per year until 2030?



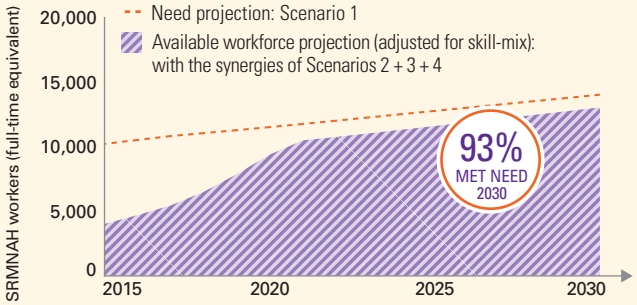
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Midwives, Community Midwifery Assistants (CMA), Nurse-Midwives, Clinical Officer (CO), Medical Officers (MBBS), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

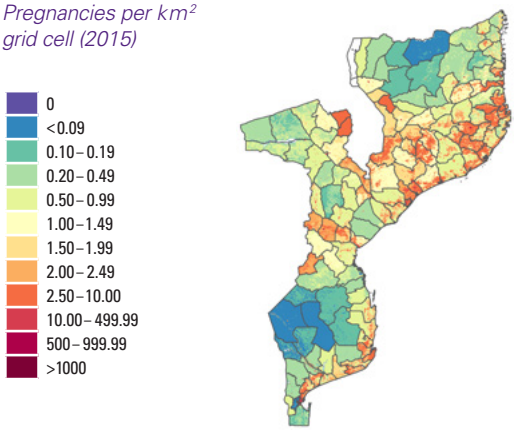
MOZAMBIQUE

In 2015, of an estimated total population of 28.0 million, 68% were living in rural areas and 6.4 million (23%) were women of reproductive age; the total fertility rate was 5.1. By 2030, the population is projected to increase by 48% to 41.4 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 1.8 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 100.1 million antenatal visits, 19.1 million births and 74.4 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

1,385,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	14,667,000 family planning visits
ANTENATAL (deliveries x 4)	=	4,233,000 routine visits
BIRTH	=	1,030,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	4,119,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	5,148	60
Midwives, auxiliary	557	60
Nurse-midwives	*na*	*na*
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	590	15
Non-physician clinicians	6,774	45
Physicians, generalists	1,383	30
Obstetricians & gynaecologists	57	60

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

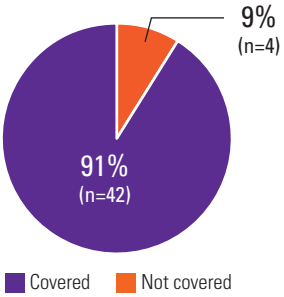
POTENTIAL MET NEED = 25%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

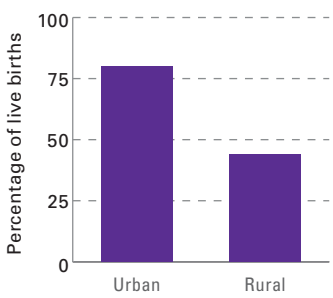
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	2
Standardized curriculum? Year of last update	Yes, 2013
Minimum number of supervised births in curriculum	50
Number of 2015 graduates/as % of all practising midwives	870/17
% of graduates employed in SRMNAH within one year	100%

MIDWIFERY REGULATION

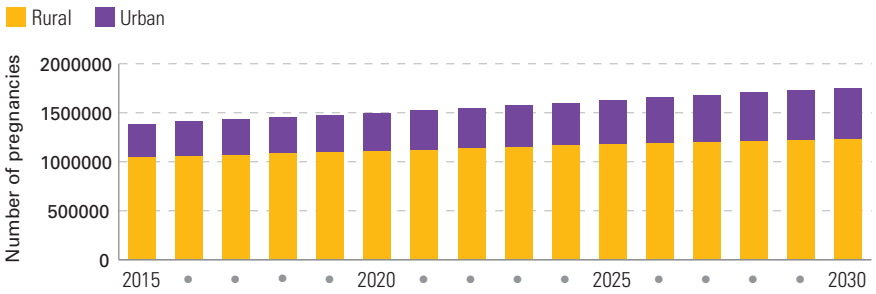
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	No
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	No
A live registry of licensed midwives exists	No
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

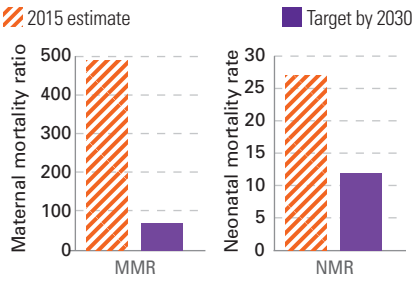
Year of creation of professional associations	1989, 2004
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

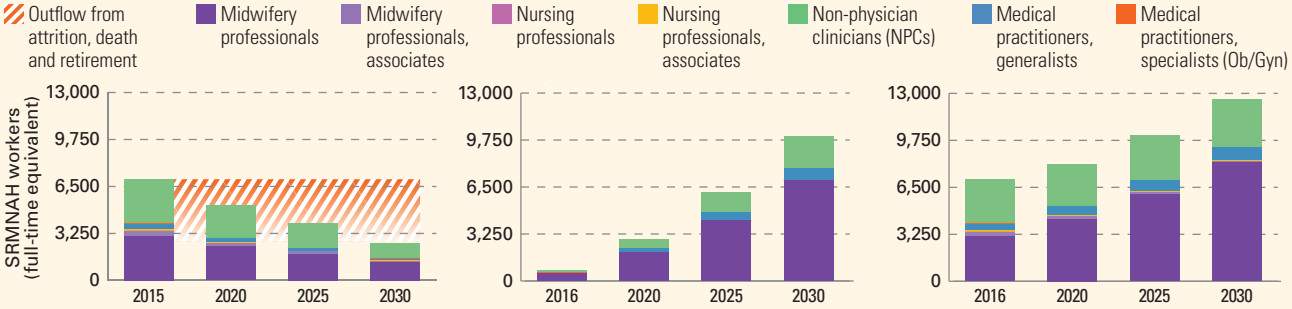
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

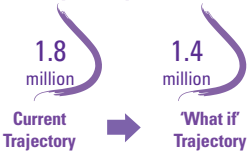
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



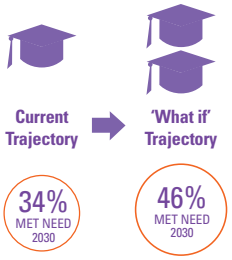
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?

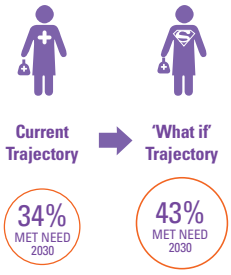


Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

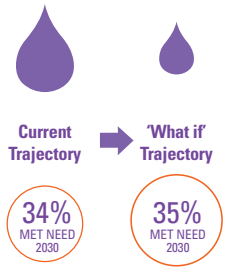
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



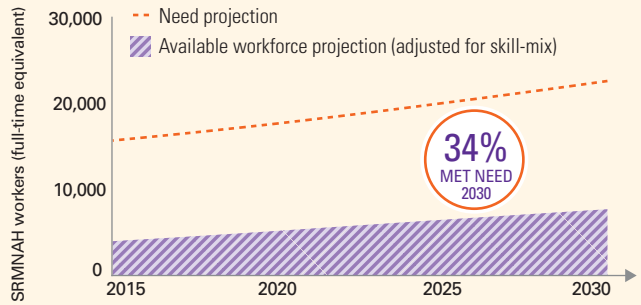
3 Efficiency improved by 2% per year until 2030?



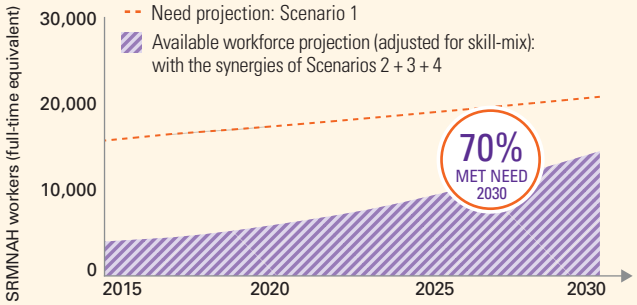
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Maternal-child health nurses, Elementary midwife, Elementary nurse, Surgical Technicians, Medical Technicians, Medical Agents, Physician (general), Physician (Obstetrician / Gynaecologist)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

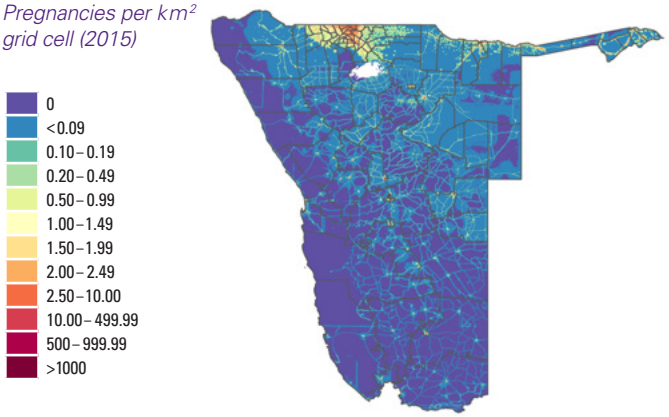
NAMIBIA

In 2015, of an estimated total population of 2.5 million, 54% were living in rural areas and 0.7 million (28%) were women of reproductive age; the total fertility rate was 3.3. By 2030, the population is projected to increase by 33% to 3.3 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.09 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 5.7 million antenatal visits, 1.0 million births and 4.0 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

86,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	1,975,000 family planning visits
ANTENATAL (deliveries x 4)	=	247,000 routine visits
BIRTH	=	61,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	243,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	–	–
Midwives, auxiliary	*na*	*na*
Nurse-midwives	–	–
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	–	–
Non-physician clinicians	*na*	*na*
Physicians, generalists	–	–
Obstetricians & gynaecologists	–	–

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

POTENTIAL MET NEED =

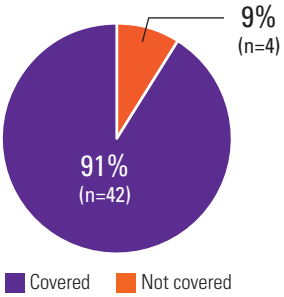
NO DATA

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

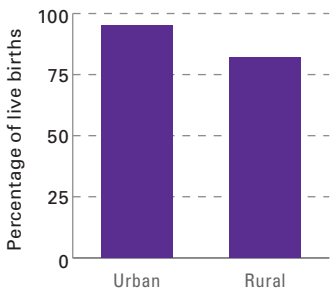
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	4
Standardized curriculum? Year of last update	Yes, –
Minimum number of supervised births in curriculum	–
Number of 2015 graduates/as % of all practising midwives	–/–
% of graduates employed in SRMNAH within one year	–%

MIDWIFERY REGULATION

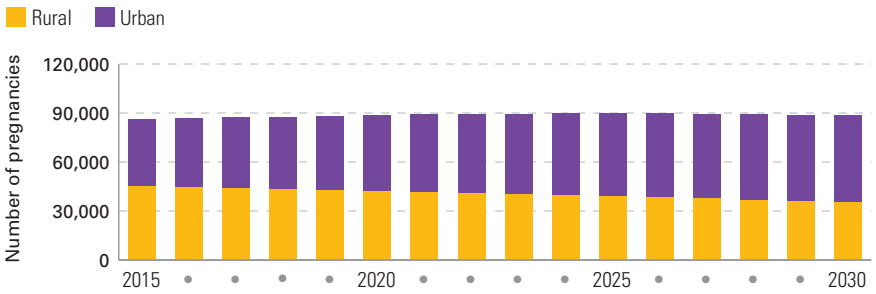
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	–/Yes

PROFESSIONAL ASSOCIATIONS[4]

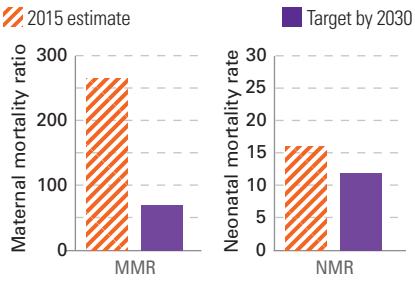
Year of creation of professional associations	2014
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

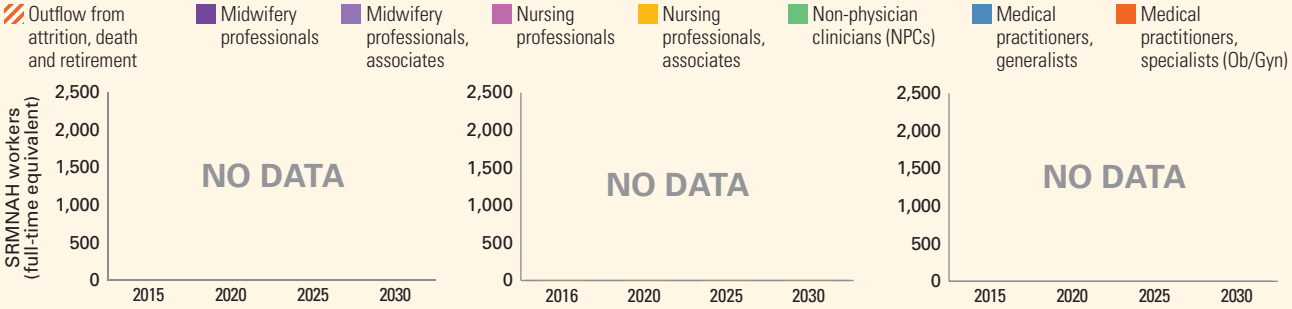
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

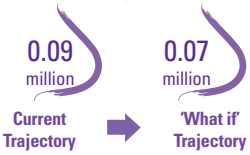
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



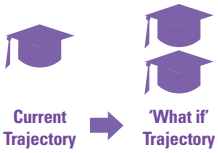
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?



