



GHANA NATIONAL NEWBORN HEALTH STRATEGY AND ACTION PLAN

2019–2023



**GHANA NATIONAL NEWBORN HEALTH
STRATEGY AND ACTION PLAN**
—— 2019–2023 ——



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Foreword

Ghana's first National Newborn Health Strategy and Action Plan (2014–2018) outlined a targeted strategy for accelerating the reduction of newborn deaths in Ghana. The costed action plan with clearly marked timelines for implementation facilitated advocacy, resource mobilization, evaluation, scaling up of proposed basic newborn interventions across the country, and monitoring and evaluation using appropriate indicators.

Implementation of the strategic objectives outlined in the document also resulted in capacity-building of health professionals in facilities nationwide for improved service provision for newborns as well as promotion of appropriate behaviors at the community level. The net effect of all of the above was a reduction in the neonatal mortality rate from 29 per 1,000 live births at the launch of the strategy to 25 per 1,000 live births, as recorded in the 2017 Maternal Health Survey. The above notwithstanding, newborn deaths still contribute significantly to infant and under-5 mortality rates, and there are several challenges yet to be addressed in order to push toward achieving the Sustainable Development Goal target of 12 per 1,000 live births for neonatal mortality by 2030.

The last 5 years of implementing Ghana's first National Newborn Health Strategy and Action Plan focused on strengthening appropriate basic or essential newborn care at all levels. For the next 5 years (2019–2023), this second strategy and action plan seeks to consolidate the gains already made while increasing coverage of basic care nationwide to promote universal coverage. At the same time, deliberate efforts will be made to improve care at the higher levels of service delivery with emphasis on caring for at-risk/small and sick newborns, focusing extensively on intermediary/ secondary/level II care in all hospitals and on intensive/tertiary/level III care in all teaching and regional hospitals, the latter in a phased manner. The strategies outlined in this document give prominence to improving respectful/compassionate quality of care and attaining universal health coverage, in line with global and national priorities. Provisions have also been made for advancing newer areas of service delivery, such as psychosocial support for mothers who have experienced adverse events as a part of childbirth, application of the Nurturing Care Framework, and the Survive and Thrive approach, addressing not only neonatal mortality but also the quality of survival. Care has been taken to outline the implementation package and the strategies in some detail, listing the major components and line items to better address their coverage in the implementation process.

Key stakeholders and representatives from the different sections of the administration at various levels, such as reproductive, maternal, newborn, and child health; the health information system/district health information system; the National Health Insurance Authority; and professional bodies, have been involved in the development of this document. Great effort has been made to achieve consensus on all the key elements of this document. We are hopeful that the shared vision and partnerships forged will promote ownership and will continue in strong operationalization of the strategy and action plan to reach the desired goals and objectives, including a further reduction in neonatal mortality by 2023 and improved quality of survival.

Acknowledgments

The development of the second National Newborn Health Strategy and Action Plan (2019–2023) was made possible through the involvement and contributions of several stakeholders at various levels of the health system in Ghana.

The Family Health Division, which led the process, is grateful to health workers and partners who contributed at various stages of the process, from reviewing progress made in implementing the first strategy, to the bottleneck analysis and identification of barriers, to key issues for the new document, to the drafting and consensus building until finalization.

Our unqualified gratitude goes to Dr. George Amofah (local consultant) and Dr. Indira Narayanan (international consultant) for their wealth of knowledge and tireless efforts in guiding the process to produce this rich document.

We are particularly grateful to the PATH Making Every Baby Count Initiative for providing funds used to assess the progress made in implementing the first document and for its technical inputs for the entire process. UNICEF deserves special commendation for expert technical guidance and funding the rest of the process, including paying for the services of the international consultant and providing part of the payment for the national consultant.

Apart from its technical inputs, the US Agency for International Development (USAID)'s Maternal and Child Survival Program (MCSP) deserves special mention for editing and formatting the final document before printing. We would like to also express our appreciation to the World Health Organization for the technical inputs and to the many others who are too numerous to be acknowledged individually but contributed to the development of this document at various stages in a variety of ways.



Abbreviations

AAP	American Academy of Pediatrics
CHN	community health nurse
CHPS	Community-Based Health Planning and Services
CHV	community health volunteer
CHW	community health worker
CSO	civil society organization
DAMA	discharged against medical advice
DHIS	district health information system
DHS	Demographic and Health Survey
ECD	early childhood development
ENC	essential newborn care
FCC	family-centered care
FHD	Family Health Division
GHS	Ghana Health Service
HIC	high-income countries
HIS	health information system
IP	infection prevention
KMC	kangaroo mother care
LAMA	left against medical advice
LBW	low birth weight
LMIC	low- and middle-income countries
MBFHI	Mother Baby Friendly Hospital Initiative
MCSP	Maternal and Child Survival Program
MOH	Ministry of Health
NICU	neonatal intensive care unit
QI	quality improvement
QoC	quality of care
RMNCAH	reproductive, maternal, newborn, child, and adolescent health
SARA	Service Availability and Readiness Assessment
SBCC	social and behavior change communication
SCNC	Subcommittee on Newborn Care
SCNU	special care neonatal unit
SPA	Service Provision Assessment
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

Background

Globally, there has been a remarkable improvement in child survival since 1990. The under-5 mortality rate decreased by 58%, from 93 per 1,000 live births in 1990 to 39 per 1,000 live births in 2017. The fall in the neonatal mortality, however, has been slower, decreasing from 37 per 1,000 live births in 1990 to 18 per 1,000 live births in 2017. Neonatal mortality constituted around 40% of childhood mortality in 2017.

In Ghana, review of data since the inception of the first National Newborn Health Strategy and Action Plan (2014–2018) has also shown a reduction in the neonatal mortality rate, from 29 per 1,000 live births in 2014 to 25 per 1,000 live births in 2017 (GSS et al. 2018), representing a 14% decrease. The 2017 evaluation also showed variations within the country, with Greater Accra, Brong Ahafo, and Upper East regions having neonatal mortality rates lower than the national average. Volta Region had the highest rate, followed by Central and Western regions.

In addition, in Ghana, as in many low- and middle-income countries, there has been a significant increase in percentage of deliveries conducted by skilled birth attendants at facilities—from 55% in 2007 to 79% in 2017—a 44% increase. However, while total neonatal mortality in the country has decreased, according to the 2018 district health information system, facility-based neonatal deaths have risen. This has been consistent in all regions, with the national figure increasing from 3.8 per 1,000 live births in 2014 to 8.4 per 1,000 live births in 2017. While part of this increase could be due to better reporting, it is a concern, as it also implies, among other things, that there is a need for improving facility readiness and quality of care for these vulnerable babies.

The above factors have had a major impact on the revision of the intervention package and outline of the updated policies.

Intervention Package

The intervention package, integrated within the reproductive, maternal, newborn, child, and adolescent health (RMNCAH) framework and addressed at scale, will strengthen and expand essential newborn care for all newborns at facility and community levels, and further expand to cover facility-based care of at-risk, small, and sick babies. Key activities will be implemented to decrease neonatal mortality, with emphasis on quality of care. Additional activities to address quality of survival will include neonatal screening for selected conditions, such as sickle cell disease; initiation of psychosocial support to mothers with problems, including the loss of a baby; optimal neurodevelopmental assessment, including hearing and visual evaluation; and selective stimulating/supportive components related to early childhood development in the neonatal period through implementation of the Nurturing Care Framework. This will also support the Survive and Thrive approach and will be ongoing, subsequently being linked with maternal and child health activities through the continuum of care.

Key Goals and Objectives

1. To contribute to the reduction of the neonatal mortality rate from 25 per 1,000 live births in 2017 to 18 per 1,000 live births in 2023 (5% per year), documented through a national survey (GSS et al. 2018).
2. To contribute to the reduction of the institutional (facility) total stillbirth rate from 15 per 1,000, or 1.5%, of total births in 2017 to 10 per 1,000, or 1%, of total births in 2023.



3. To contribute to the reduction of institutional (facility) fresh/intrapartum stillbirths from 60% in 2017 to 40% of total still births in 2023 (4% per year) based on average computation from 2011–2017.
4. To contribute to the reduction of the institutional (facility) neonatal mortality rate by at least 40% by 2023, namely decreasing it from 8.4% in 2017 to 5.2% in 2023.

A number of objectives have also been developed to cover additional components to help achieve the set goals.

Updated Strategies

To achieve the set goals and objectives, the key strategies were appropriately updated based on the following guiding principles, namely use of evidence-based interventions and strategies, nurturing/compassionate quality of care, strong partnerships at all levels, and universal coverage with appropriate prioritization and consideration of equity and integration within the RMNCAH framework. The strategies and related activities were developed to keep to the **World Health Organization health system building blocks**, which was felt to be more appropriate to implement and track, and to more readily integrate within the RMNCAH framework in the continuum of care. The number of strategies was reduced from 14 (outlined in the first strategy) to 10 by combining some of them. The 10 strategies deployed to achieve desired objectives and targets are:

1. Strengthen leadership and governance for newborn care.
2. Strengthen/develop/update policies and tools.
3. Improve health financing and resource mobilization.
4. Establish reliable health information system/district health information system and monitoring and evaluation systems.
5. Ensure equitable availability of an adequate, competent health workforce.
6. Improve compassionate/nurturing quality of care.
7. Ensure continuous availability of essential drugs, equipment, and other commodities.
8. Strengthen community engagement and social and behavior change communication activities at all levels.
9. Strengthen inclusive partnerships, including public-private partnerships.
10. Strengthen appropriate research.

A review of available newborn indicators will be carried out to develop an updated set of strategies, where feasible, with increased emphasis on outcome indicators to develop an effective plan for monitoring and evaluation. This will eventually help monitor progress toward achieving Sustainable Development Goal 3.2.2, aiming to end preventable deaths of newborns and reduce neonatal mortality to at least as low as 12 per 1,000 live births. Midterm and end-term project evaluations will also be conducted.

As in the earlier strategy, the updated National Newborn Health Strategy and Action Plan's funding will be managed using the existing financial management arrangement with the Ministry of Health (MOH)/Ghana Health Service (GHS). They will also conform to the existing common management arrangement that the MOH has with partners.

The Family Health Division (FHD) of the GHS is the secretariat of the national Subcommittee on Newborn Care and reports to the director general of the GHS. The deputy director responsible for reproductive and child health in the FHD is the overall coordinator of the action plan. However, relevant departments and divisions of the MOH/GHS will continue to operate different aspects of the action plan. Regions and districts will implement the Newborn Health Strategy and Action Plan in the spirit of integration without losing focus on newborn care. Focal people will be appointed at the regional and district levels, and will continue to oversee activities related to newborn care on behalf of the respective regional and district health management teams.

Introduction

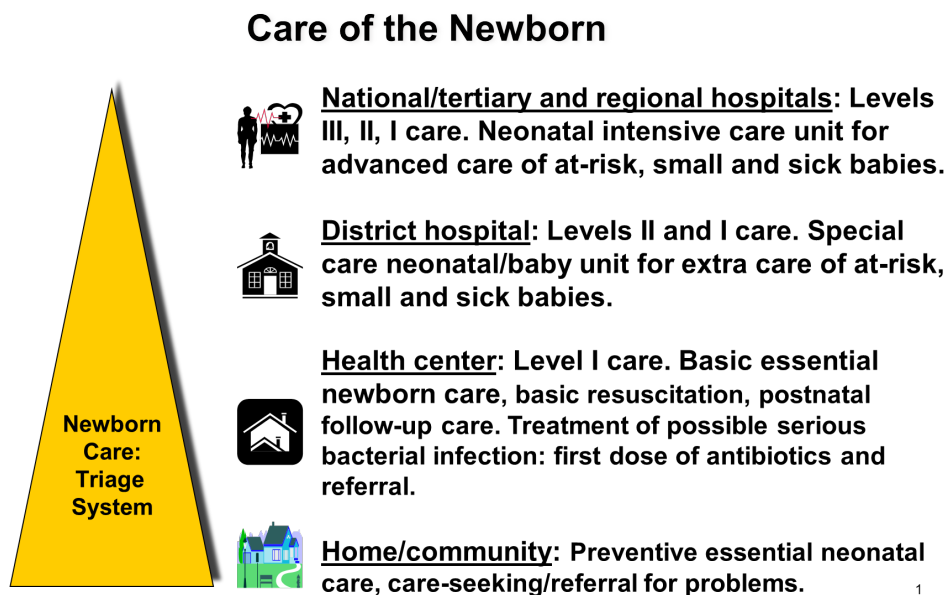
Rationale

During the last decade, there has been a concerted global effort to promote deliveries by skilled birth attendants through communication strategies and, in some countries, incentives (Randive et al. 2013). As most skilled birth attendants worked at facility level, this resulted in a significant increase in facility births, from 60% in 1990 to 75% between 2010–2015 (UNICEF 2018).