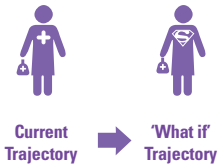
Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



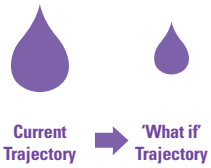
NO DATA

3 Efficiency improved by 2% per year until 2030?



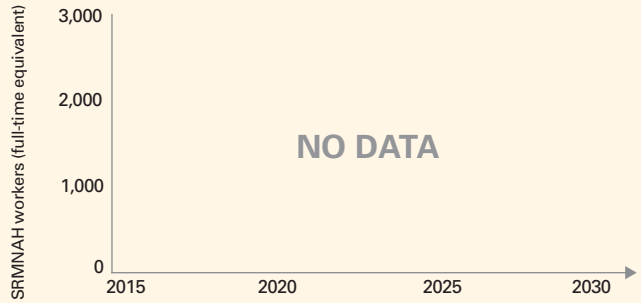
NO DATA

4 Attrition was halved in the next 5 years (2018-2023)?

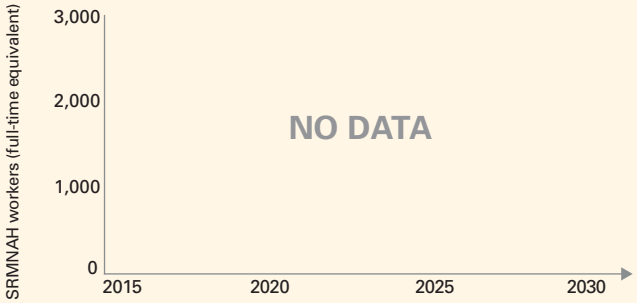


NO DATA

CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Registered midwives, enrolled midwives, Nurse-midwives, Enrolled nurse-midwives, Health assistants, Physicians (general), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

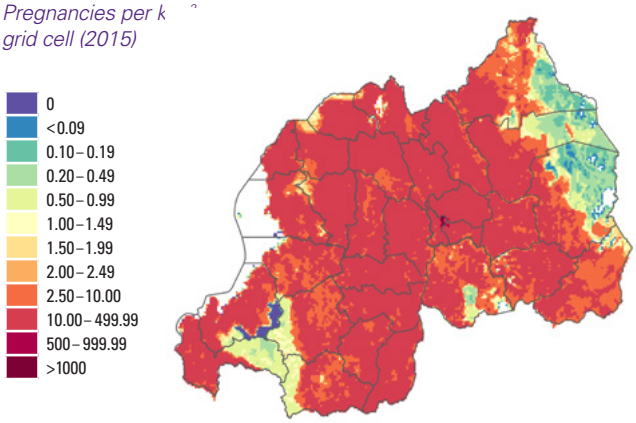
RWANDA

In 2015, of an estimated total population of 11.6 million, 72% were living in rural areas and 3.0 million (26%) were women of reproductive age; the total fertility rate was 3.6. By 2030, the population is projected to increase by 36% to 15.8 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.7 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 42.7 million antenatal visits, 7.4 million births and 28.8 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

625,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	7,563,000 family planning visits
ANTENATAL (deliveries x 4)	=	1,729,000 routine visits
BIRTH	=	422,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	1,688,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	1,400	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	88	75
Nurses	6,300	50
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	*na*	*na*
Physicians, generalists	1,052	60
Obstetricians & gynaecologists	56	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

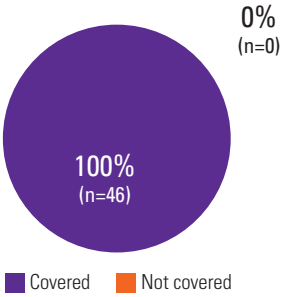
POTENTIAL MET NEED = 59%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

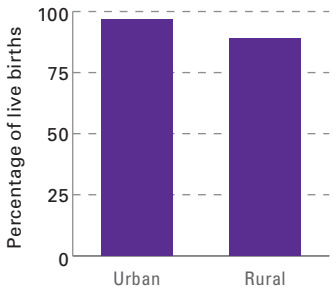
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2017
Minimum number of supervised births in curriculum	60
Number of 2015 graduates/as % of all practising midwives	150/10
% of graduates employed in SRMNAH within one year	-%

MIDWIFERY REGULATION

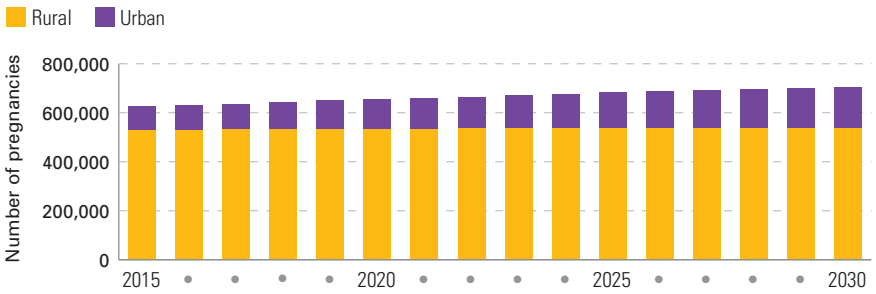
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	6
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/No

PROFESSIONAL ASSOCIATIONS[4]

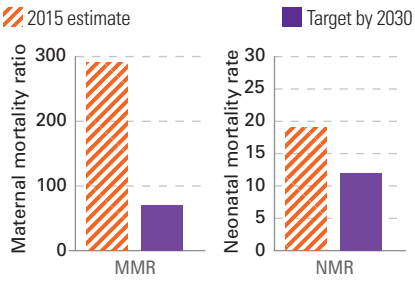
Year of creation of professional associations	2011
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	No
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

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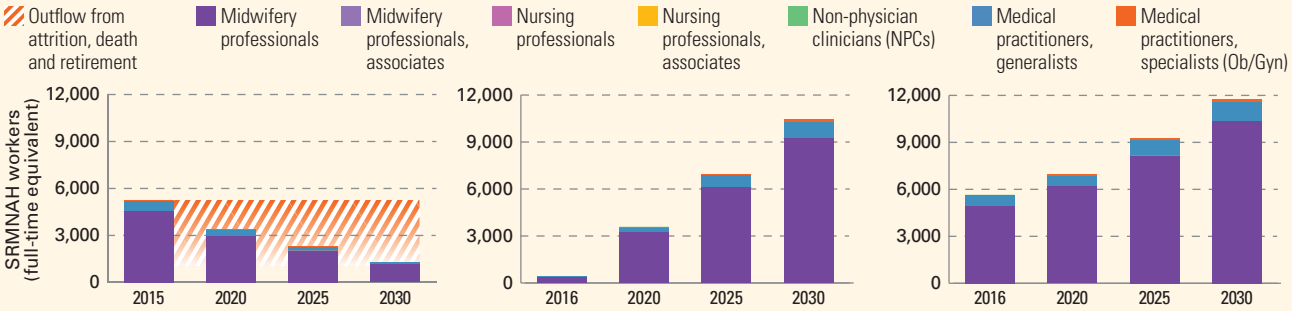
PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

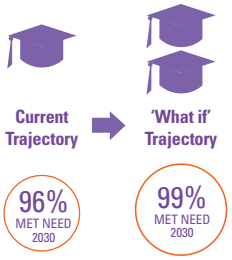


WHAT IF... *Estimates of potential met need based on available data.*

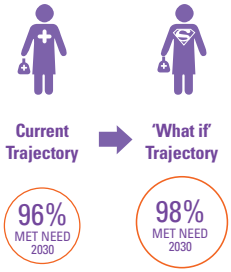
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

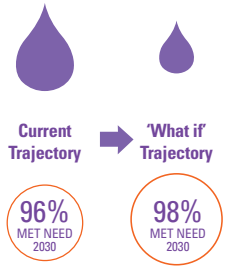
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



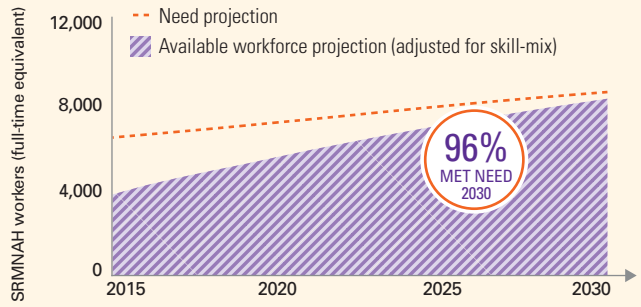
3 Efficiency improved by 2% per year until 2030?



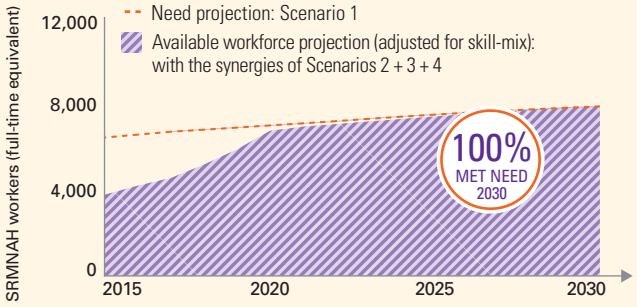
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Midwives, Nurse-midwives, General Nurses, Physicians (gerneral), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

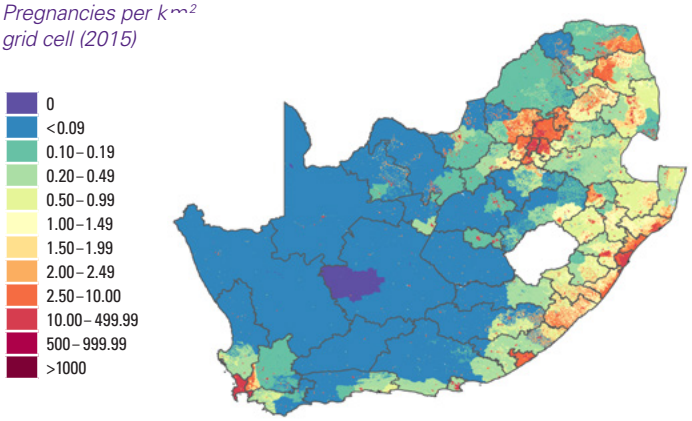
SOUTH AFRICA

In 2015, of an estimated total population of 54.5 million, 36% were living in rural areas and 14.7 million (27%) were women of reproductive age; the total fertility rate was 2.3. By 2030, the population is projected to increase by 10% to 60.0 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 1.4 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 91.0 million antenatal visits, 16.7 million births and 65.5 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

1,509,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	42,556,000 family planning visits
ANTENATAL (deliveries x 4)	=	4,436,000 routine visits
BIRTH	=	1,087,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	4,346,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	1,284	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	*na*	*na*
Nurses	124,045	–
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	581	50
Physicians, generalists	43,277	–
Obstetricians & gynaecologists	1,247	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

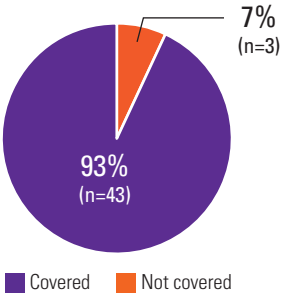
POTENTIAL MET NEED = 100%

workforce time available / *workforce time needed*

Estimate of potential met need (national aggregate) based on available data.

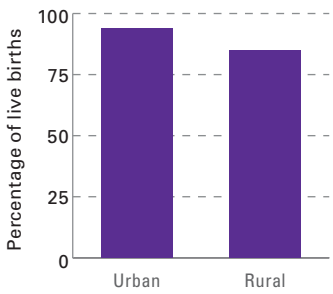
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	4
Standardized curriculum? Year of last update	Yes, 2013
Minimum number of supervised births in curriculum	15
Number of 2015 graduates/as % of all practising midwives	–/–
% of graduates employed in SRMNAH within one year	–

MIDWIFERY REGULATION

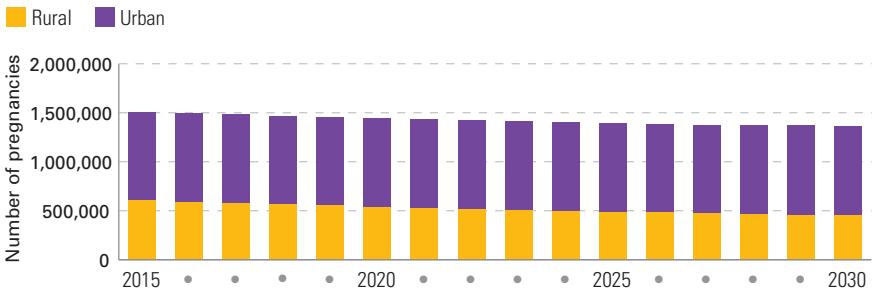
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/No

PROFESSIONAL ASSOCIATIONS[4]

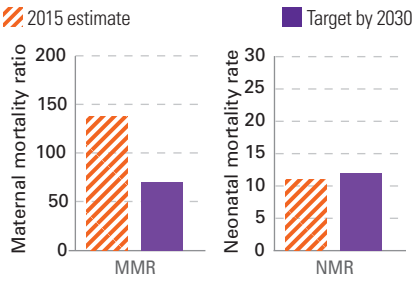
Year of creation of professional associations	1993, 1996, 2001
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

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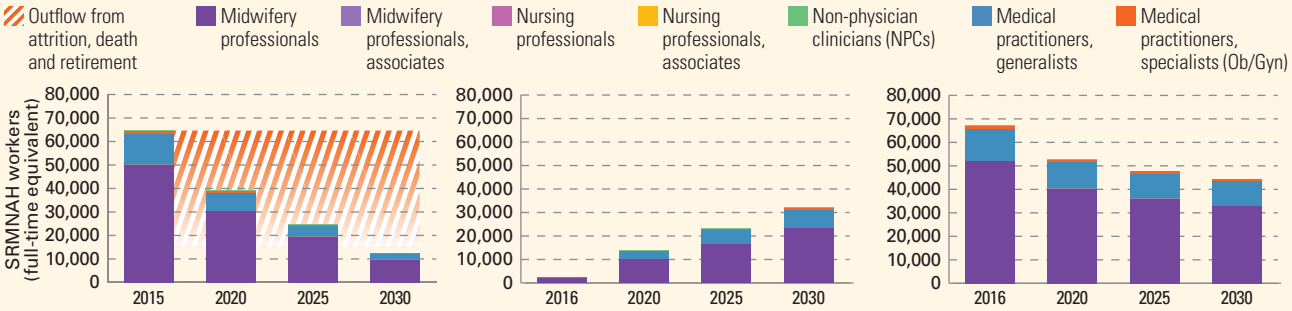
PROJECTED OUTFLOWS

PROJECTED INFLOWS

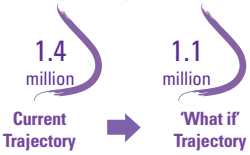
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



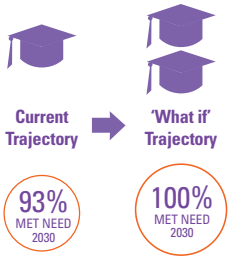
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?

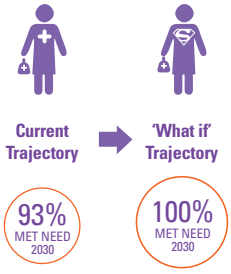


Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

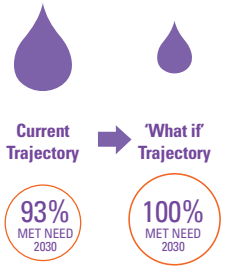
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



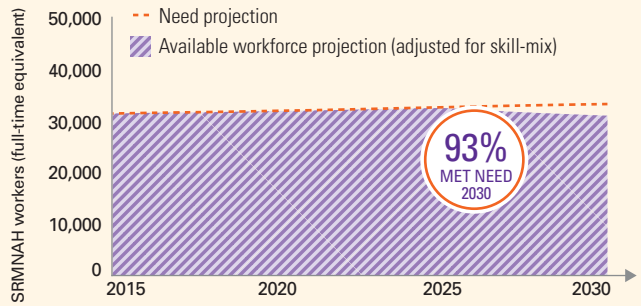
3 Efficiency improved by 2% per year until 2030?



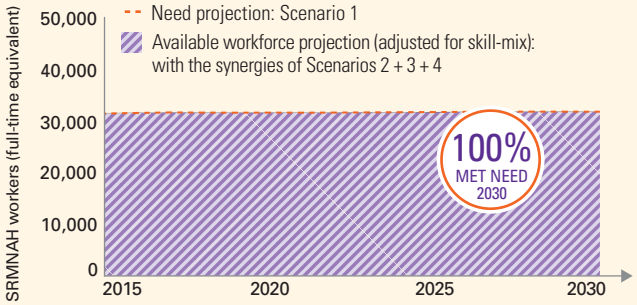
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Advanced midwives, Professional nurses, Clinical associates, General practitioners, Gynaecologists
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

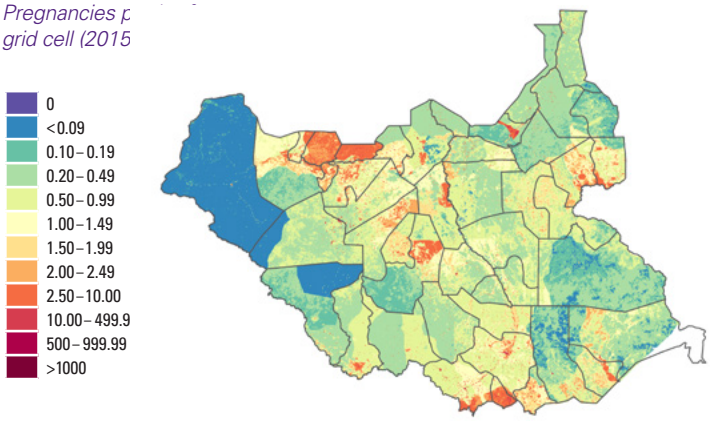
SOUTH SUDAN

In 2015, of an estimated total population of 12.3 million, 81% were living in rural areas and 2.9 million (24%) were women of reproductive age; the total fertility rate was 4.7. By 2030, the population is projected to increase by 44% to 17.8 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.8 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 45.2 million antenatal visits, 7.7 million births and 30.2 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

639,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies p
grid cell (2015



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	3,822,000 family planning visits
ANTENATAL (deliveries x 4)	=	1,747,000 routine visits
BIRTH	=	426,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	1,705,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	–	100
Midwives, auxiliary	–	100
Nurse-midwives	–	100
Nurses	–	25
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	–	20
Physicians, generalists	–	20
Obstetricians & gynaecologists	–	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

POTENTIAL MET NEED =

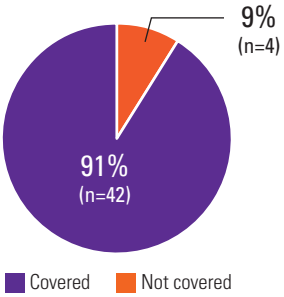
NO DATA

workforce time available / *workforce time needed*

Estimate of potential met need (national aggregate) based on available data.

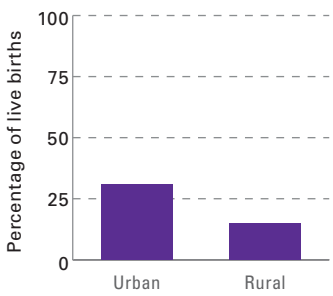
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	2.6
Standardized curriculum? Year of last update	Yes, 2015
Minimum number of supervised births in curriculum	40
Number of 2015 graduates/as % of all practising midwives	–/–
% of graduates employed in SRMNAH within one year	50%

MIDWIFERY REGULATION

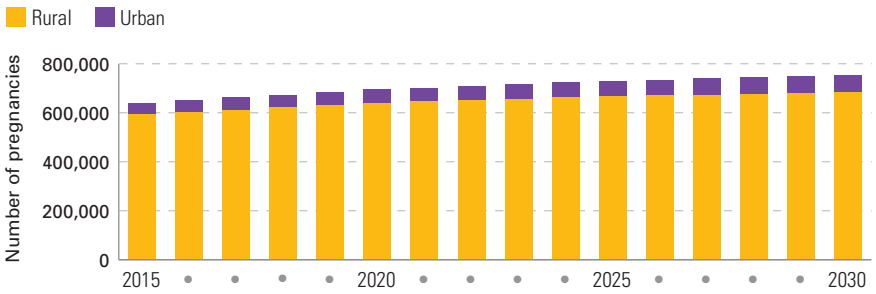
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	No
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	No
A live registry of licensed midwives exists	No
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

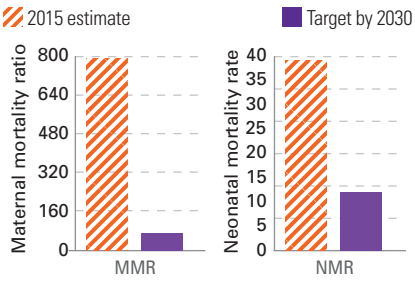
Year of creation of professional associations	2011
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

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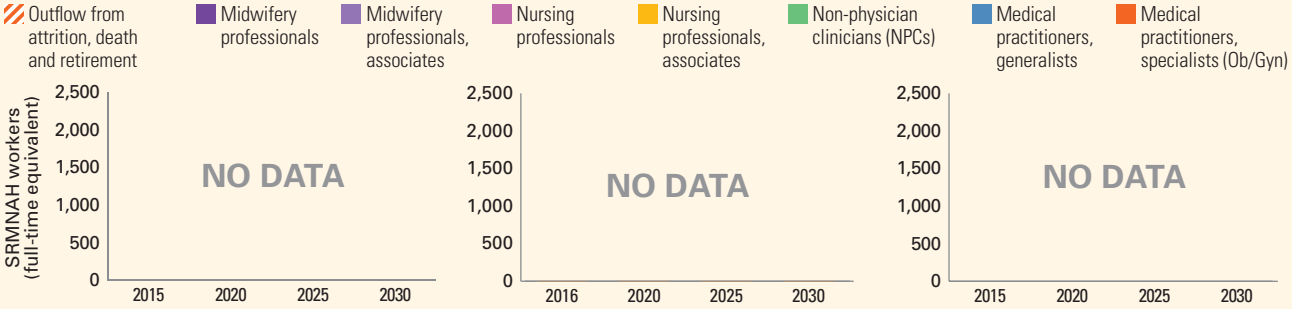
PROJECTED OUTFLOWS

PROJECTED INFLOWS

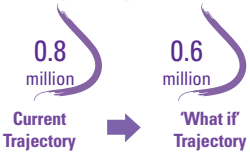
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



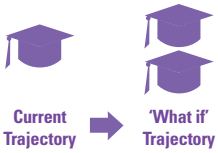
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?



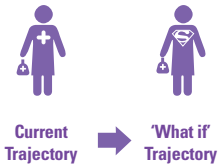
Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



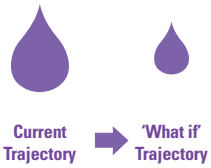
NO DATA

3 Efficiency improved by 2% per year until 2030?



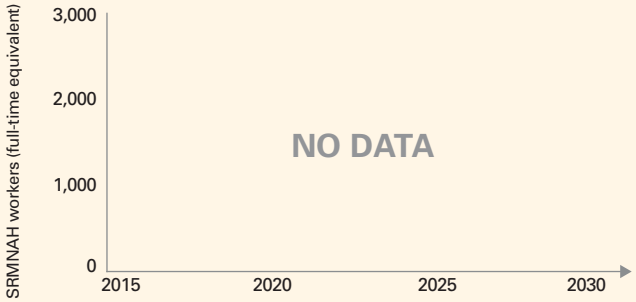
NO DATA

4 Attrition was halved in the next 5 years (2018-2023)?

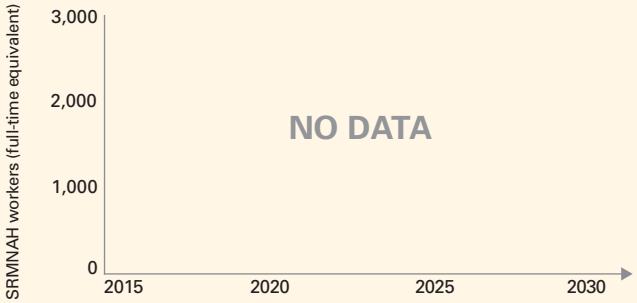


NO DATA

CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Midwife (diploma), midwife (enrolled), Community midwife, Registered nurse/registered midwife, Enrolled nurse/enrolled midwife, Registered nurse, enrolled nurse, Clinical officer, Medical officer, Consultant obstetrician
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

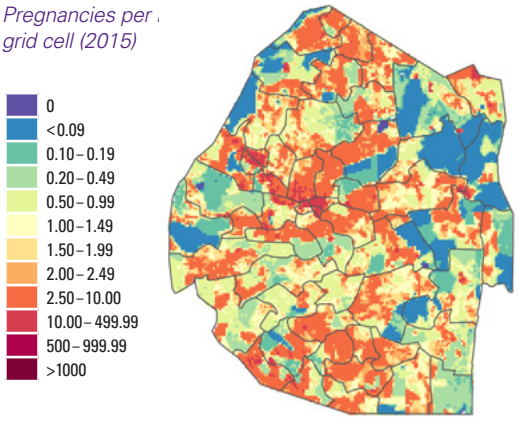
SWAZILAND

In 2015, of an estimated total population of 1.3 million, 79% were living in rural areas and 0.3 million (23%) were women of reproductive age; the total fertility rate was 3.1. By 2030, the population is projected to increase by 17% to 1.5 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.05 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 3.4 million antenatal visits, 0.6 million births and 2.3 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

55,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	1,017,000 family planning visits
ANTENATAL (deliveries x 4)	=	153,000 routine visits
BIRTH	=	37,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	150,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	*na*	*na*
Midwives, auxiliary	*na*	*na*
Nurse-midwives	1,376	98
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	700	100
Non-physician clinicians	*na*	*na*
Physicians, generalists	259	30
Obstetricians & gynaecologists	6	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

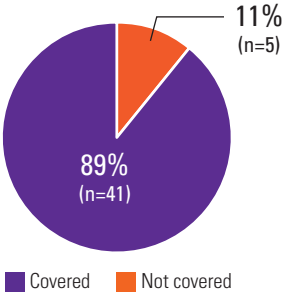
POTENTIAL MET NEED = 78%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

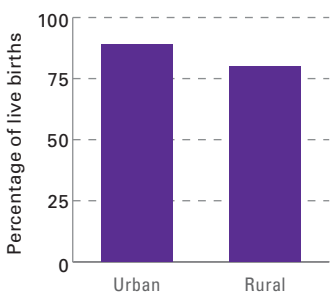
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	4
Standardized curriculum? Year of last update	Yes, 2013
Minimum number of supervised births in curriculum	60
Number of 2015 graduates/as % of all practising midwives	143/10
% of graduates employed in SRMNAH within one year	98%

MIDWIFERY REGULATION

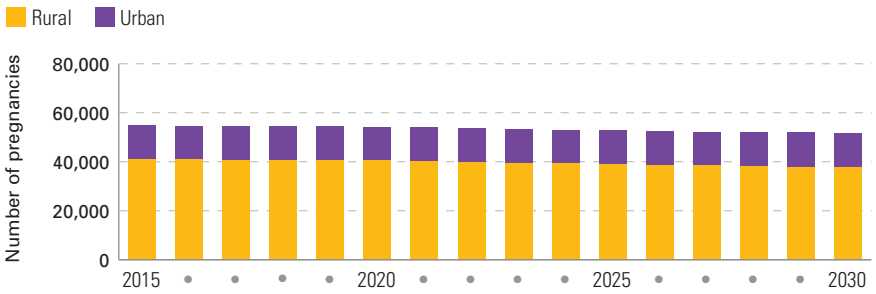
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	5
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

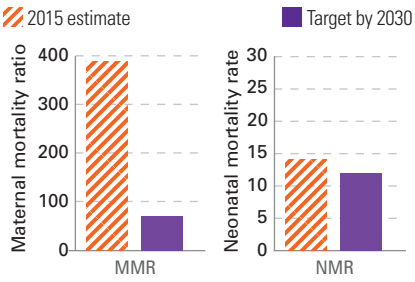
Year of creation of professional associations	1965, 1997
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



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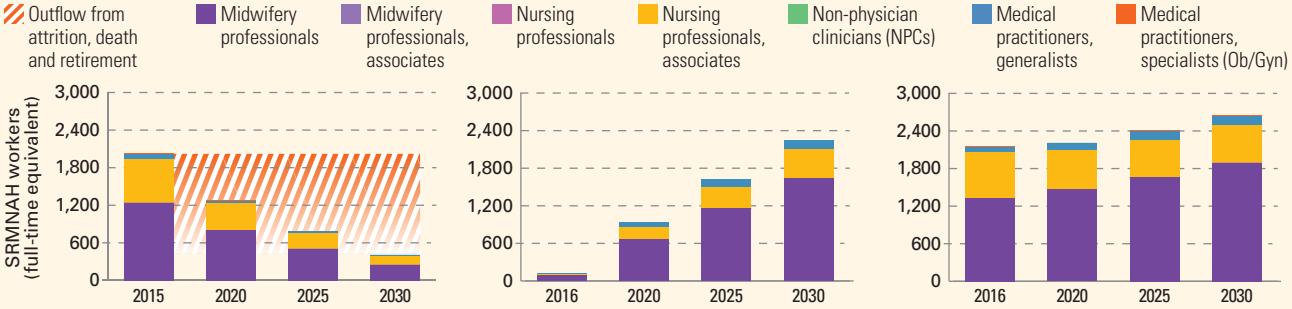
PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



WHAT IF... *Estimates of potential met need based on available data.*

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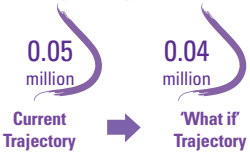
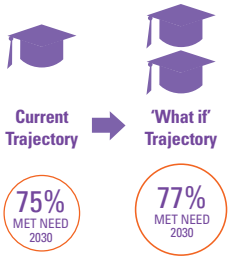


Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



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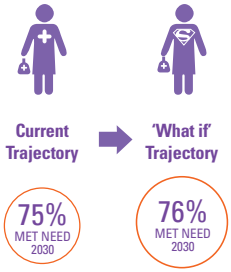

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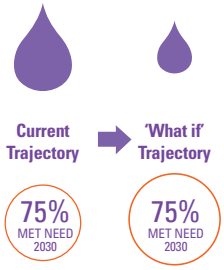
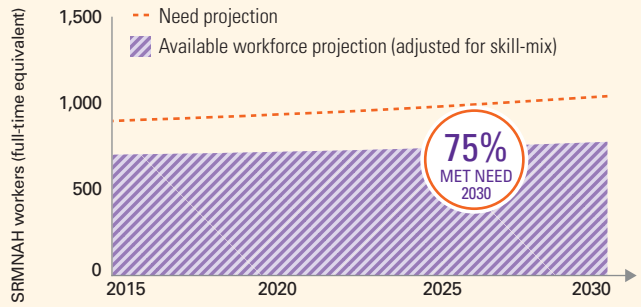
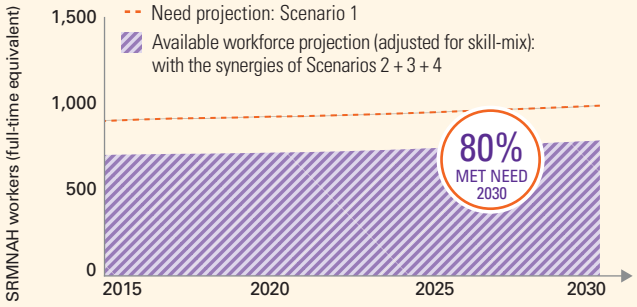


CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Nurse-midwives, Nursing assistants, Physicians (general), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

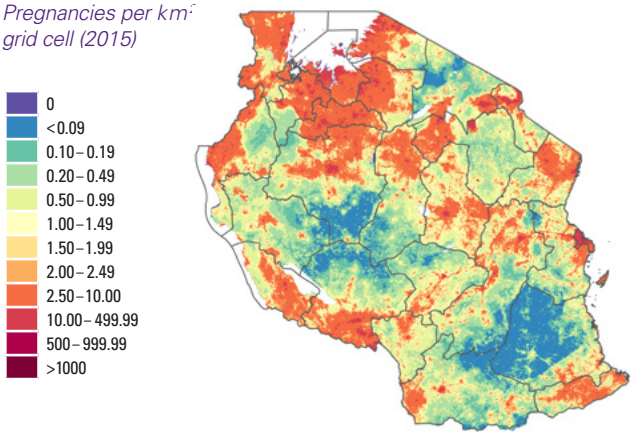
TANZANIA (MAINLAND)

In 2015, of an estimated total population of 52.0 million, 69% were living in rural areas and 12.0 million (23%) were women of reproductive age; the total fertility rate was 4.9. By 2030, the population is projected to increase by 55% to 80.6 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 3.6 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 202.4 million antenatal visits, 36.7 million births and 143.0 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

2,753,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	24,678,000 family planning visits
ANTENATAL (deliveries x 4)	=	7,982,000 routine visits
BIRTH	=	1,944,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	7,778,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	*na*	*na*
Midwives, auxiliary	*na*	*na*
Nurse-midwives	21,275	88
Nurses	*na*	*na*
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	12,430	37
Physicians, generalists	742	30
Obstetricians & gynaecologists	67	83

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

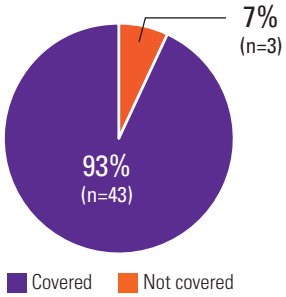
POTENTIAL MET NEED = 64%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

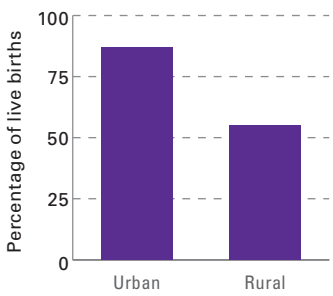
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2017
Minimum number of supervised births in curriculum	25
Number of 2015 graduates/as % of all practising midwives	3,807/18
% of graduates employed in SRMNAH within one year	–