However, outcomes did not necessarily improve (Hurst et al. 2015). Inadequate quality of care in the facilities that were not ready to deal with this increased load could have been a major influencing factor. The focus on facility-based care is therefore increasing related not only to essential newborn care (ENC) for normal babies but also to more specialized care for at-risk, small and sick babies. It is also widely recognized that ENC is important at the facility and community levels, and all care providers, whether they are health care providers, community health workers (CHWs), or mothers/family members, need to have the necessary knowledge and skills required at their level to improve neonatal outcomes.

Figure 1 indicates the triage system with the types of care provided for newborns at various levels. The cost of special and intensive care is high, but far fewer babies who are at the apex of the pyramid of care require it.

Figure 1. Care of the Newborn: Triage System



Source: Adapted from Narayanan 2009

Related to the definitions of and criteria for the levels of care, conventional tools, such as the World Health Organization (WHO)'s Service Availability and Readiness Assessment (SARA) and the Demographic and Health Survey (DHS) Program's Service Provision Assessment (SPA) tools, while useful for basic ENC, do not cover the key requirements of special care newborn units (SCNUs) and neonatal intensive care units (NICUs) (HSIS and WHO 2015, DHS Program 2019). Other definitions are available in publications of professional bodies, such as the American Academy of Pediatrics (AAP), and, in even greater detail, in the AAP's *Guidelines for Perinatal Care* and in the National Neonatology Forum of India's accreditation



lists (Committee on Fetus and Newborn 2012, AAP and ACOG 2017, National Neonatology Forum of India 2019). There is increasingly greater emphasis on a more holistic approach to the care of the mother and the baby. Initially, the focus was primarily on reducing mortality. In recent years, there has been growing interest in the quality of survival, emphasizing the Survive and Thrive approach (Survive & Thrive Alliance 2012).

Newborn health has always been a part of maternal and child health in the continuum of care, being more closely linked with and addressed within maternal health strategies. However, with the advent of the Every Woman Every Child initiative, and even more so with the emergence of the global Every Newborn Action Plan for ending preventable newborn deaths and stillbirths, a separate plan emerged in many countries focusing on newborn care to ensure that it did not slip through the cracks of an integrated program. While newborn care is not meant to be rolled out as a vertical, independent program, having a separate costed strategic action plan helps to more clearly define implementation activities for the newborn, setting aside a specified budget for them. As with the earlier strategy, this updated version has been developed in keeping with the key components of the WHO building blocks of the health system adapted to suit Ghana's requirements. This method better facilitates integration of the National Newborn Strategy and Action Plan into the reproductive, maternal, newborn, child, and adolescent health (RMNCAH) continuum of care.

Methodology

The development of the National Newborn Health Strategy and Action Plan 2019–2023 was carried out in phases. Phase I involved an extensive evaluation of the implementation of the 2014–2018 strategy, which consisted of a detailed desk review of published and gray zone literature. Relevant in-country reports listed in Table 1 were also reviewed.

Table 1. Key in-country documents reviewed for updating the national newborn health strategy

<ul style="list-style-type: none"> • National Newborn Strategy and Action Plan, 2014–2018 (Ghana MOH and GHS 2018) • Various stakeholder workshop reports • Minutes of Subcommittee on Newborn Care meetings • Annual reports from the Ghana Health Service and Family Health Division • 2017 holistic assessment report (Ghana MOH 2018) • Review reports from partners • 2016 midterm review report of newborn strategy • Ghana DHSs (1998–2014) • Ghana Maternal Health Survey (GSS et al. 2018) • 2011 Ghana Multiple Indicator Cluster Survey (Institute of Statistical, Social and Economic Research and UNICEF 2014) • Accelerating newborn survival through low-dose health worker training (Gomez et al. 2018) • Draft Health Sector Medium-Term Development Plan (2018–2021) • Every Newborn Case Study in Ghana (UNICEF 2014) • Ghana National Action Plan on Antimicrobial Resistance (Ghana MOH et al. 2018)

In Phase II, field interviewers visited three regions, covering the regional and teaching hospitals in each region, two districts per region, two subdistrict facilities per district, and one Community-Based Health

Planning and Services (CHPS) zone per subdistrict area. They interviewed key health personnel and partners at national, regional, and district levels, and in CHPS zones to assess the progress made, lessons learned, and key challenges/bottlenecks faced during the implementation period to feed into the development of the updated newborn strategy for 2019–2023. The list of interviewers and the regions they covered are noted in Appendix 1.

Phase III included a bottleneck analysis workshop that consolidated the major findings noted in the first two phases and shared them with representatives from key stakeholder groups listed in Appendix 2. Through group discussions and plenary sessions, participants identified the important bottlenecks and analyzed them based on health systems strengthening components. They reviewed major root causes for the various bottlenecks and then identified possible solutions that could help to develop the updated strategies for the new action plan.

In phase IV, consultants made additional field visits to facilities, including a teaching hospital and regional, urban, and rural district hospitals in Greater Accra Region. Visits to the labor and delivery rooms, postnatal wards, and neonatal units included discussions with key informants, including health care providers, administrators, and staff in the medical record sections.

Phase V consisted of another interactive workshop involving members of the Subcommittee on Newborn Care (SCNC) to develop consensus on selected key components and activities in the proposed newborn strategy, terminologies (such as levels of facility-based care), key goals, and a plan of action for developing the strategy document.

The consultants prepared the draft national strategy document, and several iterations were shared with relevant partners groups. The draft was also shared at a major stakeholders' meeting, and after additional discussions involving the technical working group, the final iteration was developed.



Current Newborn Health Situation

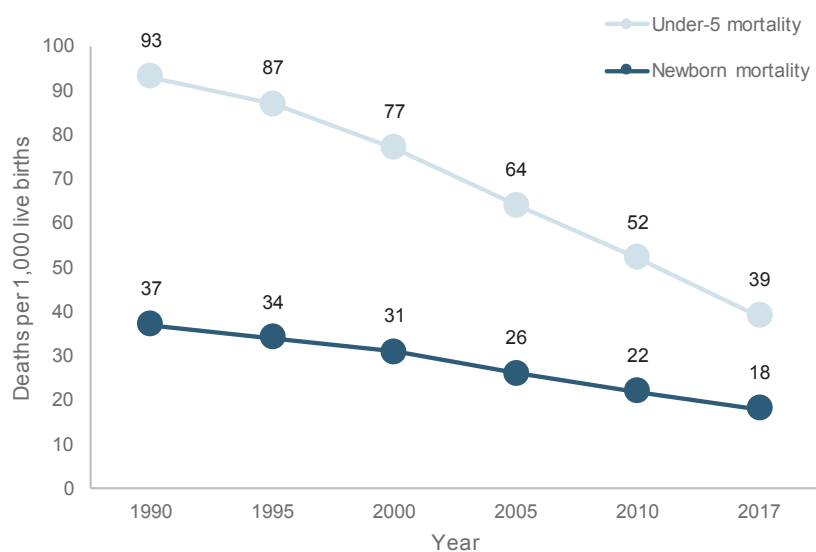
This section covers the status of newborn health at the global level and in Ghana. The global overview focuses on the changing trends in childhood mortality, causes of death, and selected topics of current special interest, particularly quality of care, infection prevention (IP), and antibiotic stewardship. The in-country section covers the local situation and the results of the evaluation of activities implemented as part of the earlier National Newborn Health Strategy and Action Plan 2014–2018. It also includes the results of the bottleneck and root cause analyses.

GLOBAL OVERVIEW

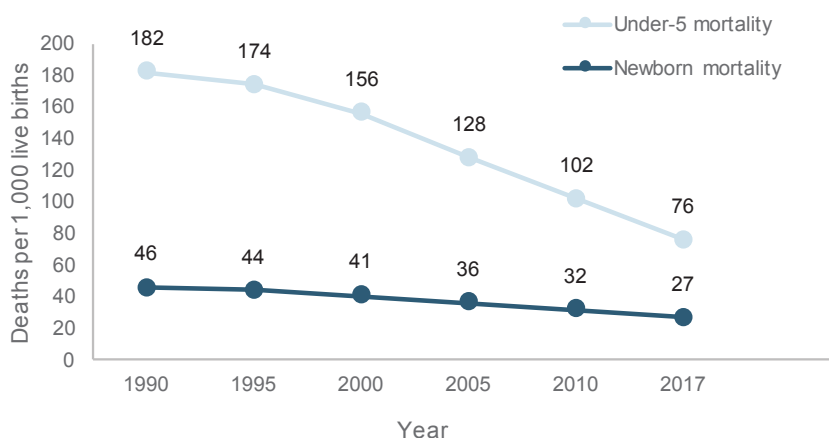
Magnitude of the Global Problem

There has been a remarkable improvement in child survival since 1990. Among children ages 5–14, mortality decreased by 52% in 2017. The under-5 mortality rate decreased by 58%, from 93 per 1,000 live births in 1990 to 39 per 1,000 live births in 2017. The rate of decline in the neonatal period, however, has been decreased, from 37 per 1,000 live births in 1990 to 18 per 1,000 in 2017, as shown in Figure 2 (UNICEF et al. 2018). Neonatal mortality constituted around 40% of childhood mortality in 2017.

Figure 2. Global Child Mortality Rates, 1990–2017



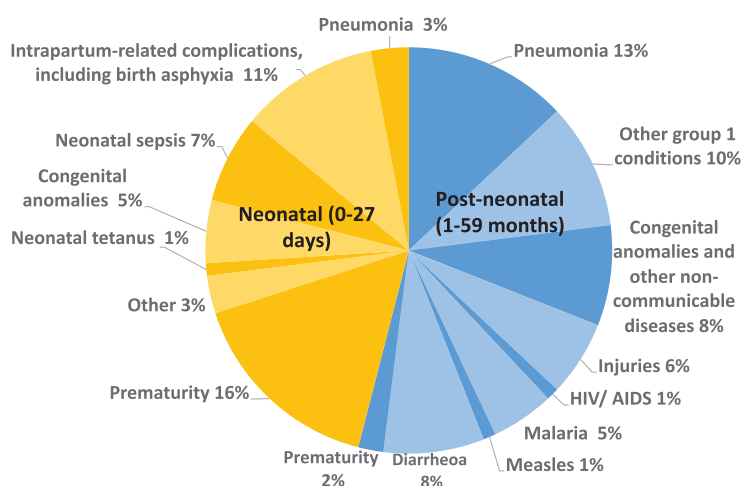
Mortality rates for sub-Saharan Africa are, as expected, higher than rates at the global level, even though they too have been steadily declining, especially among those under-5. Again, the fall is slowest in the neonatal period (see Figure 3).

Figure 3. Sub-Saharan Africa Child Mortality Rates. 1990–2017

Adapted from UNICEF, WHO, World Bank Group, United Nations. 2018. *Levels and Trends in Child Mortality Report 2018*. New York City: UNICEF.

Causes of Mortality

Among causes of death in those under 5, complications of prematurity are reported to be the most common, constituting 16% of deaths. In the neonatal period, the other two common causes of mortality are adverse intrapartum deaths: birth asphyxia (11% of under-5 deaths) and infections (11% of under-5 deaths) as seen in Figure 3 (WHO 2017a). These are also the three leading causes of neonatal death, constituting 34.8%, 23.9%, and 23.9%, respectively, in the neonatal period.

Figure 4. WHO Causes of Deaths Among Children Under 5 Years, 2016

Source: WHO 2017a

Discussions on neonatal deaths are incomplete without considering stillbirths. Fortunately, they are



receiving greater attention in this decade and have been extensively covered by *The Lancet* through a series in 2016 (The Lancet 2016). The exact magnitude of the problem is not clear due to poor registration, as only 5% of neonatal deaths and even fewer stillbirths are registered. Around 98% of the 2.6 million third-trimester stillbirths are estimated to take place in low- and middle-income countries (LMIC). Among stillbirths, fresh or intrapartum stillbirths are influenced by the quality of management of labor and delivery. Some of the neonatal deaths, for a number of reasons, may be wrongly recorded as fresh stillbirths (Liu et al. 2016). WHO, in fact, recommends that resuscitation should be attempted on all intrapartum stillbirths immediately after drying (WHO 2012).

To get a true idea of neonatal deaths at the facility level, besides the total number of deaths recorded, care providers need to be trained and supervised to correctly differentiate between neonatal deaths and intrapartum stillbirths. In addition, in some countries, some of the sick babies in the SCNU/NICU may be taken home against medical advice, declared as discharged against medical advice (DAMA), or left against medical advice (LAMA). Some of these babies may be very sick, as one of the reasons for DAMA/LAMA is the baby being very ill and the parents' perception of the futility of continuing care. Other common reasons include the family not being able to afford payments for care, poor communication, and inadequate support of relatives (Devpura et al. 2016). Additionally, in a number of hospitals in several LMIC, neonates referred for problems from other facilities or following home deliveries, often called "outborn" babies, may get admitted into pediatric wards instead of neonatal units, especially if they are suspected to have infections. Deaths of neonates in the pediatric wards may be missed and not be counted as newborn deaths in the national health information system (HIS) unless they are disaggregated by age and care is taken to consolidate the newborn deaths in this group with the deaths from the neonatal unit.