MIDWIFERY REGULATION

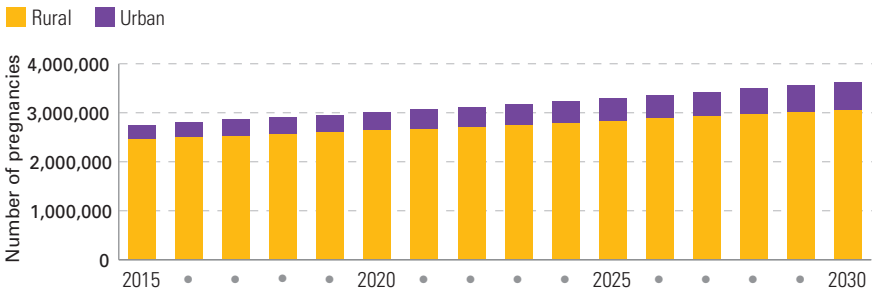
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	6
Midwives allowed to provide injectable contraceptives/intrauterine devices	-/-

PROFESSIONAL ASSOCIATIONS[4]

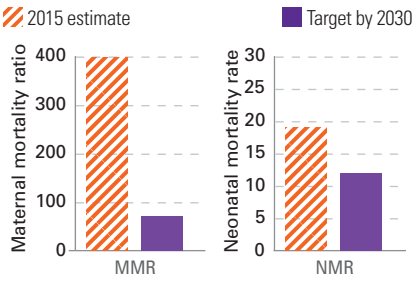
Year of creation of professional associations	1971, 1992
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

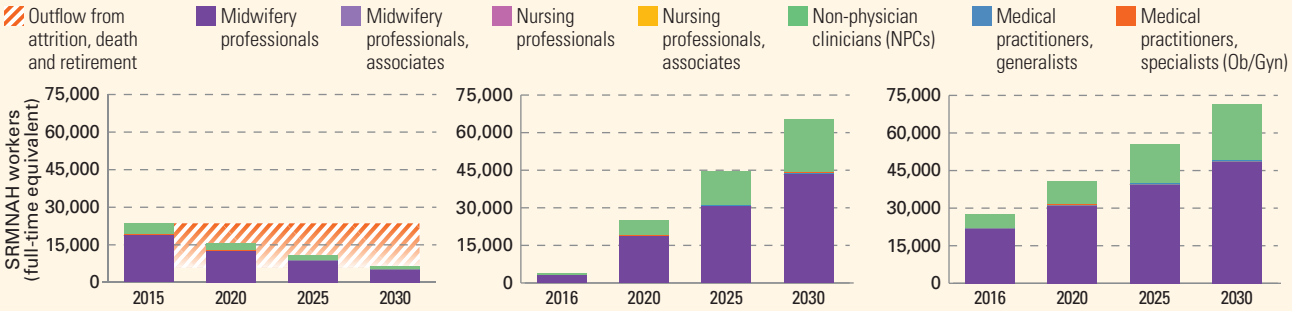
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

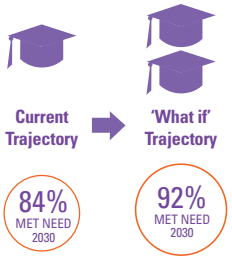


WHAT IF... *Estimates of potential met need based on available data.*

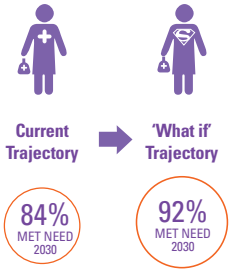
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

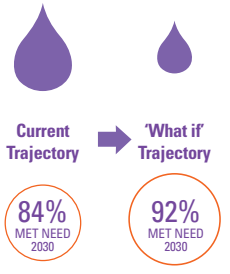
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



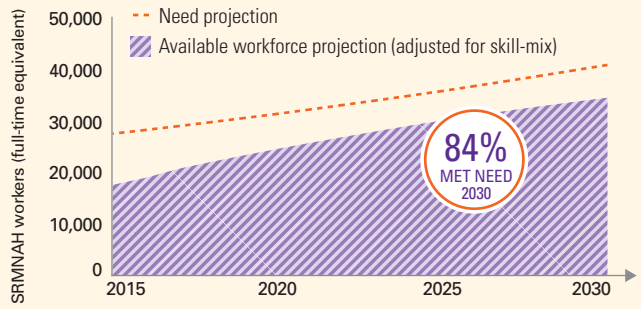
3 Efficiency improved by 2% per year until 2030?



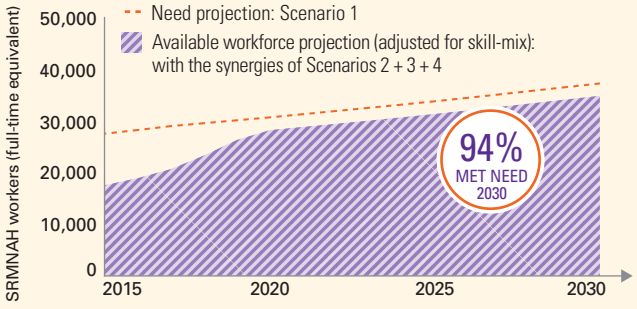
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Nurse-midwives (enrolled and registered), Nursing officers, Assistant nursing officers, Clinical officers (CO), Clinical assistants, Assistant medical officers (AMO), Medical officers, Ob/gyn
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

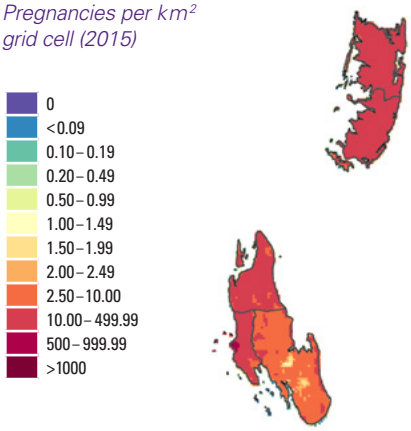
TANZANIA (ZANZIBAR)

In 2015, of an estimated total population of 1.5 million, 54% were living in rural areas and 0.3 million (20%) were women of reproductive age; the total fertility rate was 4.9. By 2030, the population is projected to increase by 55% to 2.3 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.10 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 5.5 million antenatal visits, 1.0 million births and 3.9 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

72,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	563,000 family planning visits
ANTENATAL (deliveries x 4)	=	209,000 routine visits
BIRTH	=	51,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	204,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	52	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	169	100
Nurses	33	100
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	36	–
Physicians, generalists	13	45
Obstetricians & gynaecologists	2	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

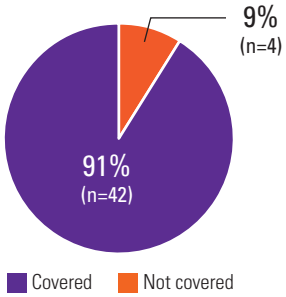
POTENTIAL MET NEED = 56%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

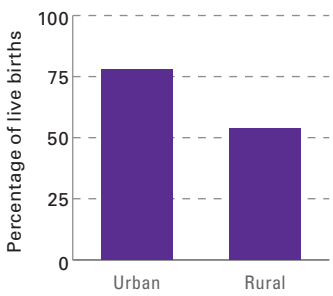
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2017
Minimum number of supervised births in curriculum	15
Number of 2015 graduates/as % of all practising midwives	117/53
% of graduates employed in SRMNAH within one year	–

MIDWIFERY REGULATION

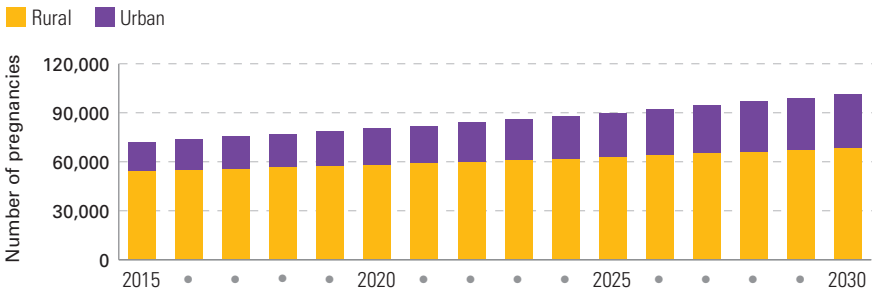
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

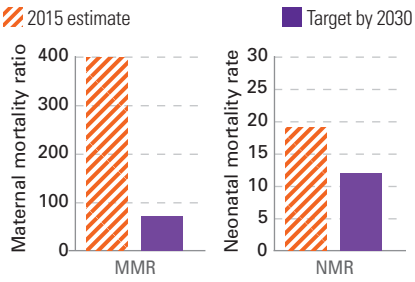
Year of creation of professional associations	1992
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

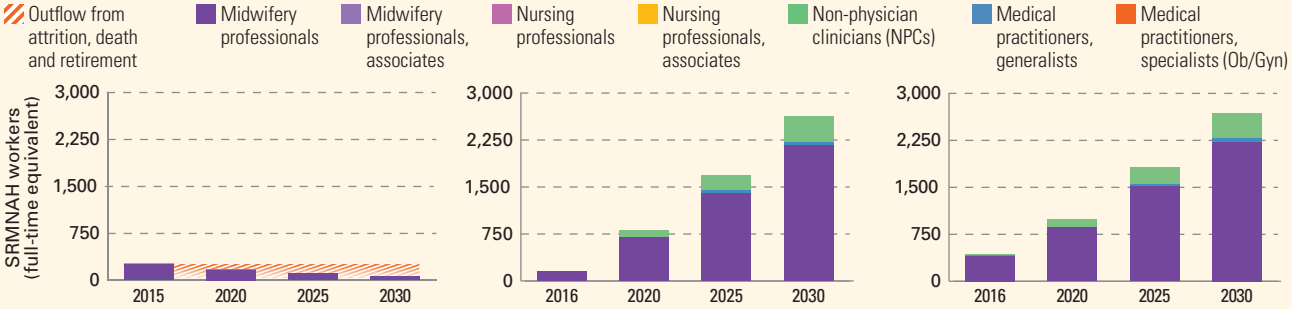
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)

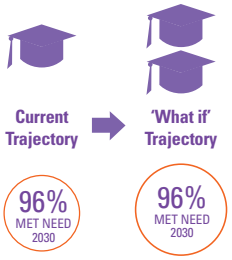


WHAT IF... *Estimates of potential met need based on available data.*

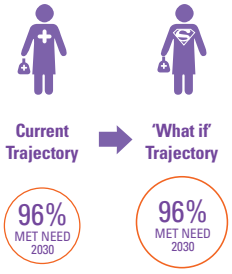
1 The number of pregnancies reduced by 20% by 2030?

Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

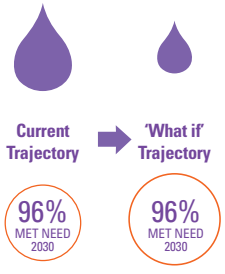
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



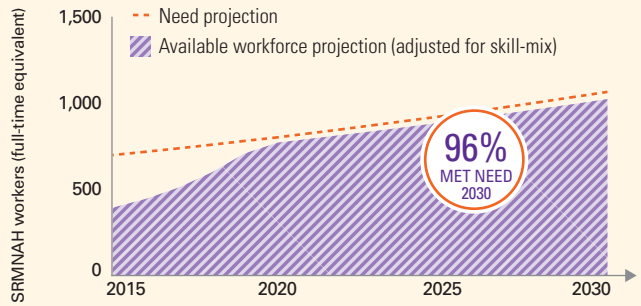
3 Efficiency improved by 2% per year until 2030?



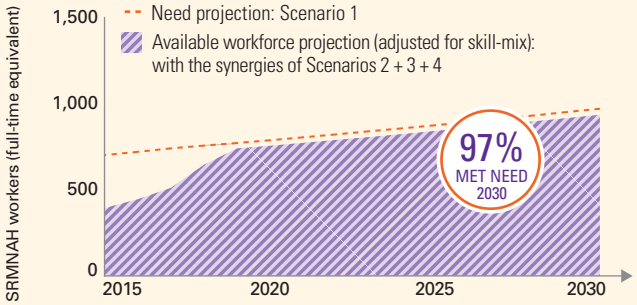
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Midwives, Nurse-midwives, Public health nurse B (PHNB), Clinical officers and assistant medical officers, Physicians (general), Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

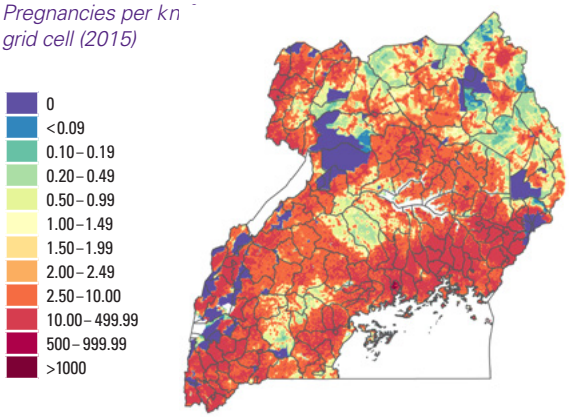
UGANDA

In 2015, of an estimated total population of 39.0 million, 84% were living in rural areas and 8.7 million (22%) were women of reproductive age; the total fertility rate was 5.5. By 2030, the population is projected to increase by 59% to 61.9 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 3.4 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 191.7 million antenatal visits, 32.2 million births and 125.4 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

2,591,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	20,085,000 family planning visits
ANTENATAL (deliveries x 4)	=	6,967,000 routine visits
BIRTH	=	1,695,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	6,781,000 routine visits

WORKFORCE AVAILABILITY (2015)

Country classification of staff working in SRMNAH[1]		Time spent on SRMNAH %
Midwives	9,802	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	574	50
Nurses	20,725	20
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	3,156	20
Physicians, generalists	1,408	40
Obstetricians & gynaecologists	42	90

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

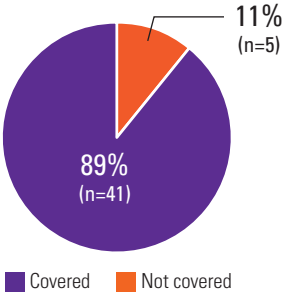
POTENTIAL MET NEED = 59%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

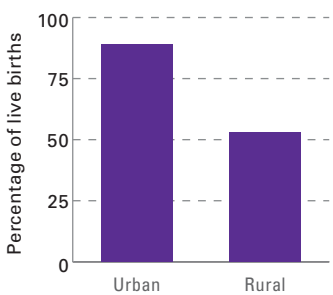
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2015
Minimum number of supervised births in curriculum	70
Number of 2015 graduates/as % of all practising midwives	3,797/37
% of graduates employed in SRMNAH within one year	–

MIDWIFERY REGULATION

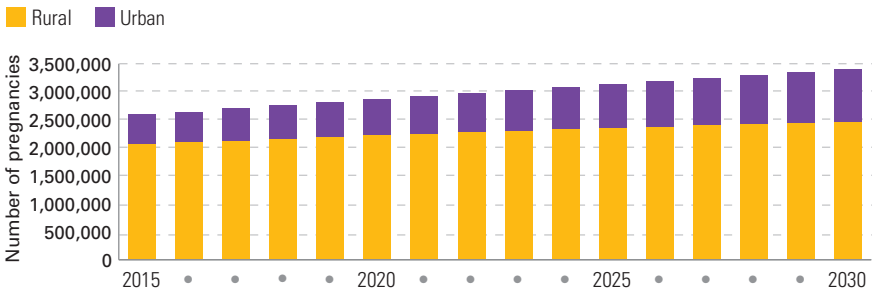
Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	6
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

Year of creation of professional associations	1948, 2003, 2016
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



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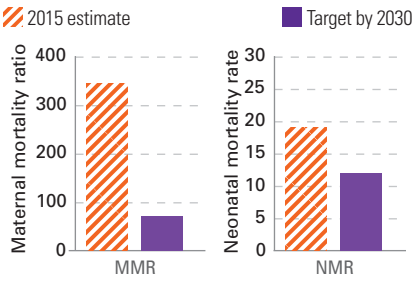

ESTIMATES AND PROJECTIONS TO 2030

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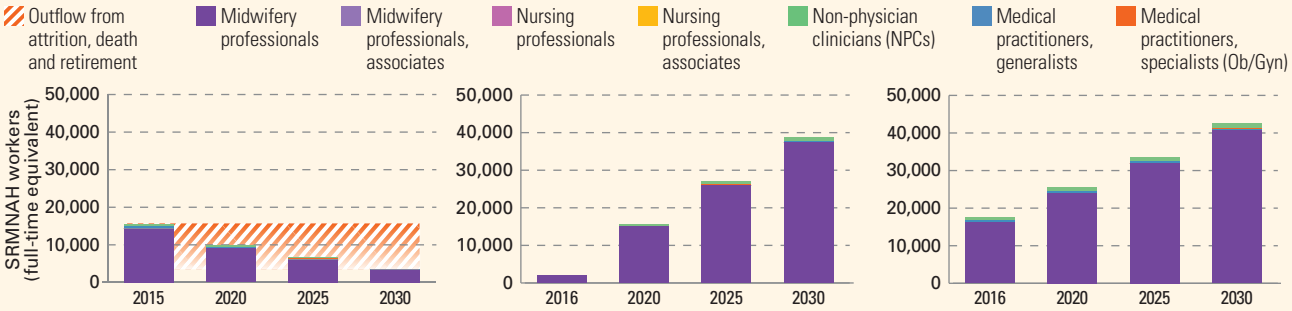
PROJECTED OUTFLOWS

PROJECTED INFLOWS

PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



WHAT IF... *Estimates of potential met need based on available data.*

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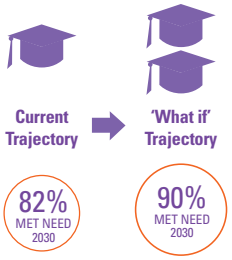

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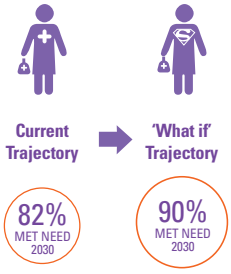

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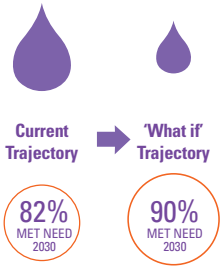
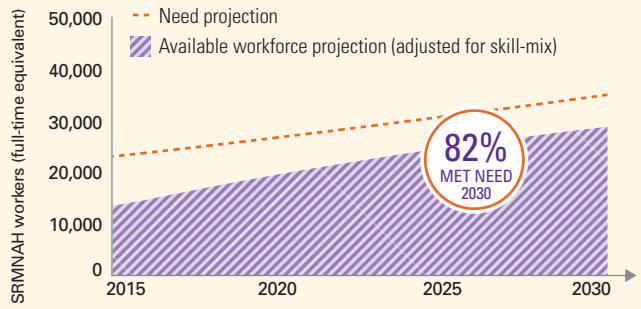
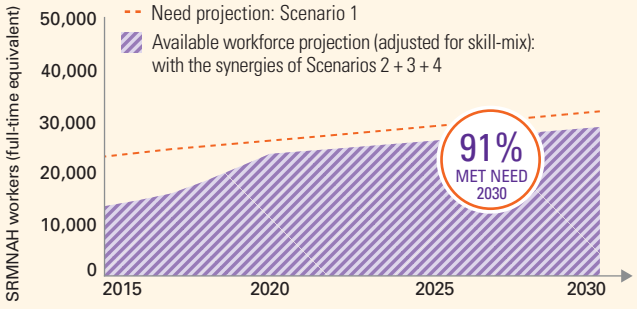


CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Registered midwife (diploma), Enrolled midwife (certificate), Registered nurse-midwives (Diploma), Registered nurses (Bachelor), Registered comprehensive nurses (Diploma), Enrolled comprehensive nurses (Certificate), Registered nurses (Diploma), Enrolled nurses (Certificate), MSc nurses, Medical clinical officers, Medical officers, Medical officer special grade (obs/gyn)
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

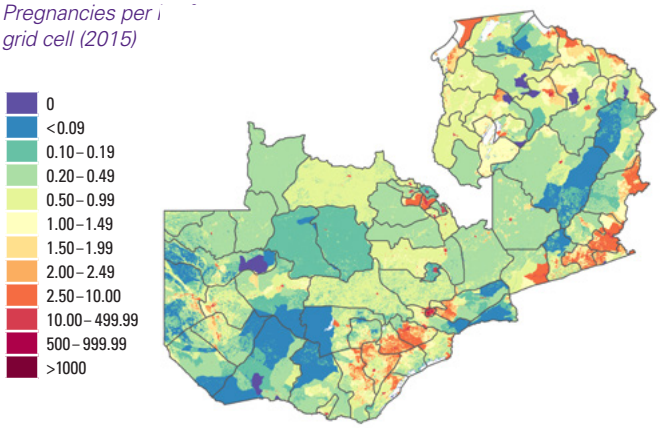
ZAMBIA

In 2015, of an estimated total population of 16.2 million, 60% were living in rural areas and 3.7 million (23%) were women of reproductive age; the total fertility rate was 5.1. By 2030, the population is projected to increase by 56% to 25.3 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 1.4 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 75.2 million antenatal visits, 12.9 million births and 50.4 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

982,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	9,630,000 family planning visits
ANTENATAL (deliveries x 4)	=	2,705,000 routine visits
BIRTH	=	658,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	2,632,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	192	100
Midwives, auxiliary	*na*	*na*
Nurse-midwives	2,806	100
Nurses	13,424	–
Nurses or nurse-midwives, auxiliary	*na*	*na*
Non-physician clinicians	1,091	–
Physicians, generalists	1,150	–
Obstetricians & gynaecologists	46	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

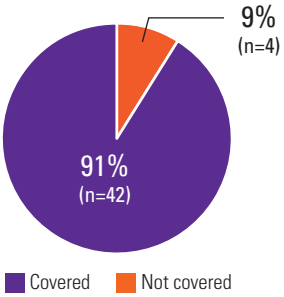
POTENTIAL MET NEED = 56%

workforce time available / workforce time needed

Estimate of potential met need (national aggregate) based on available data.

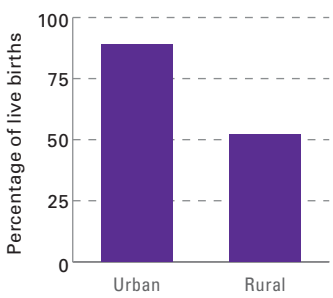
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	3
Standardized curriculum? Year of last update	Yes, 2015
Minimum number of supervised births in curriculum	30
Number of 2015 graduates/as % of all practising midwives	540/18
% of graduates employed in SRMNAH within one year	99%

MIDWIFERY REGULATION

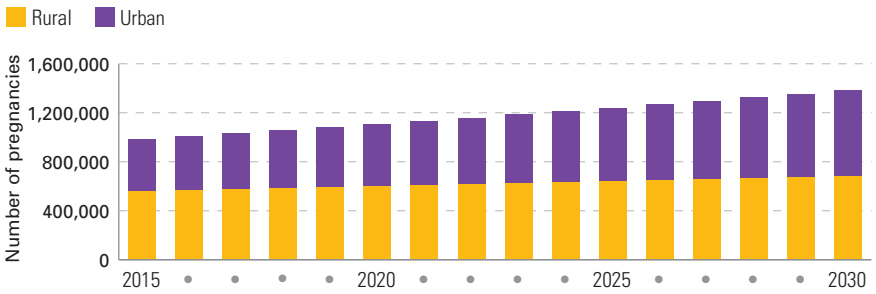
Legislation exists recognizing midwifery as an autonomous profession	No
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	7
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

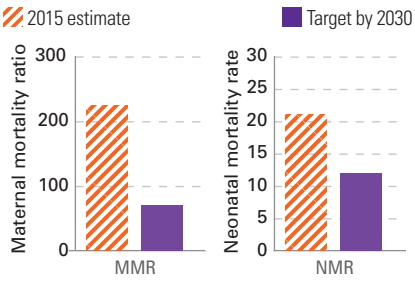
Year of creation of professional associations	2011
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	No
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	No

na = not applicable; – = missing data

PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



MORTALITY REDUCTION[5]



ESTIMATES AND PROJECTIONS TO 2030

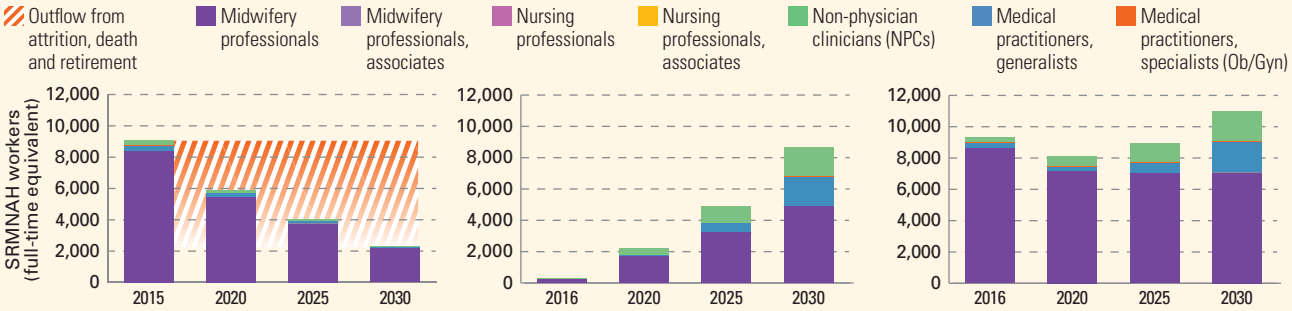
This section of the brief uses reported country data to calculate needs-based planning estimates and projections to 2030. The projections are sensitive to reported enrolment, graduation, % time spent on SRMNAH services, age distribution, roles and attrition. In the absence of country data, standardized, evidence-based assumptions are used. The projections are indicative and should be used to verify the accuracy of country data and inform further policy discussion. Further information in the "How to read" section on page 39.

PROJECTED OUTFLOWS

PROJECTED INFLOWS

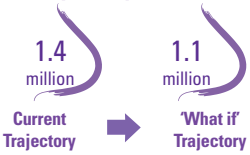
PROJECTED WORKFORCE

by International Standard Classification of Occupations (ISCO-08)



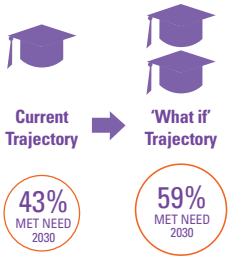
WHAT IF... *Estimates of potential met need based on available data.*

1 The number of pregnancies reduced by 20% by 2030?

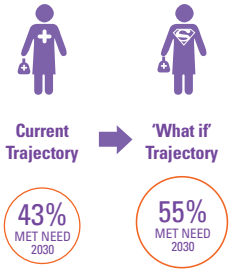


Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

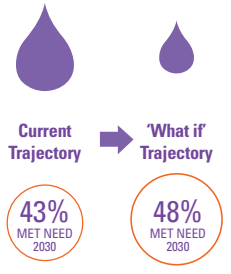
2 The number of midwife, nurse, NPC and physician graduates doubled by 2025?



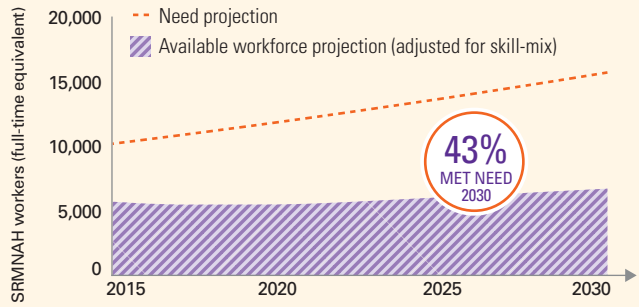
3 Efficiency improved by 2% per year until 2030?



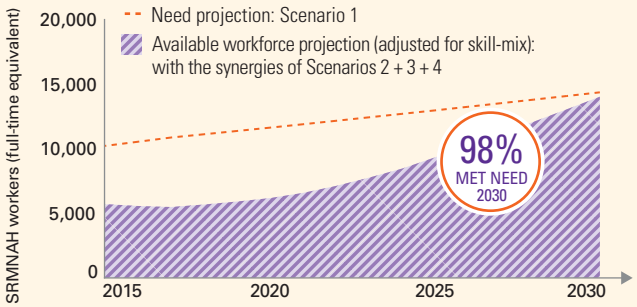
4 Attrition was halved in the next 5 years (2018-2023)?



CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Midwives, RNM ZEM, RN, ZEN, Clinical officer gen medical licentiates, Medical officers, Consultants
2. Most recent DHS or MICS Population Survey
3. Information refers to Midwife and Nurse-Midwife Cadres
4. National Associations which are open to Midwives and/or Nurse-Midwives
5. Targets set under SDGs

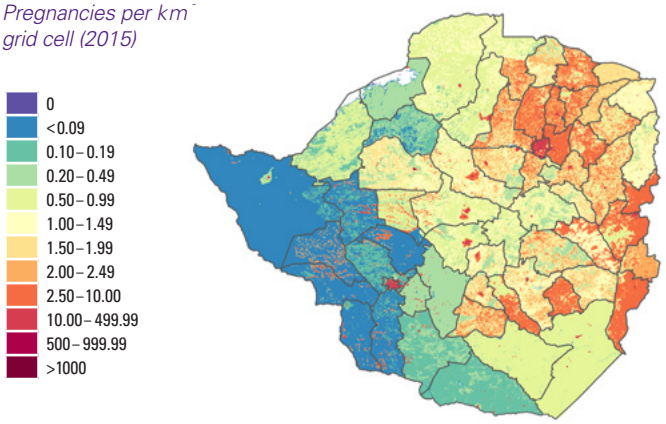
ZIMBABWE

In 2015, of an estimated total population of 15.6 million, 67% were living in rural areas and 4.0 million (26%) were women of reproductive age; the total fertility rate was 3.7. By 2030, the population is projected to increase by 37% to 21.4 million. To achieve universal access to sexual, reproductive, maternal, newborn and adolescent (SRMNAH) care, health services must respond to 0.7 million pregnancies per annum by 2030. The health system implications include how best to configure and equitably deploy the SRMNAH workforce to cover at least 42.9 million antenatal visits, 7.7 million births and 30.0 million post-partum/postnatal visits between 2015 and 2030.

WHAT WOMEN AND NEWBORNS NEED (2015)

655,000 PREGNANCIES A YEAR = HOW MANY EPISODES OF CARE?

Pregnancies per km² grid cell (2015)



APPROX.

PRE-PREGNANCY (all women of reproductive age)	=	12,432,000 family planning visits
ANTENATAL (deliveries x 4)	=	1,873,000 routine visits
BIRTH	=	459,000 skilled birth attendance
POST-PARTUM (births x 4) + POSTNATAL (newborns x 4)	=	1,835,000 routine visits

WORKFORCE AVAILABILITY (2015)

	Country classification of staff working in SRMNAH[1]	Time spent on SRMNAH %
Midwives	*na*	*na*
Midwives, auxiliary	*na*	*na*
Nurse-midwives	4,715	100
Nurses	17,022	75
Nurses or nurse-midwives, auxiliary	1,567	88
Non-physician clinicians	*na*	*na*
Physicians, generalists	453	–
Obstetricians & gynaecologists	9	100

PRE-PREGNANCY
ANTENATAL
BIRTH
POST-PARTUM
POSTNATAL

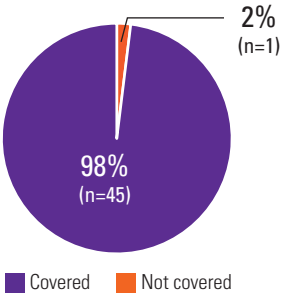
POTENTIAL MET NEED = 83%

workforce time available / *workforce time needed*

Estimate of potential met need (national aggregate) based on available data.