The large number of deaths related to complications of preterm babies has resulted in a strong movement toward expanding the basic ENC promoted at all levels to include additional care of the small and sick newborns in maternal and newborn programs, initially at facilities and later as follow-up care in the community/home. These include the US Agency for International Development (USAID) Maternal Child Survival Program (MCSP), USAID's Every Premie–SCALE program, and Save the Children's Saving Newborn Lives program (MCSP 2018, Every Premie–SCALE 2017, Save the Children 2019).

Every Newborn Action Plan

The close link between newborn and maternal and child health has been further strengthened through Every Woman Every Child's Global Strategy for Women's, Children's and Adolescents' Health and its accompanying initiatives, the United Nations Commission on Life-Saving Commodities for Women and Children, and UNICEF's *Committing to Child Survival: A Promise Renewed* (Every Woman Every Child 2015, Every Woman Every Child 2012, UNICEF 2014). The focus on newborns and stillbirths has become even stronger with the introduction of the Every Newborn Action Plan, which was endorsed at the 67th World Health Assembly in May 2014 (WHO 2014). The plan outlines a framework to end preventable stillbirths and newborn deaths. With this, a number of countries developed national-level strategies for newborn health and action plans, with Ghana among the early adopters. The milestones achieved by various countries have also been tracked (WHO and UNICEF 2018).

Quality of Care

In recent years, the importance of quality of care (QoC) has been much in the forefront globally. QoC has been strongly promoted by WHO along with partners such as UNICEF, UBORA/Institute for Healthcare Improvement, and USAID, with the establishment of the Quality, Equity, Dignity network in 10 countries: Bangladesh, Côte d'Ivoire, Ethiopia, Ghana, India, Malawi, Nigeria, Sierra Leone, Tanzania, and Uganda (WHO 2017c).

WHO and others developed a number of documents in this area (WHO 2016b, WHO 2017d, WHO 2017b, The Lancet Global Health 2018). It is increasingly being realized that the old adage of promoting deliveries by “skilled birth attendants” and even instituting capacity-building of these care providers do not necessarily improve outcomes. Incorporating QoC into service provision is mandatory to have the desired impact on outcomes. Various countries are adopting different approaches for improving QoC. Rwanda, for example, looked into having a national steering committee and an accreditation oversight body for this purpose, and is progressing toward institutionalizing QoC. Introducing specific hospital standards made assessments more objective, and progressive accreditation created a pathway for facilities to improve QoC, moving them steadily to higher levels of performance (MSH Rwanda 2017).

Infection Prevention

Infections are the third most important cause of neonatal mortality. It is likely that they are underestimated in newborns, particularly in preterm and low-birthweight (LBW) babies, as clinical features may be similar in several noninfectious conditions and suitable diagnostic tests may be limited in LMIC, including Ghana. Chances of infection are also higher where basic resources, including continuous availability of clean running water and hand hygiene, are inadequate. It is likely that many of the complications of prematurity, especially as newborns survive and stay for longer periods in hospitals, may actually be infections. Some hospitals in LMIC have reported a high incidence of sepsis (Zaidi et al. 2005).

Infection prevention thus becomes of paramount importance when dealing with these vulnerable babies. The WHO/UNICEF water, sanitation, and hygiene initiative and the Water and Sanitation for Health Facility Improvement Tool, with their recommended IP practices, should be the very basic requirements and mandatory for every facility (WHO 2017f, WHO 2016a). Organizations and projects, such as Jhpiego, USAID’s Every Premie–SCALE, and PATH, have included infection prevention as priorities (Tietjen et al. 2003, Every Premie–SCALE 2017, PATH 2016).

Antibiotic Stewardship

Antibiotic resistance is closely linked with infections, is a topic of growing concern globally, and is of special interest to Ghana. Needless, indiscriminate, and prolonged use of inappropriate antibiotics, either given to pregnant women or newborns, has contributed to the significant intensification of this challenge that has had adverse effects on the newborn microbiome. It needs to be addressed urgently. Optimal antibiotic stewardship is essential and needs to be implemented through a motivated team of physicians/pediatricians, pharmacists, nurses, key members of the infection control team, and microbiologists. IP measures and adoption of best practices related to use of antibiotics, including choice, criteria for initiation, and duration of treatment, are a few of the important remedial steps (Ramasethu and Kawakita 2017).

CURRENT SITUATION OF NEWBORN HEALTH IN GHANA

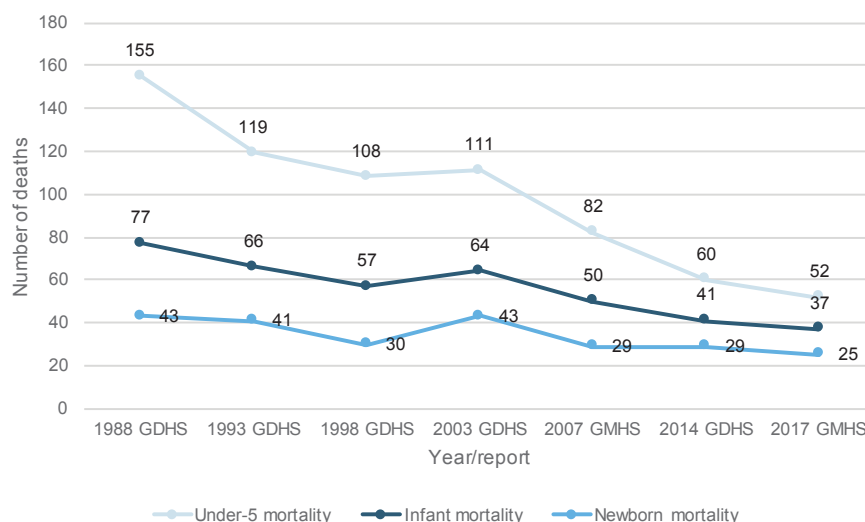
This section will highlight the current status of newborn health in Ghana and the changes that have taken place mainly since 2014, when the first national strategy for newborn health was developed for Ghana (Ghana MOH and GHS 2018).



Neonatal Mortality Rate

Ghana's neonatal mortality rate has gone down, from 29 per 1,000 live births in 2014 to 25 per 1,000 live births in 2017 (GSS et al. 2018), a 14% reduction (see Figure 5).

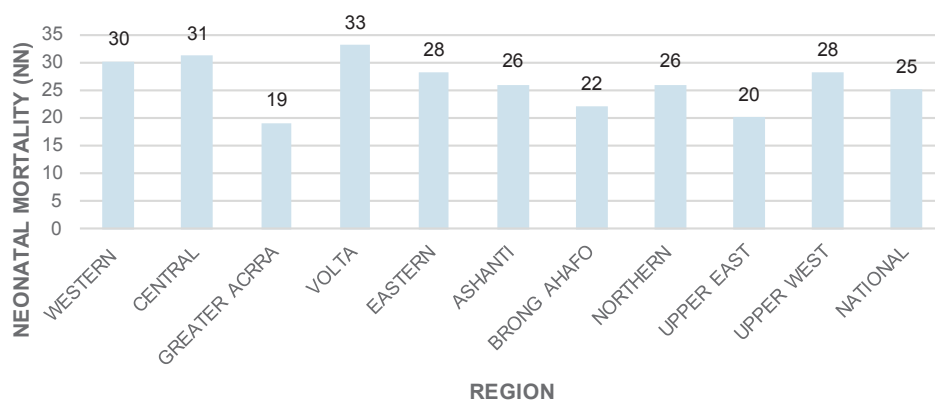
Figure 5. Trends in childhood mortality, 1988–2017



Sources: Ghana DHS 1988–2014, GSS et al. 2018

According to the 2017 Ghana Maternal Health Survey, Greater Accra, Brong Ahafo, and Upper East regions had neonatal mortality rates lower than the national figure, while Volta Region had the highest, followed by Central and Western regions (see Figure 6).

Figure 6. Regional 10-year neonatal mortality rates, Ghana, 2017



Source: GSS et al. 2018

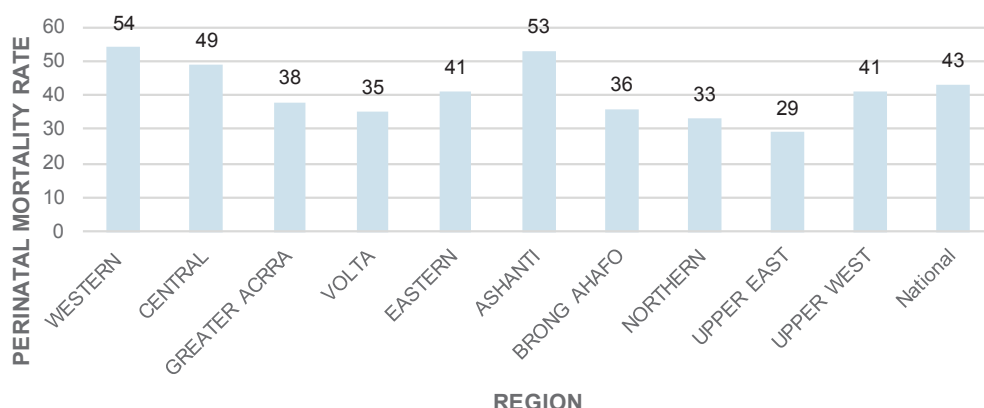
Institutional Neonatal Death Rate

Institutional neonatal death rates have been increasing in all regions, with the national figure increasing from 3.8 per 1,000 live births in 2014 to 8.4 per 1,000 live births in 2017, according to data from the 2018 district health information system (DHIS). This may be partly attributable to improved data collection, but the high rate is still a concern, suggesting that, among other things, QoC will need to be better addressed.

Perinatal Mortality Rate

The 2017 Ghana Maternal Health Survey showed the national perinatal mortality rate for the 5 years preceding the survey was 43 per 1,000 total births; Ashanti, Western, and Central regions had higher values than the national figure (see Figure 7).

Figure 7. Perinatal mortality rates by region, 2017, Ghana



Source: GSS et al. 2018

Causes of Newborn Deaths

Ghana does not have available data for causes of newborn deaths (as of the end of 2018), but the GHS is trying to address by capturing causes of death routinely in the DHIS as of January 2019. Available data from some facilities in Greater Accra shows that the five most common causes of neonatal deaths are adverse intrapartum events or birth asphyxia, prematurity, neonatal sepsis, respiratory distress, and meconium aspiration.

Note: Some of the “causes” are not quite appropriate, such as respiratory distress, which is a clinical feature, and prematurity, which is mainly a contributing/predisposing factor to the actual cause(s) of death. Issues such as this will be covered in the new strategies related to capacity-building of health care providers and correct documentation in the HIS (see Strategy 4 and Strategy 5).

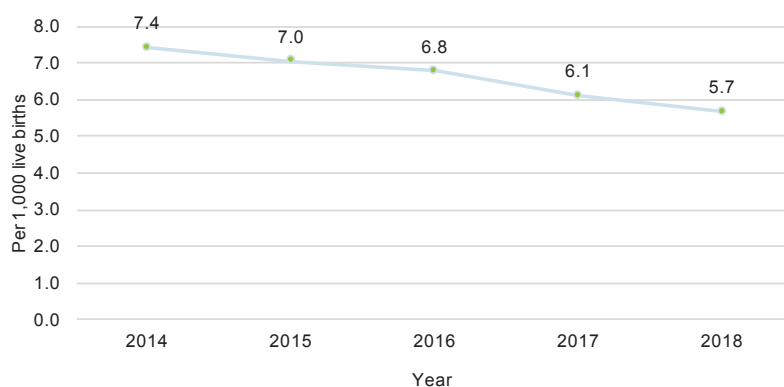
Stillbirth Rate

There was slight decrease in stillbirth rate, from 1.8 per 1,000 total births in 2013 to 1.5 per 1,000 total births in 2017, a 16.7% decrease. There may be gross underestimation of the actual stillbirth rate as most of such deaths in the communities are not captured or reported and survey data is currently not available. Data from the DHIS show that the fresh or intrapartum stillbirth rate has markedly improved, from almost 74% in 2014 to 61% in 2017 and 57% as of December 2018 (see Figure 8). This may be



because of improved care during labor and delivery and/or better neonatal resuscitation.