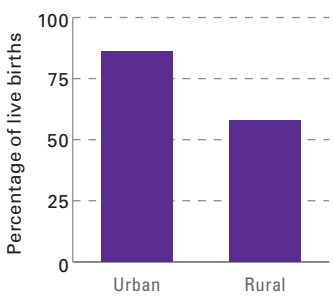
FINANCIAL ACCESSIBILITY

Percentage of 46 RMNH Essential Interventions included in minimum health benefits package, 2015



GEOGRAPHICAL ACCESSIBILITY

Percentage of live births with a skilled birth attendant (SBA)[2]



MIDWIFERY EDUCATION[3]

Minimum high-school requirement to start training	Grade 12+
Years of study required to qualify	5
Standardized curriculum? Year of last update	Yes, 2013
Minimum number of supervised births in curriculum	30
Number of 2015 graduates/as % of all practising midwives	853/18
% of graduates employed in SRMNAH within one year	100%

MIDWIFERY REGULATION

Legislation exists recognizing midwifery as an autonomous profession	Yes
A recognized definition of a professional midwife exists	Yes
A government body regulates midwifery practice	Yes
A licence is required to practise midwifery	Yes
A live registry of licensed midwives exists	Yes
Number of EmONC basic signal functions that midwives are allowed to practise (out of a possible 7)	6
Midwives allowed to provide injectable contraceptives/intrauterine devices	Yes/Yes

PROFESSIONAL ASSOCIATIONS[4]

Year of creation of professional associations	1995
Roles performed by professional associations:	
Continuing professional development	Yes
Advising or representing members accused of misconduct	Yes
Advising members on quality standards for SRMNAH care	Yes
Advising the Government on policy documents related to SRMNAH	Yes
Negotiating work or salary issues with the Government	Yes

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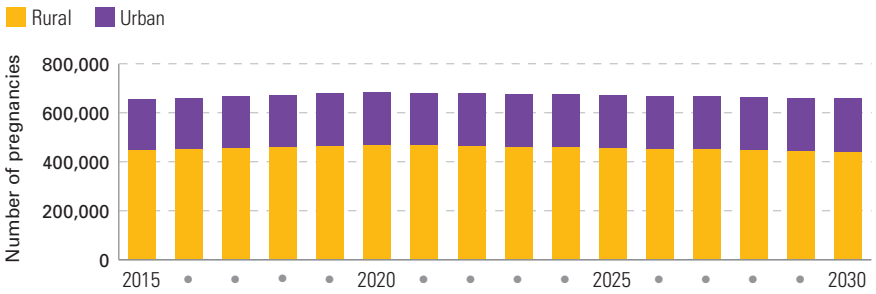
PROJECTED NUMBER OF PREGNANCIES BY YEAR: URBAN VS. RURAL



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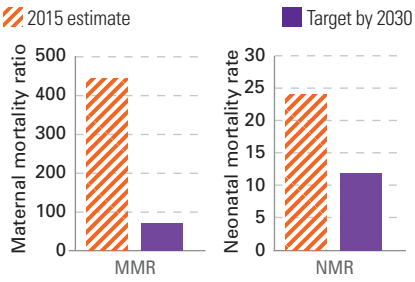

ESTIMATES AND PROJECTIONS TO 2030

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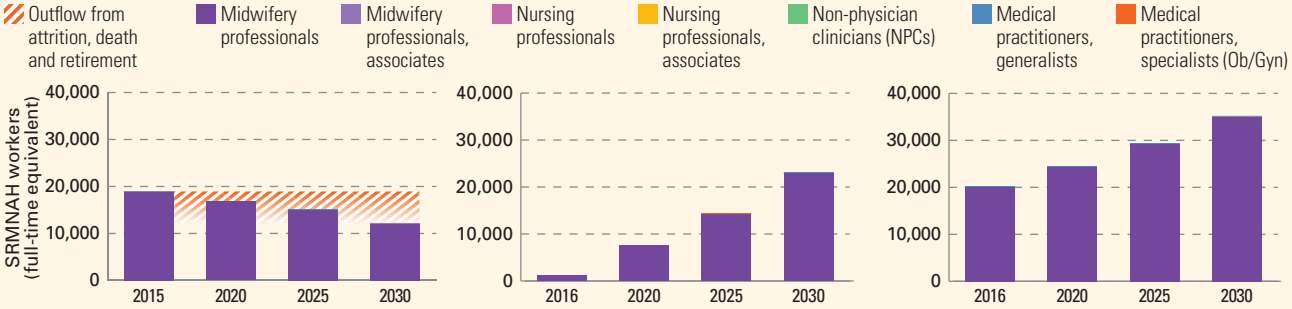
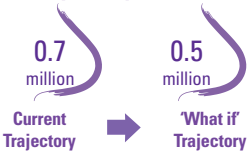
by International Standard Classification of Occupations (ISCO-08)



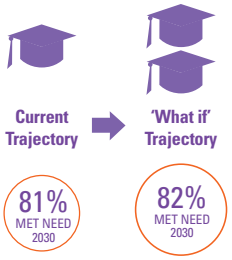
WHAT IF... *Estimates of potential met need based on available data.*

1 **The number of pregnancies reduced by 20% by 2030?**

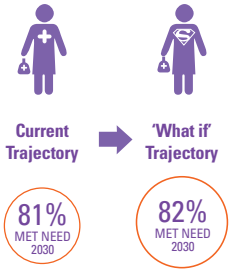


Immediate increase in met need for pregnancy, birth, post-partum/ postnatal care.

2 **The number of midwife, nurse, NPC and physician graduates doubled by 2025?**



3 **Efficiency improved by 2% per year until 2030?**



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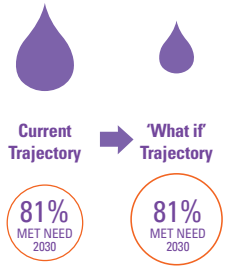
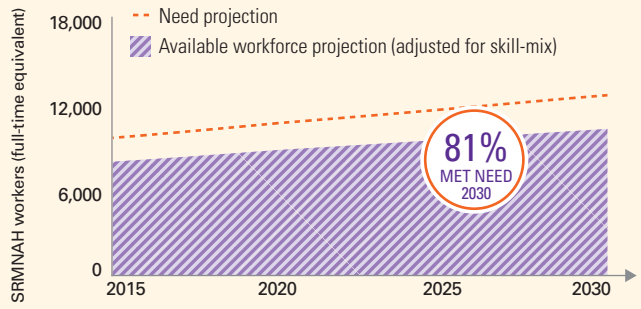
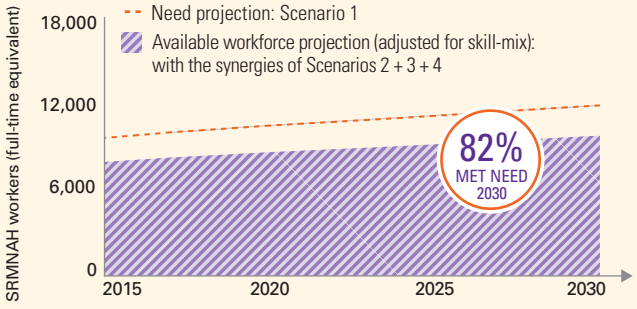


CURRENT TRAJECTORY



WHAT IF... TRAJECTORY



1. These health worker categories include the following country titles: Nurse-midwives, Registered general nurses, Primary care nurses, Government medical officer / hospital medical officer, Physicians (ob/gyn)
2. Most recent DHS or MICS Population Survey
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4. National Associations which are open to Midwives and/or Nurse-Midwives
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ANNEX 1: METHODOLOGY

Data collection

A self-completion questionnaire was used to collect quantitative and qualitative data on selected indicators. The questionnaire was identical to the one used for the 2014 *State of the World's Midwifery (SoWMy)* report, except for the addition of a new column to collect data on non-physician clinicians (NPCs), which is an important SRMNAH cadre in many countries in the region. The questionnaire was developed in 2013 through an iterative feedback process involving the core *SoWMy* team and representatives of WHO, UNFPA, ICM, ICN, FIGO and Jhpiego. Reference was made to international policy documents and agreed research and analysis frameworks. Information needs were balanced against the need to make the process manageable for respondents. A French translation of the original English language questionnaire was also produced.

In November 2016, the questionnaire was distributed to UNFPA country offices in all 23 countries in the region. A bi-lingual (English and French) email helpdesk was set up to take queries from countries, although in the event no queries were received except for requests for additional copies of the questionnaire, perhaps because many of the country focal points had also worked on the SoWMy questionnaire so were familiar with the requirements. By March 2017, 21 of the 23 countries had returned at least a partially-completed questionnaire and were therefore included in this report. The exceptions were Mauritius and Seychelles. Each participating country office worked with personnel from ministries of health, ministries of education, professional associations and other relevant stakeholders to complete the questionnaire. A full list of contributors can be found in Annex 2.

Once the completed questionnaire was submitted, the research team reviewed the responses and sent a list of queries and clarifications to the country focal point in either English or French as appropriate. These were mainly requests to find sources of missing data and questions about apparent contradictions or anomalies. Of the 21 participating countries, 18 responded to these queries (the exceptions were Lesotho, Namibia and South Sudan), and gave their approval to a number of changes to the original submission. The data were then inputted into an Excel database and a PDF file of the final submission was sent to each country which had agreed to changes to its original submission.

Secondary data from published sources were collected on demographics and epidemiology to inform the modelling of met need (see below and Annex 4 for details). The University of Southampton provided modelled estimates of numbers of pregnancies (disaggregated by urban and rural residence).

Data analysis & modelling

Most of the information in Chapter 2 of this report is the result of descriptive analysis of the data provided by the countries in the questionnaire. The 'potential met need' estimates and the information on the right-hand page of each country brief under the heading 'Estimates and projections to 2030' is the result of a modelling exercise which aimed to estimate the proportion of the need for SRMNAH services that could potentially be met by the country's SRMNAH workforce.

Potential met need was estimated for the 17 countries that provided headcount data for all their SRMNAH cadres (i.e. all except Angola, Lesotho, Namibia and South Sudan) using a mathematical model. Before commencing the modelling, we defined the key interventions representing need for SRMNAH care. For this we used the list of 46 essential interventions proposed by the Partnership for Maternal, Newborn and Child Health (PMNCH). The model itself was run separately for each country as follows:

1. Estimate how much health worker time would be required to deliver each essential intervention to everyone who needed it in the baseline year (2015), by:

a. estimating the number of women, adolescents and newborns requiring each intervention using demographic and epidemiological data from secondary sources (see Annex 4 for details).

b. estimating the average contact time required to deliver each intervention to one individual, using time estimates from the OneHealth tool where available, otherwise expert estimates (see Annex 4 for details),

c. based on the previous two quantities, estimating the total annual contact time required to deliver each intervention to all the individuals who need it,

d. translating the total annual hours required to deliver each intervention into the equivalent number of FTEs, where it was assumed that all SRMNAH workers work 40 hours per week, take an average of 5 days of sickness leave and 30 days of holiday per year, spend 70% of their available working hours providing clinical interventions (as opposed to administrative tasks and other duties)) and spend a (country-estimated) proportion of their clinical work time on SRMNAH care (as opposed to other types of health care), and

e. summing the number of FTEs needed to deliver universal coverage of all the interventions.

2. Estimate the amount of health worker time that is available to meet the need. This was done by allocating the annual number of FTE workers required to deliver each intervention to the least costly cadre with the relevant competencies. This step involves:

a. converting the health worker headcounts provided by each country to FTEs as per step 1d above,

b. defining the cadre(s) that should be responsible for providing at least one essential intervention (even if they do not currently do so) and assigning them to one of seven categories of health worker based on their job titles and whether or not they performed all of the midwifery tasks specified by the International Standard Classification of Occupations (ISCO) [68]: midwifery, nursing and auxiliary cadres were assigned to the 'midwifery professionals' category if they performed all of these tasks, even if their job title was not 'midwife'. The seven categories were ordered from lowest paid to highest paid (based on analysis of salaries provided in the survey) as follows: auxiliary midwives, auxiliary nurses, midwives, nurses, NPCs, generalist physicians, obstetricians/gynaecologists,

c. determining which of the SRMNAH interventions each cadre category should be competent to perform (even if they do not

currently do so) based on ISCO and Optimize MNH [69] for all cadres except NPCs (see Annex 3 for details), and

d. using a logical algorithm, allocating sequentially to each cadre category (starting with the least expensive) the number of FTEs required to provide universal coverage for each intervention based on whether or not that cadre is competent to deliver that intervention. If there were insufficient FTEs in the least expensive category to meet all of the need for an intervention, the unallocated time was allocated to the next category until either all of the need had been (theoretically) met or all of the available FTE time had been allocated.

Potential met need was calculated for 2015 and projected for every year up to 2030. To carry out the projections, the evolution of the workforce between 2015 and 2030 was modelled using a 'stock and flow' method, which takes into account the age structure of the workforce in 2015, then adds inflows for each year (from data provided by countries about the number of new graduates entering the workforce each year) and subtracts outflows for each year due to death (based on age-specific death rates), voluntary attrition (based on country estimates) and retirement (based on each country's statutory retirement age). Future projections were used for demographic data such as the number of women of reproductive age, but it was assumed that the baseline epidemiological conditions would continue to apply to 2030. If the country was not able to provide the necessary data, assumptions were made as detailed in Annex 5.

The model also allowed an exploration of alternative policy scenarios, assessing the impact on met need between 2015 and 2030 when certain parameters of the model are altered. In this report, we compare two possible scenarios: the current trajectory, where none of the parameters of the model is altered, and the "what if?" trajectory, which models the impact of a policy scenario which combines the following four outcomes: a) reducing pregnancies by 20% by 2030; b) doubling the number of midwife, nurse-midwife, non-physician clinician and physician graduates by 2025, starting in 2017; c) improving efficiency by 2% per year until 2030, starting in 2017; d) halving the rate of voluntary attrition between 2018 and 2023.

Although the modelling methodology for this regional survey was based on that used in *SoWMy 2014*, a few important changes were made, which affect the extent to which the modelling results shown in this report can be compared with those shown in the *SoWMy* report. The main change is the inclusion of non-physician clinicians (NPCs): some countries included this cadre in their responses to the *SoWMy* questionnaire, but the new prompt to include them in the regional questionnaire meant that some countries included them for this report when they did not do so for *SoWMy*. Furthermore, in this regional report, NPCs were assumed to have a wider range of competencies than was the case in the *SoWMy* report, so can meet more of the need than was previously assumed. Comparability is also affected by: (1) the inclusion of contraceptive implants in the 'need' calculation (see Annex 4), (2) the updating of time estimates for delivery of essential interventions in line with updates in the One Health tool since 2014, (3) the updating of incidence data for many of the essential interventions due to the publication of more recent estimates (see Annex 4), (4) changes to the time frame for some of the 'what if' scenarios to reflect the shorter time frame to 2030, (5) a change to the assumed holiday entitlement for health workers (in *SoWMy 2014* this was 20 days per year; for this report it was 30 days, based on a review of published information about holiday entitlement in countries in East and Southern Africa), and (6) a change to the order of allocation, because salary data from this survey informed the decision about which cadres were least expensive. All of the above changes can be considered as improvements or refinements to the methodology, but they do mean that it is not appropriate to make a direct comparison between the modelling results from *SoWMy* 2014 and those shown in this report.

ANNEX 2: COUNTRY CONTRIBUTORS TO THE DATA COLLECTION

The following list includes the names of the contributors who indicated that they wished to be acknowledged. We would like to thank them all, and also the many other contributors who requested not to be acknowledged by name in the report. Every effort has been made to make this list as accurate as possible. Sincere apologies are extended if any contributors have been unintentionally omitted.

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ANNEX 3: SRMNAH WORKER COMPETENCIES

The following table sets out the assumptions made about which cadres are competent and authorized to deliver each of the 46 essential interventions. This does not necessarily reflect what SRMNAH workers actually do in a given country: it shows what they are theoretically capable of doing if they are educated and regulated according to global standards[6].

For this reason, the table includes all 46 interventions even though they are not all routinely practised in all countries. A dot indicates that the cadre should be competent to deliver the intervention with no supervision. A dot in brackets indicates that the cadre should have a role to play in the intervention but should not take full responsibility for it.

Intervention	Auxiliary (nurse-) midwife	(Nurse-) midwife	Nurse	Non-physician clinician	Generalist physician	Obstetrician/ gynaecologist
PRE-CONCEPTION						
Family planning advice	•	•	•	•	•	•
Delivery of condoms, vaginal barriers, vaginal tablets	•	•	•	•	•	•
Delivery of contraceptive pills	•	•	•	•	•	•
Delivery of injectable contraceptives	•	•	•	•	•	•
Delivery of contraceptive implants		•	•	•	•	•
IUD insertion		•	•	•	•	•
Female and male sterilization						•
Prevention of HIV in WRA		•	•	•	•	•
Management of HIV in WRA				•	•	•
Prevention of other STIs in WRA		•	•	•	•	•
Management of syphilis in WRA		•	•	•	•	•
Management of gonorrhoea in WRA		•	•	•	•	•
Management of chlamydia in WRA		•	•	•	•	•
Management of trichomoniasis in WRA		•	•	•	•	•
Pre-conception folic acid fortification /supplementation		•	•		•	•
ANTENATAL						
Iron and folic acid supplementation in pregnancy		•	•	•	•	•
Tetanus toxoid vaccination in pregnancy		•	•	•	•	•
Prevention of malaria in pregnancy with ITNs and antimalarial medication		•	•	•	•	•
Management of malaria in pregnancy with ITNs and antimalarial medication		•	•	•	•	•
Screening for HIV for PMTCT		•	•	•	•	•
Treatment of HIV for PMTCT		•	•	•	•	•
Prevention of STIs (as part of antenatal care)		•	•	•	•	•
Management of gonorrhoea		•	•	•	•	•
Management of chlamydia		•	•	•	•	•
Management of trichomoniasis		•	•	•	•	•
Screening for syphilis		•	•	•	•	•
Treatment of syphilis		•	•	•	•	•
Calcium supplementation to prevent hypertension		•	•		•	•
Interventions for cessation of smoking	•	•	•		•	•

6 The exception was non-physician clinicians (NPCs), for which global standards do not currently exist. As part of the survey conducted for this report, the 8 countries with NPCs in the SRMNAH workforce (Ethiopia, Kenya, Malawi, South Africa, South Sudan, Tanzania, Uganda and Zambia) were asked to indicate which of the 46 essential interventions (EIs) their NPCs were competent and authorized to provide. Those EIs selected by at least 7 of the 8 countries were considered to be NPC competencies. Safe abortion was also included because the only countries where NPCs do this not perform this intervention are those where it is illegal.

Intervention	Auxiliary (nurse-) midwife	(Nurse-) midwife	Nurse	Non-physician clinician	Generalist physician	Obstetrician/ gynaecologist
Antihypertensive drugs to treat high blood pressure (including low-dose aspirin to prevent pre-eclampsia)		•	•	•	•	•
Magnesium sulphate for eclampsia		(•)		(•)	(•)	•
Antibiotics for pPROM		•		•	•	•
Antenatal corticosteroids to prevent neonatal respiratory distress		(•)			•	•
Safe abortion (vacuum aspiration or D&C) including post abortion care		•	•	•	•	•
Post-abortion care after unsafe abortion	(•)	(•)	(•)	(•)	(•)	•
Reduce malpresentation at term with *external cephalic version*		•	•			•
CHILDBIRTH						
Induction of labour to manage prelabour rupture of membranes at term			•		•	•
Normal labour and delivery management and social support during childbirth		•		•	•	•
Active management of third stage labour to prevent PPH (including uterine massage, uterotonics and cord traction)		•		•	•	•
Screen for HIV during childbirth if not already tested	•	•	•	•	•	•
Manage HIV during childbirth if not previously diagnosed		•	•	•	•	•
Caesarean section for maternal/foetal indication (including prophylactic antibiotics for caesarean section)	(•)	(•)	(•)	(•)	(•)	•
Induction of labour for prolonged pregnancy		(•)	(•)		•	•
Management of post-partum haemorrhage (manual removal of placenta and/or surgical procedures and/or oxytocics)	(•)	(•)	(•)	(•)	(•)	•
POSTNATAL						
Postnatal preventive care		•	•	•	•	•
Detect and treat post-partum sepsis	(•)	•	•	•	•	•
Neonatal resuscitation with bag and mask		•	•	•	•	•
Kangaroo mother care		•	•	•	•	•
Extra support for feeding small and preterm babies		•			•	•
Management of newborns with jaundice	•	•	•	•	•	
Initiate prophylactic ART for babies exposed to HIV	•	•	•	•	•	•
Presumptive antibiotic therapy for newborns at risk of bacterial infections		•	•	•	•	•
Surfactant to prevent respiratory distress syndrome in preterm babies		•	•		•	•
Continuous positive airway pressure to manage babies with respiratory distress syndrome		•	•		•	•

ANC = antenatal care
ART=antiretroviral therapy
CPR = contraceptive prevalence rate
D&C = dilatation and curettage
HIV = human immunodeficiency virus
ITNs = insecticide-treated bed nets
IUD = intrauterine device
PPH = postpartum haemorrhage
pPROM = preterm premature rupture of membranes
PMTCT = prevention of mother-to-child transmission
STIs = sexually transmitted infections
WRA = women of reproductive age

ANNEX 4: ESTIMATING NEED FOR THE 46 ESSENTIAL INTERVENTIONS

Intervention	Number & average duration[1] of contacts needed with a SRMNAH worker	Data requirements and sources
PRE-CONCEPTION		
Family planning advice	One 20-minute contact per woman of reproductive age (WRA) per year	**Indicator:** Number of WRA (2015-2030) **Source:** United Nations Population Division World Population Prospects database, medium variant, 2015 revision (https://esa.un.org/unpd/wpp/Download/Standard/Population/) except Zanzibar (derived from http://www.who.int/immunization/programmes_systems/financing/countries/cmyp/Zanzibar_cMYP_2010-2014.pdf)
Delivery of condoms	Three contacts per year totalling 35 minutes per woman of reproductive age using condoms, estimated as follows: WRA x (CPR + unmet need) x % of female contraceptive users who use male or female condoms	**Indicators:** Contraceptive prevalence rate (any method) and unmet need for contraception **Source:** United Nations Population Division 2015 (available from http://www.un.org/en/development/desa/population/publications/pdf/family/trendsContraceptiveUse2015Report.pdf), except Zanzibar (Tanzania DHS 2015-16) **Indicator:** % of female contraceptive users (aged 15-49) who use each type. **Source(s):** Most recent national population survey as at March 2017: Angola: DHS 2015-16 Botswana: Family health survey, 2007-08 Burundi: DHS 2010 Comoros: DHS 2012 DRC: DHS 2013-14 Eritrea: Population and health survey 2010 Ethiopia: DHS 2011 Kenya: DHS 2014 Lesotho: DHS 2014 Madagascar: DHS 2008-09 Malawi: DHS 2010 Mozambique: DHS 2011 Namibia: DHS 2013 Rwanda: DHS 2014-15 South Africa: DHS 2003 South Sudan: Household health survey 2010 Swaziland: MICS 2014 Tanzania/Zanzibar: DHS 2015-16 Uganda: DHS 2011 Zambia: DHS 2013-14 Zimbabwe: DHS 2010-11 DHS = demographic and health survey MICS = multiple indicator cluster survey
Delivery of contraceptive pills and injectable contraceptives	Three contacts per year totalling 40 minutes per woman of reproductive age using pills or injectables, estimated as follows: WRA x (CPR + unmet need) x % of female contraceptive users who use pills or injectables	
Delivery of contraceptive implants	One 40-minute contact every 3 years per woman of reproductive age using implants, estimated as follows: WRA x (CPR + unmet need) x % of female contraceptive users who use implants	
IUD insertion	One 35-minute contact every five years per woman of reproductive age using IUD, estimated as follows: WRA x (CPR + unmet need) x % of female contraceptive users who use IUDs	
Female sterilization	One 100-minute contact per unsterilized woman of reproductive age requesting sterilization, estimated as follows: (WRA in 2015 – WRA in 2014*) x (CPR + unmet need) x % of female contraceptive users who use female sterilization * for 2015 – same approach for later years	
Prevention of HIV in WRA	One 45-minute contact per WRA per year	**Indicator:** Number of WRA (2015-2030)
Prevention of other STIs in WRA	One 14-minute contact per WRA per year	**Source:** United Nations Population Division as above

(continued)

[1] Contact durations were taken from the OneHealth tool version 4.47 (November 2016, available from http://www.avenirhealth.org/software-onehealth) where available, otherwise expert opinion was used (as in SoWMy 2014). Note that, for interventions that can be delivered at the community level, the time estimate in OneHealth is higher if the intervention is delivered via an outreach model of care. In such cases, the lower time estimate was used in cases where the duration depends on model of care. For countries which make use of outreach services for SRMNAH, therefore, the assumed time requirement will be an underestimate.

Intervention	Number & average duration of contacts needed with a SRMNAH worker	Data requirements and sources
Management of HIV in WRA	One 240-minute contact per WRA needing ART, estimated as follows: WRA x HIV prevalence in WRA	**Indicator:** HIV prevalence in WRA **Source(s):** UNAIDS AIDSInfo 2015 data (available from http://aidsinfo.unaids.org/), except Comoros (https://www.unicef.org/infobycountry/comoros_statistics.html), Ethiopia (http://www.etharc.org/index.php/resources/healthstat/hivaids-estimates-and-projections-in-ethiopia-2011-2016) and Zanzibar (https://dhsprogram.com/pubs/pdf/AIS11/AIS11.pdf)
Management of syphilis in WRA	One 15-minute contact per WRA with syphilis, estimated as follows: WRA x incidence of syphilis	**Indicator:** Incidence of syphilis, gonorrhoea, chalmydia and trichomoniasis in WRA in the WHO African region. **Source(s):** Newman et al (2015) Global estimates of the prevalence and incidence of four curable sexually transmitted infections in 2012 based on systematic review and global reporting (available at http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0143304).
Management of gonorrhoea in WRA	One 15-minute contact per WRA with gonorrhoea, estimated as follows: WRA x incidence of gonorrhoea	
Management of chlamydia in WRA	One 15-minute contact per WRA with chlamydia, estimated as follows: WRA x incidence of chlamydia	
Management of trichomoniasis in WRA	One 15-minute contact per WRA with trichomoniasis, estimated as follows: WRA x incidence of trichomoniasis	
Pre-conception folic acid fortification/supplementation	One 10-minute contact per WRA per year	**Indicator:** Number of WRA (2015-2030) **Source:** United Nations Population Division as above
ANTENATAL		
Iron and folic acid supplementation in pregnancy	Four contacts per pregnancy, totalling 8 minutes	**Indicator:** Number of pregnancies (2015-2030) **Source(s):** WorldPop (http://www.worldpop.org.uk/data/get_data/)
Tetanus toxoid vaccination in pregnancy	Two contacts per pregnancy, totalling 5 minutes	
Prevention of malaria in pregnancy with ITNs and antimalarial medication	One 6-minute contact per pregnant woman living in areas of high malaria transmission, estimated as follows: Pregnancies x % of population living in areas of high malaria transmission	**Indicator:** % of population living in high malaria transmission areas **Source(s):** World Malaria Report 2015 country profiles (available from http://apps.who.int/iris/bitstream/10665/200018/1/9789241565158_eng.pdf?ua=1)
Management of malaria in pregnancy with ITNs and antimalarial medication	One 4-minute contact per pregnant woman with presumed and confirmed malaria, estimated as follows: Pregnancies x incidence of presumed and confirmed malaria cases	**Indicator:** Incidence of presumed and confirmed malaria cases (number of presumed and confirmed malaria cases / total UN population estimates) **Source(s):** World Malaria Report 2015 Annex 6A (available from http://apps.who.int/iris/bitstream/10665/200018/1/9789241565158_eng.pdf?ua=1), except South Sudan: World Malaria Report 2014
Screening for HIV for PMTCT	One 35-minute contact per pregnancy	**Indicator:** Number of pregnancies (2015-2030) **Source(s):** WorldPop as above
Prevention of other sexually transmitted infections (STIs) (as part of antenatal care)	One 6-minute contact per pregnancy	
Treatment of HIV for PMTCT	One 325-minute contact per pregnant woman needing ART to avoid mother-to-child transmission, estimated as follows: Number of pregnant women needing ART for PMTCT	**Indicator:** Number of pregnant women needing ARV for PMTCT **Source(s):** UNAIDS AIDSInfo 2015 data (available from http://aidsinfo.unaids.org/) except: Comoros (https://www.unicef.org/infobycountry/comoros_statistics.html), Ethiopia (http://www.etharc.org/index.php/resources/healthstat/hivaids-estimates-and-projections-in-ethiopia-2011-2016) and Zanzibar (https://dhsprogram.com/pubs/pdf/AIS11/AIS11.pdf)
Management of gonorrhoea	One 10-minute contact per pregnant woman with gonorrhoea, estimated as follows: All pregnant women x incidence of gonorrhoea in WRA	**Indicator:** Incidence of syphilis, gonorrhoea, chalmydia and trichomoniasis in WRA in the WHO African region. **Source(s):** Newman et al (2015) Global estimates of the prevalence and incidence of four curable sexually transmitted infections in 2012 based on systematic review and global reporting (available at http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0143304).
Management of chlamydia	One 10-minute contact per pregnant woman with chlamydia, estimated as follows: Pregnancies x incidence of chlamydia in WRA	
Management of trichomoniasis	One 10-minute contact per pregnant woman with trichomoniasis, estimated as follows: Pregnancies x incidence of trichomoniasis in WRA	

Intervention	Number & average duration of contacts needed with a SRMNAH worker	Data requirements and sources
Screening for syphilis	One 10-minute contact per pregnancy	**Indicator:** Number of pregnancies (2015-2030) **Source(s):** WorldPop as above
Treatment of syphilis	One 7-minute contact per pregnant woman with syphilis, estimated as follows: Pregnancies x incidence of syphilis in pregnant women	**Indicator:** Number of pregnancies (2015-2030) **Source(s):** WorldPop as above **Indicator:** Incidence of syphilis in WRA in the WHO African region. **Source(s):** Newman et al (2015) as above
Calcium supplementation to prevent hypertension	One 8-minute contact per pregnancy	**Indicator:** Number of pregnancies (2015-2030) **Source(s):** WorldPop as above
Interventions for cessation of smoking	One 16-minute contact per pregnant woman who smokes, estimated as follows: Pregnancies x incidence of smoking in women aged over 15 years	**Indicator:** Prevalence of smoking any tobacco product (age-standardized rate), all females aged 15 and over **Source(s):** WHO Global Health Observatory 2015 estimates (available from http://apps.who.int/gho/data/node.main.65), except: • Angola, Botswana, Eritrea: http://www.tobaccoatlas.org/country-data • Burundi, DRC, Madagascar: http://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-014-0243-x • South Sudan: mean of all other countries in the region
Antihypertensive drugs to treat high blood pressure (including low-dose aspirin to prevent pre-eclampsia)	One 50-minute contact per pregnant woman with raised blood pressure and per pregnant woman with pre-eclampsia, estimated as follows: Pregnancies x (incidence of pre-eclampsia + incidence of pre-eclampsia)	**Indicator:** Incidence of high blood pressure, pre-eclampsia and eclampsia in pregnant women **Source(s):** Dolea et al (2003). Global burden of hypertensive disorders of pregnancy in the year 2000: Evidence and information for policy. (Available at http://apps.who.int/healthinfo/statistics/bod_hypertensivedisordersofpregnancy.pdf)
Magnesium sulphate for eclampsia	One 1,500-minute* contact per pregnant woman with eclampsia and pre-eclampsia, estimated as follows: Pregnancies x (incidence of eclampsia + incidence of pre-eclampsia) * 1,440 minutes midwife time + 60 minutes ob/gyn	
Antibiotics for pPROM	One 30-minute contact per case of pPROM, estimated as follows: All births including stillbirths x incidence of pPROM	**Indicator:** Number of deliveries (2015-2030) **Source(s):** Guttmacher Institute country-specific estimates of 2014 stillbirth rates applied to WorldPop estimates of pregnancies and live births. **Indicator:** Incidence of pPROM **Source:** WHO global survey on maternal and perinatal health 2005 (available from http://www.who.int/reproductivehealth/topics/best_practices/GS_Tabulation.pdf?ua=1). Where country rate not available, used regional rate.
Antenatal corticosteroids to prevent neonatal respiratory distress	One 70-minute contact per preterm birth (including stillbirths), estimated as follows: All births including stillbirths x preterm birth rate * 40 minutes midwife + 30 minutes doctor	**Indicator:** Preterm birth rate (per 100 live births) **Source(s):** Healthy Newborn Network 2010 estimates (Available from http://www.healthynewbornnetwork.org/numbers/)
Safe abortion (vacuum aspiration or D&C), including post-abortion care	One 30-minute contact per safe abortion, estimated as follows: WRA x safe abortion rate	**Indicator:** Safe abortion rate (abortions per 1000 women aged 15-44 x proportion of induced abortions that are safe) **Source(s):** Abortion rate from Sedgh et al (2016) Abortion incidence between 1990 and 2014: Global, regional, and subregional levels and trends (available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)30380-4.pdf)). Proportion of abortions that are safe from Sedgh et al (2012) Induced abortion: Incidence and trends worldwide from 1995 to 2008 (available at http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(11)61786-8.pdf)
Post-abortion care for unsafe abortion	One 210-minute* contact per unsafe abortion, estimated as follows: WRA x unsafe abortion rate * 90 minutes auxiliary + 90 minutes nurse or midwife + 30 minutes ob/gyn	**Indicator:** Unsafe abortion rate (abortions per 1000 women aged 15-44 x proportion of induced abortions that are unsafe) **Source(s):** Abortion rate from Sedgh et al (2016) as above. Proportion of abortions that are unsafe from Sedgh et al (2012) as above.