Figure 8. Fresh stillbirth rate



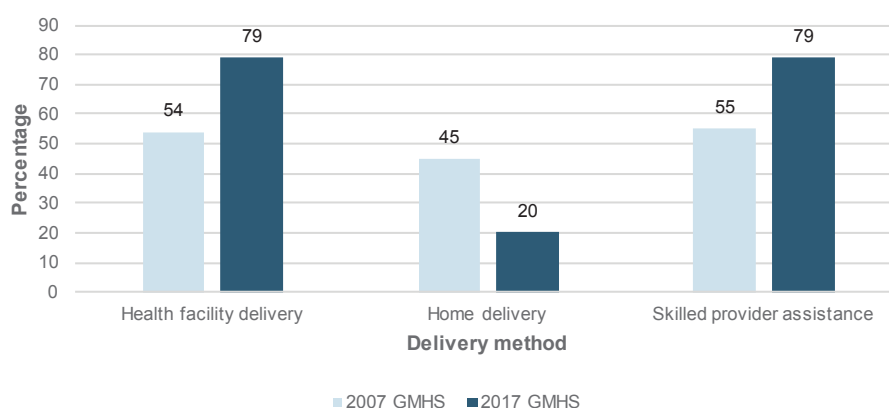
Source: Policy, Planning Monitoring, and Evaluation GHS, DHIS December 2018

Trends in Key Neonatal Care Indicators

Deliveries by Skilled Birth Attendants

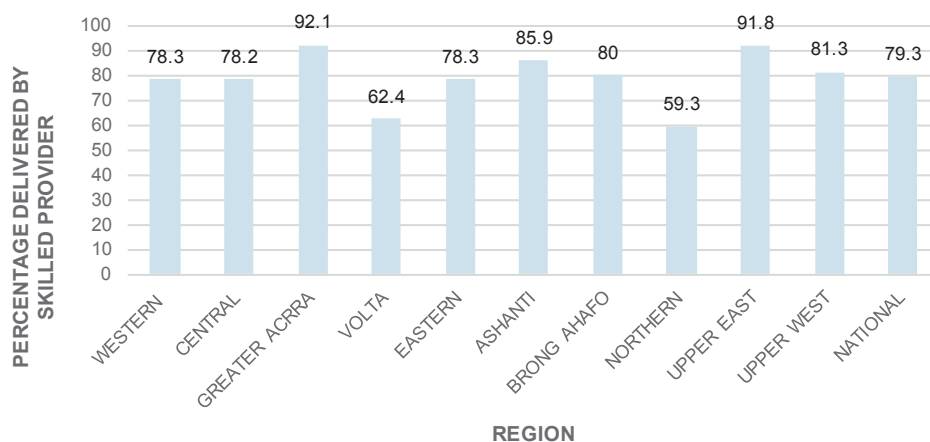
According to the 2017 Ghana Maternal Health Survey, the percentage of deliveries conducted by skilled birth attendants increased from 55% in 2007 to 79% in 2017, a 44% rise (see Figure 9).

Figure 9. Percentage of live births in the 5-year period comparing the 2007 and 2017 Ghana Maternal Health Survey



Source: GSS et al. 2018

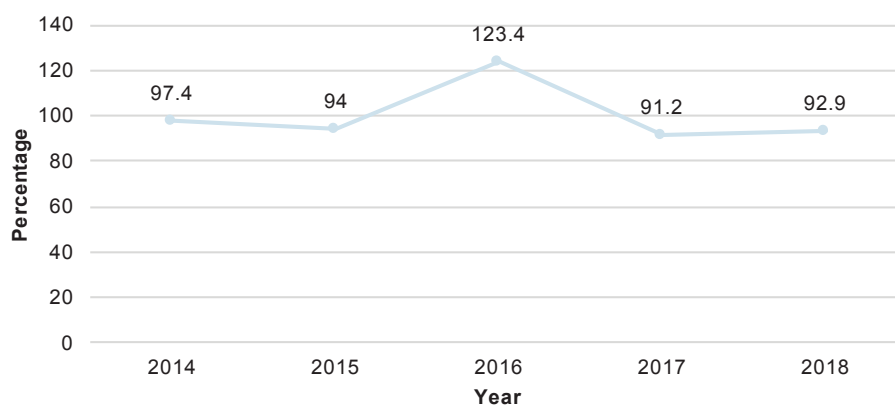
Regional coverage (GSS et al. 2018) is shown in Figure 10. Deliveries by skilled birth attendants are highest in Greater Accra (92.1%), followed by Upper East (91.8%) and Ashanti regions (85.9%). Northern (59.3%) and Volta regions (62.4%) have the lowest rates of deliveries assisted by skilled providers.

Figure 10. Deliveries by skilled birth attendants by region, 2017

Source: Ghana Maternal Health Survey, Statistical Services of Ghana, 2017 ¹³

Initiation of Breastfeeding and Exclusive Breastfeeding

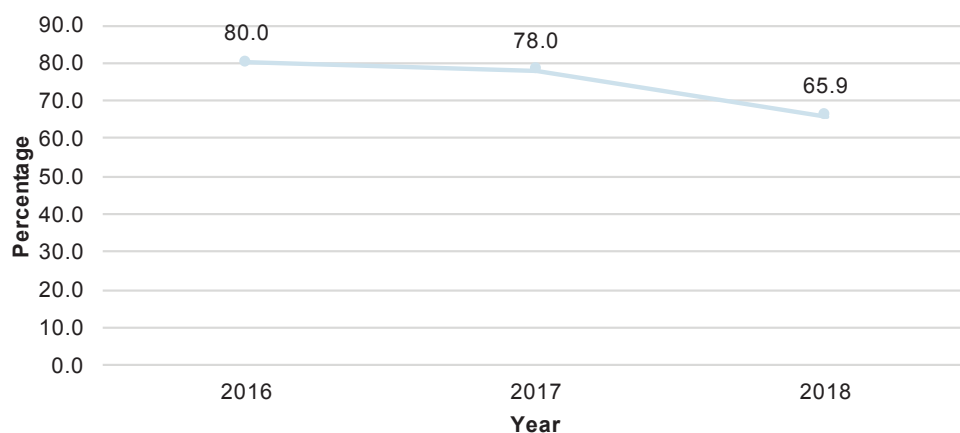
Institutional data show that 92.9% of babies had mothers who initiated breastfeeding within 1 hour of birth in 2018, compared with 97.4% in 2014 (see Figure 11).

Figure 11. Breastfeeding initiated within 1 hour of birth, 2014–2018

Source: PPME GHS, DHIS 2018

Although the 2017 Ghana Maternal Health Survey did not capture the exclusive breastfeeding up to 6 months indicator, data on this indicator from the DHIS show a downward trend, from 80% in 2016 to 78% in 2017, and still further declined to 66% as of December 2018 (see Figure 12).

Figure 12. Percentage of babies receiving exclusive breastfeeding up to 6 completed months of age, 2016–2018

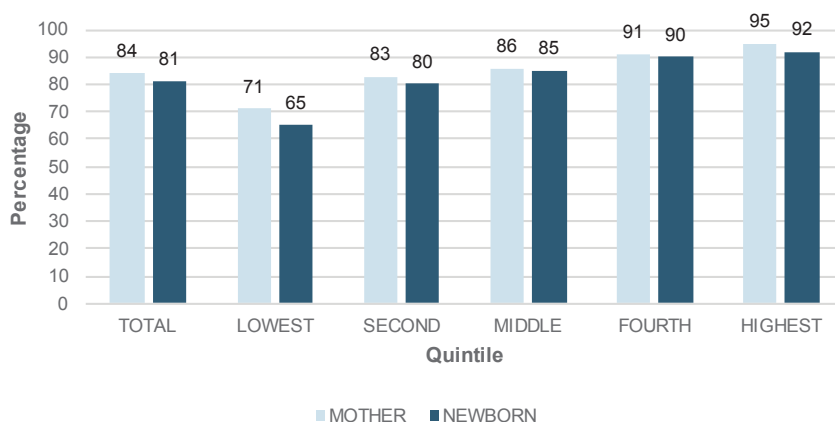


Source: DHIS 2018

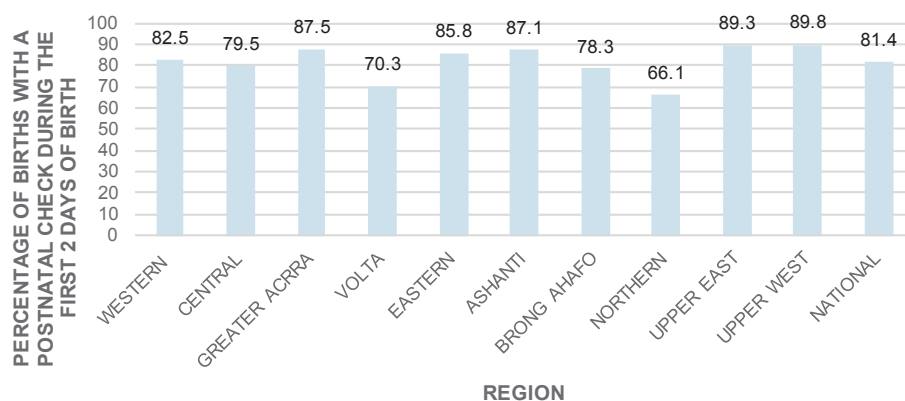
Percentage of Babies Receiving First Postnatal Visit within 48 Hours

The 2017 Ghana Maternal Health Survey reported that trained health workers contacted or visited 81% of newborns within 48 hours of delivery. The coverage was greater (92%) in the highest-wealth quintile compared to 65% in the lowest quintiles (see Figure 13). Regional breakdown is shown in Figure 14.

Figure 13. Percentage of live births in the 5-year period before the survey with postnatal care within 2 days of delivery, 2017



Source: GSS et al. 2018

Figure 14. Postnatal visit related to the newborn within 2 days of birth by region, 2017

Source: GSS et al. 2018

Upper West (89.8%), Upper East (89.3%), Greater Accra (87.5%), and Ashanti (87.1%) had the highest percentages of births that had a postnatal contact during first 48 hours of birth, according to the 2017 Ghana Maternal Health Survey. Northern (66.1%), Volta (70.3%), Brong Ahafo (78.3%), and Central (79.5%) had the lowest.

Note: Currently, in Ghana, the above indicator is referred to as postnatal care, but it is important that the SCNC review this and change it to postnatal contact or visit, as the indicator currently merely documents a visit or contact between the health worker and the mother and baby. It does not document what the health worker did during this contact. The actual care provided will need to address QoC issues, which requires a more in-depth analysis.

Bottleneck Analyses of Health System Issues Affecting Newborn Care

Detailed bottleneck analyses were undertaken during the evaluation of the 2014–2018 newborn strategy in August 2018 and at a workshop discussing key bottlenecks identified during the evaluation, root causes of these bottlenecks, and possible solutions. These analyses were taken into consideration when developing the new strategy for 2019–2023. This section provides a summary of the discussions and consensus achieved. Members who participated in the workshop on the bottleneck analysis are noted in Appendix 2.

Leadership and Governance

The newborn program established various subcommittees for activities such as resource mobilization, advocacy, and communication. The establishment of the Newborn National Multisector Committee provided a platform for stakeholders to build consensus, align activities, monitor performance, and address emerging challenges. A National Newborn Stakeholders' conference is organized yearly to provide a forum for sharing best practices, discussing emerging issues, and identifying priorities to inform planning at all levels. The national secretariat was strengthened with some technical and support staff. Key bottlenecks identified under leadership and governance included:

- The newborn program inadequately involved private-sector facilities, including those at district and regional levels, and other stakeholders, such as obstetricians
- Some leadership at facility level did not provide the necessary support for newborn strategy



implementation.

- There was no oversight body to supervise newborn health strategy implementation activities at subnational levels.

Policy and Guidelines

Many policies, guidelines, and manuals were developed or updated since 2014 to provide relevant information for implementing newborn care. The following documents and tools, among others, were adopted/adapted/reviewed or developed since 2014:

- Helping Babies Breathe and Essential Care for Every Baby, with the addition of an IP and control component
- Job aids for maternal and newborn care
- National perinatal death audit guidelines
- National kangaroo mother care (KMC) and LBW infant guidelines and training manuals
- General standards of care for newborns at all levels, including monitoring charts for inpatients
- Revised standard treatment guidelines (2017), especially with respect to inclusion of chlorhexidine and antenatal corticosteroids
- Revised Essential Medicines List 2017
- Adapted WHO pocket book for hospital care for children (reference book)
- Combined maternal and child health records
- Policy brief and guidelines on cord care practices and chlorhexidine
- Updated new delivery register and form A
- Development and operationalization of the RMNCAH scorecard

Key bottlenecks/gaps in policies and guidelines that also constituted challenges not addressed in the earlier strategy document and focused on as the priority at the time, namely ENC, are noted below:

- Insufficient focus on care of small and sick newborns with inadequate policies, guidelines, manuals, and job aids for their care
- Inadequate focus on QoC issues
- Lack of activities to promote psychosocial support for parents with poor pregnancy outcomes and for early childhood development (ECD) issues
- Limited printing and dissemination of copies of documents produced

Financing and Resource Mobilization

A number of strategies were adopted by the newborn program to help mobilize more funding for the strategic plan, including getting more partners on board, advocating to put newborn care high on the agenda at all levels, and engaging industry in Ghana to be part of the resource mobilization effort. Key bottlenecks identified included:

- Inadequate and erratic financial support from Government of Ghana for operational activities
- Incomplete coverage of services related to the level of care by the national HIS, including delays in reimbursing providers, leading to low trust between health facilities and the community
- Too much dependence on donor funds
- Inequity in funding programs, as most resources follow donor-supported regions
- Inadequate investment by the private sector due to weak resource mobilization strategies

Health Information System and Monitoring and Evaluation Systems

The newborn program noted the following achievements in the HIS:

- The neonatal mortality rate is now included in sectorwide indicators of the Ministry of Health (MOH).
- The DHIS captures 23 indicators related to the newborn, disaggregated by age.
- The delivery room register was revised to capture newborn data.
- A combined maternal and child health record book was developed to capture data on QoC, including additional postnatal care visits at 7 days after delivery.
- A scorecard for RMNCAH was developed to facilitate data capture.
- Newborn indicators are included in national and some regional peer review tools.

Key bottlenecks identified included:

- Some key indicators for newborn care have yet to be added to the DHIS.
- Some existing variables/indicators in the DHIS had inadequately classified, defined, and/or captured data.
- The private sector, some teaching hospitals, and faith-based organizations inadequately captured data.
- Some regions conducted perinatal death audits erratically and had poor follow-up of recommendations.

Health Workforce

Although the nurse population ratio improved tremendously over the past 4 years, distribution equity has remained a serious challenge. Nurses' geographical equity per population did not change significantly year over year. For instance, it only changed from 2.0 in 2013 to 2.1 in 2017, according to the Health Sector Medium-Term Plan 2018.

The Ghana Nursing and Midwifery Council revised the midwife curricula, especially on initiating breastfeeding and KMC. Jhpiego conducted orientation sessions for some tutors and equipped their skills laboratories. PATH and some medical schools helped include the revisions in Helping Babies Breathe, Essential Care for Every Baby, and KMC in the Komfo Anokye and Korle-Bu teaching hospitals. PATH funding supported conducting orientation workshops for some of the tutors. About 69% of targeted health workers countrywide have been trained in ENC, including Helping Babies Breathe, Essential Care for Every Baby, and IP (data from the national review of the 2014–2018 newborn strategy). Koforidua Regional Hospital has a KMC model, where health workers



from other facilities in Ashanti, Volta, and Brong Ahafo regions were trained on and assisted with initiating KMC in their facilities.

Key bottlenecks identified in area of health workforce included:

- Inadequate trained human resources at all levels and maldistribution of trained staff
- Few staff with specialized skills (especially pediatricians, neonatologists, and pediatric /neonatal nurses) to manage sick newborns and preterm babies
- Few tutors trained in newborn care to who can train care providers
- An inadequate preceptor system
- Poor staff attitude

Quality Issues/Mother Baby Friendly Health Facility Initiative ⁴⁴

The MOH developed:

- Infection Prevention and Control Policy and Guidelines in Health Care Settings (developed in 2015 by the Institutional Care Division)
- The Ghana National Action Plan on Antimicrobial Resistance 2017–2021, which addresses the increasing concern of multidrug resistance to many common antimicrobials in Ghana: Its rollout is being planned, but financial challenge is a major hindrance. QoC issues should therefore be addressed in the new strategy.
- The Mother Baby Friendly Health Facility Initiative (MBFHI) quality improvement (QI) program (2016–2018): Being piloted in four districts in Upper East Region (Ghana MOH and GHS 2016). The MOH developed an implementation guideline and assessment tools focusing on improving QoC based on Every Mother Every Newborn and WHO QoC standards for mothers and babies during the intrapartum period and the first week of life. Some key achievements included establishing 21 newborn care corners in health centers and three newborn care units in three hospitals, leading to reduced neonatal case fatality rates in the implementing hospitals by 30% at the end of 2018, and reduced stillbirth rates and increased demand for community breastfeeding counseling and support in partnership with civil society organizations (CSOs). The overall aim is to generate evidence for scale-up globally and in Ghana. The endline assessment findings will be disseminated in 2019.

Bottlenecks included:

- Inadequate focus related to the newborn, especially at-risk/small and sick babies, in:
- QoC in general
- IP
- Antibiotic resistance and stewardship

Availability of Infrastructure, Essential Medicines, Equipment, Logistics, and Other Commodities

A list of selected equipment primarily used for basic ENC at various levels has been developed. Various partners and projects—the European Union, PATH, UNICEF, the World Bank, WHO, the Department for International Development, Systems for Health, etc.—procured and distributed equipment for basic resuscitation and other purposes to some regions. UNICEF procured level I and II maternal and newborn

care equipment, and established five newborn care units in Upper East Region, four newborn care units in Northern Region, and three newborn care units in Upper West Region. A set of equipment for accurate nutritional measurement was recently distributed to hospitals, health centers, CHPS compounds, and outreach points.

Bottlenecks identified included:

- Inadequate infrastructure for care of small and sick newborns
- Lack of essential equipment and commodities, such as newborn resuscitation bags and masks, phototherapy equipment, radiant warmers, and pulse oximeters, in many facilities
- Delayed procurement of essential equipment due to funding challenges
- Maldistribution and inequitable distribution of some procured equipment, with partner-focused regions benefiting at the expense of “orphan” regions

Community Engagement and Social and Behavior Change Communication

Key achievements included:

- A major strategy for community engagement for national, regional, community, and facility newborn champions to use: About 10 national champions were selected, of which four are active. There are 56 newborn champions in Ghana.
- Development of a brief flyer with salient features of the newborn strategy for advocacy in 2014
- Development and implementation of an advocacy and communication strategy
- Establishment of a national health-sector social and behavior change communication (SBCC) Technical Review Committee
- Child Health Promotion Week commemorations
- Breastfeeding Week and World Prematurity Day celebrations highlighting newborn issues
- Development of communication materials for newborn care

Key bottlenecks identified included:

- Community beliefs, especially around cord care and prematurity, are still unfavorable and difficult to change.
- The capacity of newborn champions is not effectively harnessed and utilized. In addition, some regions have not yet selected and orientated champions.
- CHWs do not have the capacity to provide SBCC services or initially manage sick newborns.
- There are inadequate and ineffective linkages between clinical care and public health units for effective follow-up of all babies, whether normal, high-risk, or those treated for problems.
- Community gatekeepers, including district assemblies and CSOs, are inadequately engaged to champion care of sick newborns and preterm babies.



Inclusive Partnership

The newborn program mobilized a number of partners and USAID-funded projects to support newborn care in Ghana. Partners included PATH, Jhpiego, UNICEF, WHO, the Japan International Cooperation Agency, the Church of Jesus Christ of Latter-Day Saints, the Paediatric Society of Ghana, and the private sector. USAID supported mobilization through its Systems for Health, MCSP, and Communicate for Health projects, among others.

Key bottlenecks in this area included:

- Inadequate engagement of the corporate world
- Weak coordination between obstetricians and pediatricians
- Inadequate involvement of mothers in the care of their newborns in SCNUs/NICUs
- Poor involvement of relevant health care providers in perinatal audits
- Inadequate engagement of nongovernmental organizations and CSOs

USAID SITUATION ANALYSIS FOR INPATIENT CARE OF SICK NEWBORNS AND YOUNG INFANTS

In 2018, Ghana was among a number of countries that took part in the global initiative led by USAID to assess the status of facility-based care of newborns and young infants. The shared draft report noted that this particular evaluation included babies beyond the neonatal period of 4 weeks, extending to 59 days, as adopted in the integrated management of newborn and childhood illness strategy, which generally has greater relevance to subdistrict facilities and communities.

In contrast, admissions to the neonatal units (SCNU/NICU) are generally restricted to babies under 4 weeks, although after admission, some, mostly preemies who are convalescing, may stay in these units beyond the first month of life. Additionally, outborn babies referred for problems may be admitted to the SCNUs/NICUs in some hospitals. In others, they may be sent to the pediatric ward for fear of potential spread of infection to other inborn babies (born in the same facility) in the neonatal unit.

Review of the USAID study on newborn care components showed that the findings and recommendations complemented those of the GHS bottleneck analysis noted above.

Needed support for newborn care components included appropriate policies with optimal implementation, suitable infrastructure, guidelines, tools, and appropriate training of health care providers, which promoted motivation and improved QoC. QI was found to be essential in basic elements, such as temperature maintenance, breastfeeding, resuscitation, and additional components, such as respiratory support with safe use of oxygen, IV fluid administration, alternative feeding support, management of jaundice, infection, and other common problems. Equally important were appropriate distribution of adequate health care providers, including pediatricians/neonatologists, midwives, and nurses (such as neonatal nurses), and other ancillary staff. Additional recommendations included adequate essential equipment, commodities, and drugs; appropriate case sheets and other records; strong IP practices, including avoidance of multiple babies sharing cots/incubators; strengthening and expanding perinatal audits; and appropriate monitoring using suitable indicators.

Intervention Package

This section covers the progression from the earlier newborn intervention package (2014–2018) to key issues relevant to the new plan and the main updated intervention package (2019–2023). It also includes related issues, such as package integration within the RMNCAH framework, levels of newborn care in the new package, the interventions' sites of application, and selected cross-cutting components that can promote more effective package implementation. The common terms used in relation to the newborn and their definitions are noted in Appendix 3.

Progression from the Earlier Newborn Intervention Package (2014–2018)

The 2014–2018 newborn intervention package focused on ENC and included the following components:

- Basic ENC, primarily preventive and promotive care at birth and in the postnatal period, with special focus on the first week of life, when 75% of deaths occur
- Management of adverse intrapartum events (including birth asphyxia) through basic neonatal resuscitation
- Basic care of the preterm/LBW baby, including KMC
- Management of the sick newborn, with a focus on neonatal infections (primarily addressing identification and preliminary management before referral) and, where relevant, services for prevention of mother-to-child transmission of HIV

Emphasis in the earlier intervention package was on basic care or ENC—related to what is currently called level I care (Appendix 4A)—at all levels, including in subdistrict facilities (peripheral health centers) and at district, regional, and teaching hospitals. Frequently, the term ENC covered not only basic, preventive care but also all components noted in the above bullets.

For small babies, while extra warmth, skin-to-skin contact via KMC, additional feeding support, and referral to appropriate facilities were promoted, the components of “special/extra care” required by such babies, especially related to facility-based interventions, were not covered to any significant extent at that time. The same applied to infections. IP included primarily promotion of clean running water, handwashing, use of soaps and hand rubs, clean delivery practices, clean linen, and cord care. Treatment consisted of giving the first dose of antibiotics at peripheral health centers and sending the baby to a referral hospital. This package was, however, effective, as there was a decline in neonatal mortality, as indicated previously. However, further strengthening of existing activities and additional inputs are now required if Ghana is to address Sustainable Development Goal 3.2.2 and decrease neonatal mortality further to the targeted goal of at least 12 per 1,000 live births by 2030.

Experiences in Ghana followed those noted in many other LMIC, with 79% of births in 2017 taking place in facilities (GSS et al. 2018). Here too, this increase did not result in improved outcomes, probably mainly due to inadequate facility readiness for the care of low-risk, normal-weight/-term newborns and at-risk/small, and sick babies. In fact, neonatal deaths rose in some facilities, as noted previously. The focus of the new strategy will be expanded to cover improved **quality of newborn care** at the facility level and promote more holistic care for newborns. The updated intervention package will include:

- Continued basic ENC for **all** babies (level I), expanding it to cover sites that had not initiated it earlier in:



- Homes/communities
- Subdistrict/peripheral facilities
- Hospitals at district, regional, and national/teaching levels
- Additional facility-based care for at-risk/small and sick babies through:
 - Special care (secondary/intermediary/level II care) at all hospitals, including SCNUs
 - Intensive/tertiary/level III care in NICUs at all national/teaching hospitals and in regional hospitals progressively in stages

SELECTED ISSUES OF RELEVANCE TO THE UPDATED INTERVENTION PACKAGE

Terminology

Globally, the term “small and sick babies” is used to identify babies who need to be cared for in SCNUs/ NICUs. This is likely based on the fact that babies who are kept in SCNUs/NICUs in high-income countries (HIC) are primarily preterm/LBW newborns and babies with problems. The larger, more mature babies who need just a little extra care or observation are roomed in with their mothers, where their additional needs are met by care providers covering these sites.