(continued)

Intervention	Number & average duration of contacts needed with a SRMNAH worker	Data requirements and sources
Reduce malpresentation at term with external cephalic version	One 107-minute contact per breech birth (including stillbirths), estimated as follows: All births including stillbirths x incidence of breech presentation	**Indicator:** Incidence of breech presentation **Source(s):** Vogel et al (2015) Use of the Robson classification to assess caesarean section trends in 21 countries: a secondary analysis of two WHO multicountry surveys (available at http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(15)70094-X.pdf). Global rate of 4% applied to all countries.
Induction of labour to manage prelabour rupture of membranes at term	One 86-minute contact per case of pPROM, estimated as follows: All births including stillbirths x incidence of pPROM	**Indicator:** Number of deliveries (2015-2030) **Source(s):** Guttmacher Institute country-specific estimates of 2014 stillbirth rates applied to WorldPop estimates of pregnancies and live births. **Indicator:** Incidence of pPROM **Source:** WHO global survey on maternal and perinatal health 2005 (available from http://www.who.int/reproductivehealth/topics/best_practices/GS_Tabulation.pdf?ua=1). Where country rate not available, used regional rate.
CHILDBIRTH		
Normal labour and delivery management and social support during childbirth	One 390-minute* contact per birth (including stillbirths) * 360 minutes midwife + 30 minutes ob/gyn	**Indicator:** Number of deliveries (2015-2030) **Source(s):** Guttmacher Institute estimates of 2014 stillbirth rates applied to WorldPop estimates of pregnancies and live births.
Active management of third stage of labour to prevent PPH (including uterine massage, uterotonics and cord traction)	One 10-minute contact per birth (including stillbirths)	
Screen for HIV during childbirth if not already tested	One 11-minute contact per birth (including stillbirths) where the woman had had <4 ANC visits, estimated as follows: All births including stillbirths x (100 - % of pregnant women with 4+ ANC visits)	**Indicator:** % of births for which the mother had 4+ ANC visits **Source:** UNICEF antenatal care coverage database (February 2016 update) (available at http://data.unicef.org/topic/maternal-health/antenatal-care/), except Zanzibar (Tanzania DHS 2015-16)
Manage HIV during childbirth if not previously diagnosed	One 120-minute contact per birth (including stillbirths) to HIV+ women where the woman had had <4 ANC visits, estimated as follows: All births including stillbirths x (% of births with <4 ANC visits) x (% HIV prevalence in adult women)	**Indicator:** % of births for which the mother had 4+ ANC visits **Source(s):** UNICEF antenatal care coverage database as above, except Zanzibar (Tanzania DHS 2015-16) **Indicator:** % HIV prevalence in women aged 15-49 **Source(s):** UNAIDS AIDSInfo 2015 data (available from http://aidsinfo.unaids.org/) except: • Comoros: adult HIV prevalence from https://www.unicef.org/infobycountry/comoros_statistics.html • Ethiopia: adult female HIV prevalence from http://www.etharc.org/index.php/resources/healthstat/hivaids-estimates-and-projections-in-ethiopia-2011-2016 • Zanzibar: HIV prevalence in WRA from https://dhsprogram.com/pubs/pdf/AIS11/AIS11.pdf
Caesarean section for maternal/foetal indication (including prophylactic antibiotic for caesarean section)	One 390-minute* contact per birth (including stillbirths) which require caesarean section, estimated as follows: All births including stillbirths x recommended c-section rate * 210 minutes auxiliary + 90 minutes midwife + 90 minutes ob/gyn	**Indicator:** Number of deliveries (2015-2030) **Source(s):** Guttmacher Institute estimates of 2014 stillbirth rates applied to WorldPop estimates of pregnancies and live births. **Indicator:** Recommended c-section rate **Source:** WHO 2015 statement on c-section rates (available at http://vibwife.com/docs/WHO_RHR_15.02_eng.pdf) – estimated at 10% for all countries
Induction of labour for prolonged pregnancy	One 60-minute* contact per birth (including stillbirths) occurring after 41 completed weeks of gestation, estimated as follows: Pregnancies x % of pregnancies which go beyond 41 completed weeks * 40 minutes midwife or nurse + 20 minutes ob/gyn	**Indicator:** % of pregnancies which go beyond 41 completed weeks **Source:** OneHealth tool version 4.47 (November 2016, available from http://www.avenirhealth.org/software-onehealth) - estimated at 5% for all countries
Management of postpartum haemorrhage (manual removal of placenta and/or surgical procedures and/or oxytocics)	One 345-minute* contact per birth (including stillbirths) where there is PPH, estimated as follows: WRA x incidence of PPH per 1,000 women aged 15-49 * 150 minutes auxiliary + 80 minutes nurse or midwife + 115 minutes ob/gyn	**Indicator:** Cases of PPH per 1,000 women aged 15-49 **Source:** Dolea et al (2003) Global burden of maternal haemorrhage in the year 2000 (available at http://www.who.int/healthinfo/statistics/bod_maternalhaemorrhage.pdf)

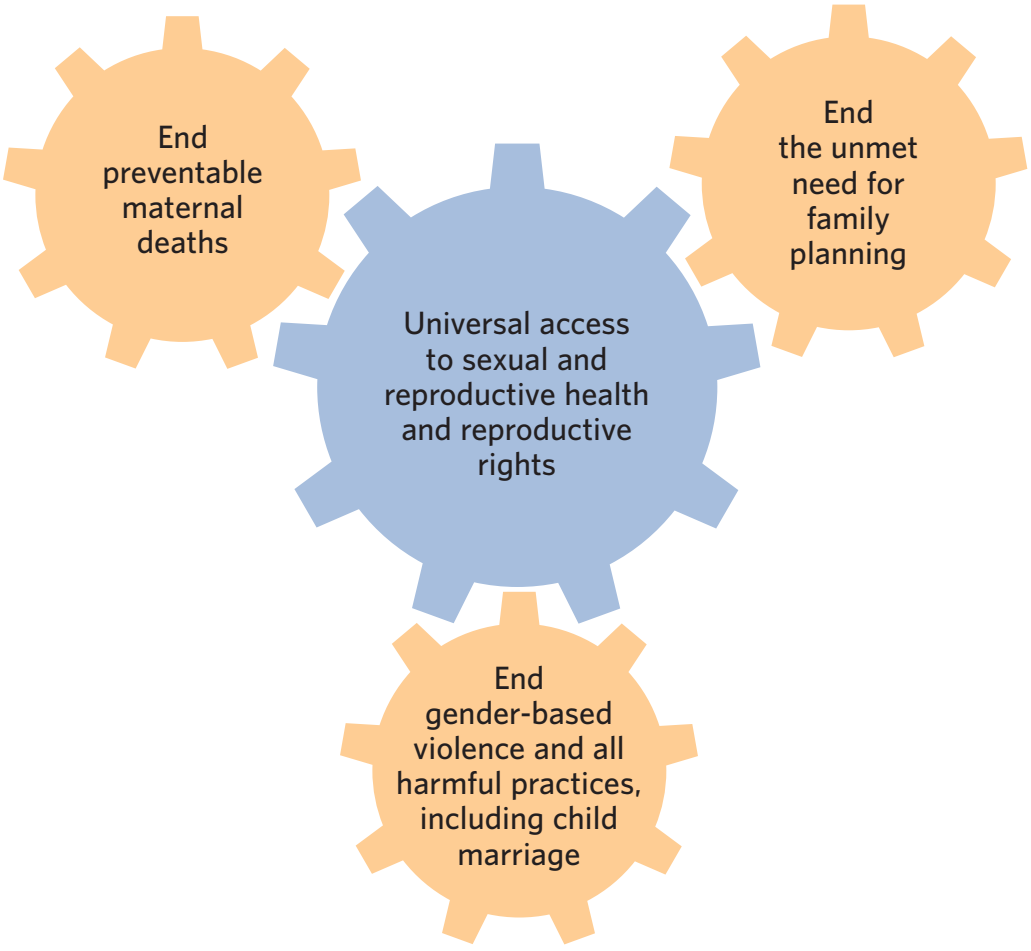
Intervention	Number & average duration of contacts needed with a SRMNAH worker	Data requirements and sources
POSTNATAL CARE		
Postnatal preventive care	Four contacts per birth (including stillbirths), totalling 80 minutes	**Indicator:** Number of deliveries (2015-2030) **Source(s):** Guttmacher Institute estimates of 2014 stillbirth rates applied to WorldPop estimates of pregnancies and live births
Detect and treat postpartum sepsis	One 240-minute* contact per case of postpartum sepsis, estimated as follows: WRA x incidence of postpartum sepsis * 170 minutes auxiliary + 70 minutes nurse or midwife	**Indicator:** Cases of postpartum sepsis per 1,000 WRA **Source:** Dolea & Stein (2003) Global burden of maternal sepsis in the year 2000 (available from http://www.who.int/healthinfo/statistics/bod_maternalsepsis.pdf)
Neonatal resuscitation with bag and mask	One 23-minute contact per newborn requiring resuscitation, estimated as follows: Live births x % of newborns requiring resuscitation	**Indicator:** % of newborns requiring resuscitation **Source:** OneHealth tool version 4.47 (November 2016, available from http://www.avenirhealth.org/software-onehealth) - estimated at 1% for all countries
Kangaroo mother care	One 30-minute contact per newborn with low birth weight, estimated as follows: Live births x % of newborns with low birth weight	**Indicator:** % of newborns with birth weight <2500g **Source(s):** Healthy Newborn Network estimates for 2009-2013 (available from http://www.healthynewbornnetwork.org/numbers/). If no country data were available, the regional estimate for East and Southern Africa (11%) was applied.
Extra support for feeding small and preterm babies	One 90-minute contact per preterm live birth, estimated as follows: Live births x preterm birth rate	**Indicator:** Preterm birth rate (per 100 live births) **Source(s):** Healthy Newborn Network 2010 estimates (Available from http://www.healthynewbornnetwork.org/numbers/)
Management of newborns with jaundice	One 150-minute contact per newborn with jaundice, estimated as follows: Live births x % of newborns with jaundice requiring phototherapy	**Indicator:** % of newborns with severe jaundice **Source:** Teune et al (2011) A systematic review of severe morbidity in infants born late preterm (available at http://www.ajog.org/article/S0002-9378(11)00916-1/fulltext) . Estimated at 1.9% for all countries (sum of incidence in late preterm infants and full-term infants).
Initiate prophylactic ART for babies exposed to HIV	One 135-minute contact per birth to HIV+ women who have not had 4+ ANC visits, estimated as follows: Live births x (100 - % of HIV+ pregnant women with 4+ ANC visits)	**Indicator:** % HIV prevalence in women aged 15-49 x % of pregnant women with 4+ ANC visits **Sources:** UNAIDS AIDSInfo 2015 data as above. UNICEF antenatal care coverage database (February 2016 update) as above.
Presumptive antibiotic therapy for newborns at risk of bacterial infections	One 40-minute contact per newborn at risk of bacterial infection, estimated as follows: Live births x incidence of bacterial infection in newborns	**Indicator:** % of newborns with bacterial infection **Source(s):** Singh et al (2013) Adding it up: The need for a cost of maternal and newborn care – estimates for 2012 (available from https://www.guttmacher.org/report/adding-it-need-and-cost-maternal-and-newborn-care-estimates-2012). Uniform assumption of 20%.
Surfactant to prevent respiratory distress syndrome in preterm babies	One 60-minute contact per preterm live birth, estimated as follows: Live births x preterm birth rate	**Indicator:** Preterm birth rate (per 100 live births) **Source(s):** Healthy Newborn Network 2010 estimates (Available from http://www.healthynewbornnetwork.org/numbers/)
Continuous positive airway pressure to manage babies with respiratory distress syndrome	One 120-minute contact per newborn with respiratory distress syndrome (RDS), estimated as follows: Live births x % of live births delivered at <32 weeks' gestation	**Indicator:** % of live births delivered at <32 weeks' gestation (WHO estimates that most babies born at <32 weeks develop RDS – see http://www.who.int/pmnch/media/news/2012/201204_borntoosoon-report.pdf) **Source:** Blencowe et al (2012) National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications (available at http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(12)60820-4.pdf) estimated that 17% of preterm births in Sub-Saharan Africa were <32 weeks, so this proportion was applied to the pre-term birth rate to estimate the % of newborns with RDS.

ANC = antenatal care
ART=antiretroviral therapy
CPR = contraceptive prevalence rate
D&C = dilatation and curettage
HIV = human immunodeficiency virus
ITNs = insecticide-treated bed nets
IUD = intrauterine device
PPH = postpartum haemorrhage
pPROM = preterm premature rupture of membranes
PMTCT = prevention of mother-to-child transmission
RDS = respiratory distress syndrome
STIs = sexually transmitted infections
WRA = women of reproductive age

ANNEX 5. MODELLING ASSUMPTIONS IN THE CASE OF MISSING DATA

As noted in Chapter 2, missing data was a significant problem. If headcounts were missing for any cadre of SRMNAH worker (as was the case for Angola, Lesotho, Namibia and South Sudan), it was not possible to produce modelled estimates of potential met need. If other data items were missing, assumptions were applied during the modelling as described in the following table.

Data Item	Assumption if no data provided by the country
Age distribution of a SRMNAH cadre	Apply an equal distribution of the total number of workers across age groups
% of clinical working time spent on SRMNAH tasks	Apply the regional median from those countries providing a response for that cadre as follows: • Midwifery professionals: 100% • Midwifery professionals, associates: 97.5% • Nursing professionals: 40% • Nursing professionals, associates: 53% • Non-physician clinicians: 27.5% • Medical practitioners, generalists: 30% • Medical practitioners, specialists ob/gyn: 100%
Annual voluntary attrition from the workforce	Apply a uniform assumption of 4%
Retirement age	Apply the retirement age of any cadre in the same country with the same ISCO code. If the former not available, use retirement age of any other cadre in the same country. If data missing for all cadres in the country, assume 65 years.
Graduates in 2015	Assume 5% of the number of workers in that cadre in 2015. This assumption was also applied if the country did not have any educational establishments producing graduates for that cadre.
Enrolments in each year 2013 to 2015	Default to the last available enrolment figure from earlier years. If not available, assume enrolment is equal to graduates in 2015.
Years of education	Apply the regional median from those countries providing a response for that cadre as follows: • Midwifery professionals: 3 years • Midwifery professionals, associates: 1.25 years • Nursing professionals: 3 years • Nursing professionals, associates: 2 years • Non-physician clinicians: 3 years • Medical practitioners, generalists: 7 years • Medical practitioners, specialists ob/gyn: 10.25 years
Student attrition from education	Apply the regional mean from those countries providing a response for that cadre as follows: • Midwifery professionals: 5.5% • Midwifery professionals, associates: 0 • Nursing professionals: 1.5% • Nursing professionals, associates: 0 • Non-physician clinicians: 11.7% • Medical practitioners, generalists: 1.3% • Medical practitioners, specialists ob/gyn: 0.3%


End preventable maternal deaths
Universal access to sexual and reproductive health and reproductive rights
End the unmet need for family planning
End gender-based violence and all harmful practices, including child marriage

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