However, in LMIC, some babies weighing over 2,500 g who are not necessarily sick are transferred to SCNUs for extra observation and minimal bedside tests. For example, babies who were successfully and quickly resuscitated may need some monitoring for respiratory problems and feeding adequacy. Babies whose mothers had gestational diabetes require simple bedside blood sugar estimations. Some late preterm babies who may weigh over 2,500 g will still need closer observation and perhaps additional support for feeding and temperature maintenance early on. In some hospitals, it may not be feasible to room these babies in with mothers in postnatal wards, as the few midwives/nurses there primarily deal with mothers and, to some extent, with term, normal-weight/low-risk babies. (Narayanan 2019). Based on this, because the situation is similar in Ghana, the term “at-risk/small and sick babies” will be used for babies who need to be cared for in SCNUs. **At the same time, babies should not be subjected to needless separation from their mothers.**

Care of the Small Baby

In many global health programs, until fairly recently, much of the focus of care for preterm/LBW babies (small babies) has been primarily on KMC. Over the years there, has been ample indisputable evidence for its tremendous advantages, both short and long term (Charpak et al. 2017). Ghana has strongly supported expansion of this intervention. Unfortunately, despite all of the evidence, approval, and promotion, in most hospitals, many small babies do not receive KMC or do so for limited periods. It is therefore important to not only continue promoting KMC but also address the care needed by this special group of babies based on the key signal functions related to most preterm/LBW babies who do not have major problems or illnesses. These can be provided through KMC. Where KMC is not feasible or covers an inadequate number of babies, **it is essential that suitable alternate arrangements are understood and implemented correctly.** The two are not mutually exclusive, as KMC may be practiced intermittently in some situations.

Another approach has been added to the care of these babies during their facility stay—family-centered care (FCC), which, unlike KMC, applies to all babies, including those who are sick and need to spend time in level II or III care. This too should be incorporated into the armamentarium of care of at-risk/small and sick babies.

FCC is emerging as a paradigm shift in the practice of facility-based newborn care in HIC and LMIC. The focus is changing from a provider-centered model to a client-centered one. With some guidance and

supervision, mothers and some family members can have access to neonatal units; provide a baby's own mother's breast milk, in keeping with Ghana's policy; and provide some aspects of nonskilled, nurturing aspects of care (task sharing). With reasonable precautions, FCC has not been associated with an increase infections. FCC improves the confidence of mothers/families, especially in post-discharge care of the baby (Narayanan 1987, Verma et al. 2017). A link to an example of a training guide on FCC used in LMIC is included in Appendix 6.

In some hospitals, outborn babies brought to outpatient departments or emergency units do not get admitted to neonatal units for fear of spreading infection to inborn babies. Instead, they are admitted to general pediatric wards, where they run the risk of acquiring infections from older infants and may not receive the more specialized care that may be available in SCNUs/NICUs. These are significant challenges in resource-poor environments and require considerable thought, planning, and additional supportive resources related to the various components of the health system. In addition, in some places, there is the risk of neonatal deaths being missed, which is higher in outborn babies than in inborn admissions, unless great care is taken when reporting deaths from pediatric wards. The latter, as noted earlier, includes careful disaggregation of deaths by age and ensuring that the deaths of newborns admitted to pediatric wards are linked with the deaths reported from the neonatal unit when data are sent to the DHIS/HIS.

Inadequate Recognition of the Importance of Infections and Their Prevention

Over the years, while a number of areas in newborn health—including adverse intrapartum events, such as birth asphyxia; prematurity; and treatment of infection—have received significant attention, **prevention** of infection has generally not received the interest it deserves, especially at facility level. It is possible that in the last decade, the increased focus on prematurity may have inadvertently been an influencing factor. Perhaps this was based primarily on findings in HIC, where prematurity is a key problem to be addressed. In HIC, the QoC in general and infection control are already at a much higher level, and the components related to the care of prematurity have a slightly different connotation. Here, issues such as use of antenatal corticosteroids, the care of the very small babies, and prevention of preterm birth itself—a much more challenging issue—are at the forefront. In LMIC, the more basic QoC and infection prevention need to be addressed to a far greater extent.

The above points are also important in relevant sites in LMIC. However, not recognizing infections and grouping them as “complications” of prematurity—often even noted just as “prematurity”—can have serious implications, as it prevents focusing on some of the key problems. This is particularly important for Ghana, as visits to hospital record sections in the preparatory period for developing this strategy document indicated that many deaths were attributed to prematurity, even when many had survived quite a few days. Knowing the correct causes of mortality to the extent feasible is very important, as appropriate actions can then be taken to prevent and treat the actual problems. Prematurity is an underlying factor and not an actual cause of death. This is particularly so in LMIC, where the cut-off gestational age and birthweight for viability is often taken as 28 weeks and 1,000 g, respectively.

IP control is, thus, among the most important components of care in LMIC to be addressed to prevent mortality and morbidity among newborns, especially preterm babies. Aside from other important components, strong promotion of use of human milk (own mother's breast milk, based on Ghana's requirements) and subsequent exclusive breastfeeding are also of critical importance, particularly due to falling rates of exclusive breastfeeding in Ghana (see “Current Situation of Newborn Health in Ghana”). It should be noted that as care of preterm babies improves and they stay longer in SCNUs/NICUs, prevention of health care-associated infections will assume an even greater significance. Addressing the basic steps of promoting clean water supply and hand hygiene, as supported by WHO/UNICEF's Water and Sanitation for Health Facility Improvement Tool, are critical (WHO 2017f). Additional steps are essential in the care of at-risk/small and sick babies, including proper disinfection/sterilization of all reusable equipment/commodities and ensuring that health care providers implement care and



procedures for babies not only in the correct manner but also in a way that promotes IP.

Although Ghana has done an excellent job of developing a national-level document on IP, it needs an additional supplement to address more specific newborn care issues at various levels, especially for SCNUs and NICUs. Equally important is the need for key tests to correctly diagnose infections, including blood cultures and sensitivity tests relevant to antibiotics. Established protocols and guidelines for the correct diagnosis and treatment of various infections, and appropriate antibiotic stewardship are also critical (Ramasetu and Kawakita 2017).

Components of the Updated Intervention Package for 2019–2023

Broadly speaking, interventions will expand to address facility-based care for **all** newborns, not only the low-risk categories. At the same time, interventions will continue to be implemented and further strengthened to address community-based activities. As the range of care expands, additional tools, including standards, manuals, and job aids for extra care required by this vulnerable group of babies, procedures, and IP specific to the newborn care units, will be required.

The updated intervention package will continue to prioritize the key causes of neonatal mortality, namely complication of prematurity, birth asphyxia/adverse intrapartum events, and neonatal infections. However, besides providing the basic ENC package and recommendations for referral for problems/danger signs, the package will also cover **managing** problems related to at-risk/small and sick babies at the appropriate levels. The key components of the updated package are included in Table 2 and will be implemented at scale, including in underserved, marginalized areas.

Table 2. The intervention package

1.	ENC for all babies, including: <ul style="list-style-type: none"> Care at and around birth (such as management of birth asphyxia/adverse intrapartum events), services for prevention of mother-to-child transmission of HIV, and prevention and treatment of other infections, as the first 24 hours is when 36% of deaths occur Continued care during the short facility stay in the postnatal period with appropriate assessment and counseling at discharge
2.	Care of at-risk/small and sick newborns, both preventive care and management of problems relevant to the level of care being provided, particularly intermediary/secondary/level II care in all hospitals and intensive/tertiary care/level III in all teaching hospitals and regional hospitals (starting in select hospitals and, in stages, covering all): The quality support/care should promote KMC and FCC, and include IP and antibiotic stewardship. Further details with required signal functions are noted in Table 3 and in Appendixes 4A–C.
3.	Follow-up care to support the Survive and Thrive approach: <ul style="list-style-type: none"> Preventive and promotive care initially at the facility and later in the community/home during the postnatal period as part of routine ENC, services for prevention of mother-to-child transmission of HIV, early detection of problems/danger signs, prompt care seeking, and extra focus in the first week of life, when around 75% of the deaths occur: The current postnatal schedule includes three contacts/visits in the first week, namely day 0 [the first 24 hours], primarily including care after the first hour that is related to the birthing process; within 48 hours; and at day 6/7.

	<p>Initiation of additional activities, particularly addressing:</p> <ul style="list-style-type: none"> • Selective newborn screening tests: It is essential that those used countrywide be outlined by the SCNC. They include detection of key genetic problems, such as the sickle cell disease, a common problem among Africans. Almost 2% of babies born in Ghana have sickle cell disease. This screening should ideally be done in adults to detect the sickle cell trait or before delivery through testing of the amniotic fluid as early as 8–10 weeks of pregnancy. These tests may not always be feasible in LMIC. Most commonly, the disease is detected through newborn screening after birth. Currently, in Ghana, newborn screening for sickle cell disease is carried out at Komfo Anokye Teaching Hospital; Korle-Bu Teaching Hospital; Kumasi South, Tafo, and Suntreso hospitals; and a few other facilities in Ashanti Region. Cases are then managed according to existing draft protocols. Unfortunately, due to logistic and other challenges, the newborn sickle cell screening program is currently not running adequately. The current government has signed a memorandum of understanding with the Switzerland-based Novartis Pharmaceuticals Corporation to revamp the program. The newborn strategy proposed to revive the program, strengthen and finalize the draft protocols, and expand the intervention to other suitable hospitals. <p>The SCNC will also look into feasibility of screening for other conditions, such as hypothyroidism, which can affect neurodevelopment but is far more easily treated. All are in line with the current Child Health Policy and Strategy.</p> <p>Neonatal screening will be supported by SBCC activities to ensure the community is adequately informed on why such tests should be done and what actions need to be taken. Without this, the screening program may face additional challenges.</p> <ul style="list-style-type: none"> • Evaluation for hearing loss; visual problems, such as retinopathy of prematurity; and developmental delays with suitable plans for feasible remedies. • Psychosocial support for mothers/families who have undergone adverse events, such as the loss of a baby • Promotion of ECD to be addressed through the implementation of the UNICEF/WHO Nurturing Care Framework, launched in Ghana in June 2018, which supports client-centered care (WHO et al. 2018): Ghana is in the process of adapting the global guidelines to suit in-country requirements. ECD provides stimulating activities and can help detect and deal, to some extent, with developmental delays. Although ECD is important in the newborn period, many of its components have greater relevance during infancy and with children in the continuum of care.
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Important Note Relevant to Antenatal Corticosteroids

In view of articles reporting risks of administration of antenatal corticosteroids in LMIC, Ghana has already adopted guidelines in its revised safe motherhood strategy restricting their use in preterm births in hospitals that can readily identify the appropriate imminent preterm births and provide the recommended care for relevant mothers and babies at birth and during the subsequent critical postnatal period (Greensides et al. 2018, Ghana MOH 2017).

INTEGRATION WITHIN THE RMNCAH FRAMEWORK

The newborn care intervention package is not meant to be implemented vertically. It will instead be integrated into RMNCAH programs as a part of the continuum of care (Ghana MOH and GHS 2016,



Ghana MOH and GHS 2014, Ghana MOH and GHS 2017). While links to maternal and child health are clear, it is important to remember that reproductive health components, such as family planning and optimal pregnancy spacing, are also important for decreasing neonatal mortality, stillbirths, and, to some extent, preterm births. Besides the conventional components, as noted above, two relatively newer components will be linked:

- **Psychosocial support ideally for both parents/family, but at least for mothers, following adverse outcomes, including the loss of their babies.** Care providers can begin early detection of common problems and initiation of support in the first 4 weeks designated as the neonatal period, with training of care providers looking after the mothers and babies to help identify mothers who may need extra support and at least provide basic sympathetic support and referral. Full psychosocial support will need to be addressed by better-trained providers who specialize in this field, as these needs cannot be met by the type of workers who commonly care for the baby and will need to be addressed as a part of maternal health.
- **ECD.** Families need support so they can provide nurturing care to newborns in the postnatal period. Nurturing care encompasses five components: good health, adequate nutrition, responsive caregiving, security and safety, and, later in infancy, opportunities for early learning (WHO et al. 2018).

Three additional components related to ECD are important and may affect the quality of survival:

- **Preventive care** to provide support for babies' bodily functions, with emphasis on protection and promotion of optimal brain growth and development from pregnancy onward, especially through the critical period when the brain is still developing. It is thus closely linked with maternal and child health strategies through the continuum of care. Timely initiation of key actions, including following the dictum "do no harm" and instituting compassionate, nurturing care and appropriate counseling of mothers/family members to provide the necessary stimulatory support in the follow-up period into childhood, are essential.
- **Early detection of problems**, such as those related to hearing, visual, and neurological challenges, some of which could result in delayed development: It would be useful to include them in careful follow-up, including tests for hearing and eye examination, along with developmental evaluation. Subsequently, in the continuum of care, ECD will be linked with child survival programs, as already addressed in the revised child health strategy and ECD policy.
- **Management of problems**, many of which will actually take place after the newborn period, except perhaps the initial nurturing care, stimulation, and massage carried out by health care providers and subsequently by the mother/family at home after receiving guidance: This has therapeutic effects during hospital stay and at home.

Psychosocial support for mothers and ECD, while very important, can be addressed, to a limited extent, during the neonatal period because of its short duration and the lack/inadequacy of competence in these technical areas among the conventional care providers looking after the baby. This further highlights the importance of an integrated approach to ensure seamless links with maternal and child health strategy interventions to provide continued support.

LEVELS OF NEWBORN CARE

It is essential to identify what components of care are best rendered at which level. These are outlined below and addressed in greater detail in "Sites of Application for Levels of Newborn Care" and in Appendixes 4A–C.

Conventionally, there are three levels of newborn care. In some places, levels II and III are further divided into A and B, though there is no strong evidence that this is beneficial. The main aim is to provide risk-appropriate care. Some organizations, such as the AAP and the American College of Obstetricians and Gynecologists, define these levels of care by the characters of the baby, including gestational age and weight, with some signal functions related to the newborn (Committee on Fetus and Newborn 2012, AAP and ACOG 2017). In LMIC, it is more practical to relate the classification primarily to signal functions, as gestation and weight may not always be known (National Neonatology Forum of India 2019).

Review of different methods for classifying levels of care indicated that many factors are considered, including:

- **Baby's characteristics and requirements (latter equivalent to signal functions):** Examples include birthweight, gestation, and support required to maintain temperature and feed the baby; need for IV fluids, oxygen, type of respiratory support, antibiotics, and other drugs; and treatment for jaundice and other problems.
- **Types of care providers:** This includes doctors (general/family physicians, pediatricians, neonatologists, pediatric surgeons, pediatric anesthesiologists, ophthalmologists, and respiratory therapists), midwives, and nurses (general, pediatric/neonatal nurses).

There is no universal, simple method of classifying levels of care, and criteria may vary, especially between HIC and LMIC, with higher levels of care being provided even at level II in HIC. A simplified classification is included in Table 3 to give a rough idea about how to develop standards, guidelines, and manuals for newborn care. Additional details are provided in Appendixes 4A–C that also may be adapted to suit Ghana.

Table 3. Simplified classification of levels of care

(Note: Criteria may vary in different countries.)

Level I – Basic Essential Newborn Care
Care at birth, with a newborn baby corner to provide initial care at birth, including basic resuscitation
Continued basic essential newborn care in the postnatal period
Babies roomed in with mothers in postnatal wards
Basic infection prevention
Ideally, stabilization of babies before referral and established links with referral hospital(s)
Level II – Intermediary Care: Special Care Newborn Units
Level I components, with more advanced resuscitation in some centers
More comprehensive care for at-risk, small, and sick babies
Extra support for feeding, including intragastric feeds and subsequent use of cups, promoting use of own mother's milk
Provision of space for mothers to express breast milk, and ideally for kangaroo mother care and family-centered care
Infection prevention to cover all components of care and correct use of all equipment related to this level



Ability to administer IV fluid, antibiotics, and other relevant drugs
Safe use of oxygen with provision of varying percentages of oxygen, as required, ideally through blenders and continuous monitoring of oxygen saturation with a pulse oximeter
Use of continuous positive airway pressure in some well-performing centers
Support for radiological evaluation (including use of mobile machines) and laboratory tests (variable)
Management of jaundice with phototherapy and exchange transfusion: In advanced health centers in high-income countries, exchange transfusions are rare due to early and effective management of jaundice with phototherapy. They are, therefore, normally done in more specialized neonatal intensive care units/level III. In low- and middle-income countries, however, because jaundice is a bigger problem, with mothers seeking care late and, at times, with less effective phototherapy, it may be appropriate that these resources and skills are established in well-functioning level II units to improve care of jaundice. Such units can be housed in well-performing district hospitals and up, and should have a blood bank, resources for testing serum bilirubin, and other tests relevant to monitor common clinical conditions, and provide effective phototherapy.
Level III/Intensive Care (Neonatal Intensive Care Units)
Level I and II components
More advanced care of small and sick babies
Continuous positive airway pressure
Mechanical ventilation
Additional monitoring equipment
More comprehensive laboratory and other investigative support
Use of surfactant
Surgical interventions
Infection prevention to cover all additional elements and practices

In HIC, level IV care also exists. It provides more advanced care and has the capability to perform advanced surgical procedures within the unit and extracorporeal membrane oxygenation, which may not be a priority at this stage in most LMIC, especially with limited funds and the need to first strengthen intermediary care or level II care and subsequently good level III care.

Certain terminologies need clarification. In Ghana, teaching hospitals are termed tertiary hospitals. However, it is important to note that they may not always be synonymous. Facilities based on their locations are often termed subdistrict, district, regional, or teaching; teaching facilities may at times be considered national level, although eventually some regional hospitals may also become teaching hospitals. Based on the main types of services provided, facilities may be primary or level I (subdistrict facilities), secondary/Intermediary/level II (district hospitals and some regional hospitals), and tertiary/level III (some regional and national/teaching hospitals).

SITES OF APPLICATION FOR LEVELS OF NEWBORN CARE

Home/Community-Based Care and Support

Most newborns spend the majority of their time at home. This area must be targeted through appropriate SBCC activities in antenatal clinics, postnatal wards, postnatal clinics, and in the community with community health nurses (CHNs) and community health volunteers (CHVs) using various communication

strategies, including mass media where appropriate. CHNs and CHVs need to counsel mothers/families to provide relevant components of basic ENC, identify problems and danger signs, and seek appropriate care in a timely manner. Promoting home visits will also be helpful, especially after discharge of small and sick babies to ensure improved survival after discharge.

Strengthening of community support with SBCC strategies will include establishing and facilitating mother support groups; continued promotion of timely utilization of services, nutrition of children, including the girl child and adolescent girls; focused antenatal care; facility births with competent skilled birth attendants; postnatal care, including ECD; and continued follow-up for optimal quality of survival. Further support can be obtained through community engagement/mobilization/partnerships and champions.

CHPS Compound/Maternity Homes

Although the MOH and GHS strongly promote facility births, some deliveries do take place at these community sites and hence will need to provide level I care, referring at-risk/small and sick babies to sites that can care for them, such as district hospitals. Mothers with anticipated problems should be sent to referral hospitals with at least SCNUs **before** delivery, as it is more difficult to transport babies with problems after birth.

Establishment/Strengthening of Links between Community and Facilities at All Levels

Care provided in the facilities and communities is important. Equally essential is the establishment of well-functioning links between the two to integrate the care provided. This applies to providing support for mothers and babies who need to reach the facilities and to establishing follow-up care after discharge.

- Increased utilization of mapping of facilities (services, contacts, etc.), including available resources and services, to promote appropriate referrals, which has been carried out at some sites, needs to be expanded. Mothers with risk factors may be referred to suitable facilities where they and their babies can be cared for instead of going to multiple sites, which can increase the time taken to reach the correct facility, worsen the patient's condition, and incur additional expenses.
- Strengthen digital, including mobile technology, to:
- Contact CHWs/CHVs to inform them of mothers and babies—both normal and at-risk, small, and sick babies—who have recovered and been discharged to promote follow-up home visits, ideally for all babies, with more frequent visits with babies who have or are recovering from problems.
- Procure data as required using innovative methods, such as using a GHS e-tracker where relevant.
- Promote mutual understanding and respect between community members/groups and facility care providers. Where funding is limited, these links, when well-established and functional, can help promote community involvement and even help generate resources for care.

Subdistrict Level (Peripheral Health Centers)/CHPS Compounds

These sites provide level I care with rooming-in of mothers and babies after birth. They are not equipped to handle major problems and need to refer such babies to district-level hospitals with SCNUs. These facilities will require a newborn care corner in the delivery room where they can provide basic resuscitation and selected aspects of ENC at the time of birth and pre-referral care for stabilization. Subdistrict peripheral facilities are not all uniform. They vary significantly in size, number and type of staff members, and workload, including the number of births they have to care for.



District-Level Hospitals

These facilities provide level II or intermediary newborn care through SCNUs along with level I care with rooming-in. Visits to some rural district hospitals with fewer deliveries showed that there were not enough staff; many had to multitask, working in the SCNU, postnatal ward, and delivery room in the same shift. In such situations, care providers may not be able to provide the care required by babies in the SCNU (Narayanan 2018). This means they may not be suitable sites in which to establish SCNUs. Instead, their staff should be trained to provide extra care/KMC in the postnatal ward with mothers for select babies whose parents are not able to go to another hospital or for late-preterm or larger, LBW babies who are otherwise doing well. Therefore, it is essential to have a sound plan with clear parameters to determine which of the district hospitals are suitable to have SCNUs. This will depend on the existing number of facility deliveries, care providers, and other factors based on comprehensive guidelines developed in consensus with the SCNC.

Regional Hospitals and Teaching Hospitals

Despite challenges, especially related to finances, these hospitals ideally should not only establish quality SCNU services but also subsequently expand to have NICUs. In addition, it would be beneficial if staff from well-performing centers could also establish links and mentor care providers at relevant district-level hospitals that refer cases and need this support.

Appendix 5 highlights some of the components related to newborn care that can be implemented at various levels of the health system. These can be adapted further as required for the national document being developed on standards of newborn care for Ghana.

INCORPORATION OF KEY CROSS-CUTTING COMPONENTS

Cross-cutting elements are essential to ensure successful implementation of the intervention package. Some key components are included in Table 4.

Table 4. Select cross-cutting areas for the intervention package

1.	Capacity-Building
	Building capacity of adequate numbers of skilled/specialized health care providers/trained community workers/volunteers at all levels (facility and community) using standard tools is essential. Related to the newer technical areas in newborn care, a significant number of tools already exist internationally and are likely to only need some adaptations to suit country requirements.
2.	Compassionate Quality of Care (QoC)
	QoC requires motivated, competent/skilled human resources supported by mentoring/supervision and appropriate functioning of all segments of the health system, including governance; policies; finance; the health information system (HIS); well-administered facilities; availability of essential medicines, supplies, equipment, and diagnostic services; active community involvement; motivated champions; and effective partnerships. Timely provision of services with emphasis on QoC and adherence to the dictum of “do no harm,” are equally important, along with compassionate/nurturing care to provide additional support for babies.

3.	Social and Behavior Change Communication (SBCC) Strategies
	SBCC strategies should be implemented at community and facility levels, with appropriate communication strategies including mass media where appropriate and feasible. Optimal behavior is required among family/community members (demand side) and in facility care providers at all levels (supply side) if the nurturing QoC is to improve and be sustained.
4.	Documentation, Transmission, and Review of HIS/District HIS Indicators with Additional Data at Hospital Level Related to Special Care Newborn Units and Neonatal Intensive Care Units
	Appropriate indicators at different levels, correct classification of causes of neonatal deaths, proper data maintenance, and timely transmission are essential. Equally important are validation/review of perinatal/neonatal audits and data trends by health care providers and use of quality improvement tools. Sources for and additional information related to indicators relevant to maternal and newborn health are noted in Appendixes 6–8. These will be reviewed by the Subcommittee on Newborn Care to determine which need to be adopted/adapted and collected through the district HIS or by other methods, such as surveys.
5.	Safe Transport for Referral
	Transfer of/transport for small and sick babies poses major challenges, with some often reaching the referral center in a moribund condition. Although all problems cannot be predicted, it is vital that health workers are trained to identify high-risk mothers in the antenatal clinic and, where necessary and feasible, motivate these mothers and their families to plan on delivering at a facility where both the mother and baby can be looked after appropriately based on their needs. Guidelines should be developed/strengthened for transport not only to facilities but also within them, especially when the distance between the delivery or operating room and the neonatal unit is great, as often happens in some hospitals.
6.	Appropriate Transmission of Information to National Health Insurance Authority and Development of Consensus on Activities to Be Covered
	A number of new activities and terms were introduced in this updated strategy document with which the National Health Insurance Authority section needs to become familiar. Consensus needs to be developed on the key newer and essential elements of newborn care that must be covered if mortality is to be decreased appropriately and quality of survival improved.
	(Appendix 6 lists some of the resources and links for tools. It includes items from both a high- and low-income country that have already gone through these exercises.)



Ghana Newborn Action Plan: Goals, Desired Outcomes, and Objectives/Targets and Milestones

A holistic approach will be promoted for implementing the newborn care package at facility and community levels. However, in defining the specific goals and objectives noted in the section below, the key targets included should be only those that can be more readily monitored in the country by valid indicators. Some of the indicators may not have baselines for comparison in the current care of at-risk/small and sick babies, but efforts will be made to capture them in the coming years. When it is not feasible to have indicators incorporated into the DHIS but the information or data are essential, special surveys will be carried out. The goals and objectives outlined here extend over the next 5-year period from 2019 to 2023.

Goals of the Newborn Health Strategy

1. To contribute to the reduction of the neonatal mortality rate from 25 per 1,000 live births in 2017 to 18 per 1,000 live births in 2023 (5%/year), documented through a national survey.
5. To contribute to the reduction of the institutional total stillbirth rate from 15 per 1,000, or 1.5% of total births, in 2017 (DHIS 2017) to 10 per 1,000, or 1% of total births, in 2023.
6. To contribute to the reduction of the fresh/intrapartum stillbirth rate from 60% of total stillbirths in 2017 to 40% total stillbirths in 2023 (4%/year based on average computation from 2011–2017).
7. To contribute to the reduction of the institutional (facility) neonatal mortality rate by at least 40% by 2023, decreasing from 8.4% in 2017 to 5% in 2023.

NEWBORN CARE AND HEALTH SERVICE DELIVERY DESIRED OUTCOMES

Health Policies, Management Systems, and Financial, Legal, Socioeconomic, and Other Related Components of the Health System

All components of the health system are in place at all levels to support the provision of quality newborn care at all service delivery points.

Competent Health Care Providers and Support Staff

Health care providers and support staff have the required knowledge, skills, and positive attitude to provide newborn care services effectively at all health service delivery points according to national policies by 2023.

At least 75% of relevant health care providers and support staff have required skills to provide newborn care services related to at least special or level II care according to national policies by 2023.

Quality Health Care Services at All Levels

By 2023, at least 75% of health care facilities provide the required compassionate, quality package of health care services—both ENC and extra care for at-risk/small, and sick babies—specific to their designated levels and based on national guidelines. The care shall be of high quality, comprehensive, accessible, equitable, gender sensitive, disability responsive, and provided in an appropriate environment and responsive manner. The care shall also address acquisition of appropriate behavior among health care providers.

At least 60% of community health officers provide quality ENC services based on national guidelines.

SBCC strategies are strengthened and target appropriate family behavior to promote optimal basic care at home, follow-up preventive postnatal care, and identification of and timely care seeking for problems. Community engagement, partnerships, and champions will advocate for and support these activities. Community dialog meetings and, where feasible, use of mass media and other innovative technical support, such as digital health, including mHealth, will be used to improve family and community behavior.

Partnership and Intersectoral Collaboration

Strong functional partnerships are in place at various levels and with different groups, including stakeholders, to facilitate and strengthen provision and utilization of quality newborn care. Health policies, management systems, and financial, legal, and other factors used to create an enabling environment based on national guidelines will be in place to support the provision of newborn care at service delivery points. The SCNC will look into determining if this component can be quantified through an indicator that can relate to the achievement of a set percentage of criteria in a suitable, pre-planned checklist.

OBJECTIVES OF THE NEWBORN HEALTH STRATEGY

This section will consist of three parts: Part A deals with objectives related to ENC or level I care in all facilities and CHPS, Part B primarily targets level II care in all hospitals, and Part C focuses on objectives related to new focus areas.

Part A: Objectives Relevant to ENC

Increase the Percentage of Health Workers Trained in ENC

- Increase training of skilled providers in the ENC package from 69% to 90% by 2023.
- Increase training of CHNs and CHWs on community-based interventions/activities for the newborn from 69% in 2017 to at least 90% by 2023.
- Increase the percentage of health workers trained in the integrated management of newborn and childhood illness strategy to at least 75% by 2023.
- Incorporate the full package of ENC in pre-service curricula for **all** relevant staff (doctors, certified registered anesthetists, nurses, and midwives) by 2023.

Improve Implementation of ENC

- Increase the percentage of deliveries conducted by skilled birth attendants from 79% in 2017 to 90% in 2023.
- Increase the percentage of babies receiving the first postnatal visit within 48 hours (after the first hour that is regarded as part of the birthing process) from 81% in 2017 to 95% in 2023.
- Increase the percentage of babies receiving the second postnatal visit by day 6/7 to 90% in 2023.
- Increase early initiation of breastfeeding (within 1 hour of birth) from 52% in 2017 (Institute of Statistical, Social and Economic Research and UNICEF 2014) to 70% in 2023.
- Increase exclusive breastfeeding up to 6 months from 43% in 2017 (Institute of Statistical, Social and Economic Research and UNICEF 2014) to 70% in 2023.
- Increase documentation of birthweight of babies in institutions/facilities from 50.9% (DHIS) in 2017 to at least 80% in 2023.



Provide Basic Neonatal Resuscitation for Adverse Intrapartum Events (Birth Asphyxia)

- Increase the percentage of babies who survive after basic resuscitation by 50% by 2023.

Improve Prevention of Neonatal Infections at Subdistrict Health Facilities/CHPS Centers and Pre-Referral Treatment

These facilities are health centers that primarily conduct deliveries and provide postnatal care for mothers and babies in common postnatal wards but do not admit at-risk/small and sick babies.

- Increase the percentage of facilities with basic water supply in maternity care areas (labor, birth, postnatal wards) to at least 80% by 2023.
- Increase percentage of health facilities with bathroom facilities available for women during and after labor and childbirth to at least 80% by 2023.
- Ensure that at least 80% of subdistrict facilities adhere to national IP/control standards (related to care at delivery and early postnatal period) by 2023.
- Increase the percentage of babies with possible severe infection referred to hospitals after pre-referral treatment according to national guidelines by at least 50% by 2023.

PART B: OBJECTIVES RELEVANT TO THE CARE OF AT-RISK/SMALL AND SICK NEWBORNS

To effectively monitor the objectives relevant to the care of at-risk/small and sick newborns—the newer component in this updated strategy document—certain prerequisites are essential. These elements are listed in Appendix 7 and must be clearly defined/updated through consensus with the SCNC and ratified by the MOH/GHS.

1. Increase the percentage of hospitals at district, regional, and teaching/tertiary hospitals providing at least level II care with the defined minimum requirements set by the SCNC to at least 50% in 2023.
2. Increase the percentage of all hospitals with functional KMC units/practicing KMC according to national guidelines to at least 70% by 2023.
3. Complete training of trainers and train 80% of skilled birth attendants in all hospitals in key components of care of small and sick babies relevant to at least level II or SCNUs by 2023.
4. Improve QoC for at-risk/small and sick newborns based on defined national criteria in at least 75% of hospitals.
5. Ensure that all tertiary and regional hospitals and at least 50% of district hospitals have safe oxygen based on set national criteria by 2023.
6. Increase the percentage of hospitals adhering to the defined national infection control standards (related to care at delivery and early postnatal period in the delivery room, postnatal wards, and SCNU/NICU) to at least 80% by 2023.
7. Ensure that all teaching and regional hospitals and at least 50% of district hospitals screen newborns for sickle cell disease at birth by 2030.
8. Reduce institutional neonatal mortality due to complications of prematurity by 50% by 2023.
9. Reduce institutional neonatal mortality due to infections by 50% by the year 2023.

10. Reduce institutional neonatal mortality (case fatality) due to neonatal jaundice by 50% by 2023.

Note: Objectives 8–10 were considered to be important by the technical working group. However, since the indicators for documenting these are complex, especially the denominators, these will be discussed regarding feasibility and finalized by the SCNC before initiating monitoring and evaluation activities (also see Appendix 8).

PART C: OBJECTIVES RELEVANT TO NEW FOCUS AREAS

These include (a) psychosocial support for mothers experiencing adverse events during childbirth and the postnatal period and (b) ECD. Key objectives in these areas include:

1. Establish the preliminary psychosocial support system based on set national guidelines/criteria as a part of the national newborn health strategy, to be subsequently linked with more extensive support implemented as a part of the maternal health strategy in the continuum of care. Ensure that this support system is established in:
 - All (100%) regional and teaching hospitals
 - At least 50% of district hospitals
2. Train at least 40% of relevant health workers in identifying affected mothers and commencing basic initial support for psychosocial disturbances during pregnancy and the postpartum period by 2023.
3. Establish training and mentoring to relevant health workers related to ECD, applying relevant parts of the UNICEF/WHO Nurturing Care Framework in the newborn period (first 4 weeks of life) based on set national guidelines in at least 50% of hospitals by 2023. (This will subsequently be linked with ECD as a part of child health in the continuum of care.)
4. Train at least 50% of relevant health workers in ECD components relevant to the newborn period by 2023.

UPDATED NEONATAL INDICATORS

Many indicators related to newborn care were included in the national HIS based on the past Ghana National Newborn Health Strategy and Action Plan (2014–2018). Globally, too, there has been progressive increase in the number of maternal and newborn indicators (Moller et al. 2018). There are overlaps in some. Resources for indicators are noted in Appendix 5, and some indicators themselves are listed in Appendix 7. These will be reviewed by the SCNC along with updated maternal and child health indicators that are expected to be released by the WHO in 2019, ensuring that technical experts in the area of pediatrics/neonatology caring for both normal and at-risk/small and sick newborns, along with key experts from the Ghana HIS and the area of monitoring and evaluation are included in the discussions. Most of the newborn care indicators apply to all levels, but as additional, more specialized care gets added to hospitals, selected indicators may be applicable only at the district, regional, and/or tertiary hospitals. As it was observed that the cause of death was not always noted in the admission register for babies who died, a separate register to document deaths will be promoted, as has already been recommended for the country. Here, the emphasis will be to note, wherever feasible, the actual causes of death and not always pass a death off as due to “prematurity” or adopt the diagnosis noted in the admission register.

The key milestones identified for the updated National Newborn Health Strategy and Action Plan are listed in Appendix 9.



Strategies and Key Implementation Activities

Guiding Principles

The strategies and activities proposed for the period 2019–2023 are based on the policies of the MOH and GHS, the lessons learned from the extensive evaluation of the newborn health strategy 2014–2018, and results from the detailed bottleneck analysis. They are governed by the following guiding principles:

- **Evidence-based interventions and strategies**

Strategies and interventions include international, evidence-based elements adapted where required to suit local country situations. As facility births increase, interventions will expand to cover facility-based care of at-risk/small and sick babies while continuing to strengthen the more basic ENC at all levels, including the home/community.

- **Nurturing/compassionate QoC**

Despite increased facility births with skilled birth attendants, Ghana has not seen the expected reduction in facility newborn deaths but instead an increase in mortality in some centers, as noted in the bottleneck analysis. Emphasis will be on QoC that can improve neonatal outcomes. QoC will be applied at all levels, and while there will be expansion to address more advanced care at facility level to cover at-risk/small and sick babies, there will also be continued focus on further improving ENC in facilities at all levels and in the community. In addition, there will be promotion of a respectful/nurturing component in caring for babies and interacting with families, ideally including KMC and FCC.

- **Strong partnerships at all levels**

Partnerships, including public-private ones, will be promoted at all levels, taking care to avoid conflicts of interest. These will include CSOs; metropolitan, municipal, and district assemblies; professional bodies; academia; and community groups and leaders, each with its own strength and complementing the other(s).

- **Quality universal coverage with appropriate prioritization and equity considerations**

To achieve the goals and objectives, all proven interventions and activities shall be rolled out at scale, but keeping QoC in mind. Equity will be a priority to ensure inclusion of regions that had not received adequate coverage before, with equitable distribution of resources and interventions negotiated with interested partners who want to support particular regions.

- **Integration within the RMNCAH framework**

Newborn care activities will not be implemented vertically but instead integrated within the RMNCAH framework in the continuum of care.

ADDITIONAL FEATURES OF THE STRATEGIES

Some of the decisions related to the strategies following discussions with the SCNC are:

- Strategies and related activities are recorded in keeping with the **building blocks of the health system**, which was felt to be easier to implement in an integrated manner within the RMNCAH framework and track rather than the five strategic objectives of the global Every Newborn Action Plan document related to:

- **Strategic objective 1:** Strengthen and invest in care during labor, birth, and the first day and week of life.
- **Strategic objective 2:** Improve the quality of maternal and newborn care.
- **Strategic objective 3:** Reach every woman and newborn to reduce inequities.
- **Strategic objective 4:** Harness the power of parents, families, and communities.
- **Strategic objective 5:** Count every newborn: measurement, program tracking, and accountability.

These objectives, however, are covered in this document, the 2014 National Reproductive Health Service Policy and Standards, the 2016 National Safe Motherhood Service Protocol, and the 2016 MBFHI Implementation Guide for Ghana.

The development of the updated strategies included the following the following:

- The number of strategies was reduced by consensus among the technical working group, from 14 to 10 by combining some of them.
- For each strategy, although the key achievements/bottlenecks from 2014–2018 related to each of the health system building blocks are mainly covered earlier in this document, a few are also highlighted in this chapter, where essential, to add additional emphasis.
- Experience with the use of the 2014–2018 strategy document indicated the value of listing key activities/subactivities in some detail to facilitate more appropriate planning and implementation. This approach was adopted for the updated version (2019–2023).

The 10 strategies to be deployed to achieve desired objectives and targets are noted in Table 5.

Table 5. Strategies to achieve set goals and objectives to improve newborn care

No.	Strategy
1	Strengthen leadership and governance for newborn care.
2	Strengthen/develop/update policies and tools.
3	Improve health financing and resource mobilization.
4	Establish reliable national and district health information and monitoring and evaluation systems.
5	Ensure equitable availability of an adequate, competent health workforce.
6	Improve quality of care.
7	Ensure continuous availability of essential drugs, equipment, and other commodities.
8	Strengthen community engagement and social and behavior change communication activities at all levels.
9	Strengthen inclusive partnerships, including public-private partnerships.
10	Strengthen appropriate research.



STRATEGY 1: STRENGTHEN LEADERSHIP AND GOVERNANCE FOR NEWBORN CARE

Effective leadership and governance are important not only in the health system as a whole but also within its individual components. For example, within hospitals and even smaller facilities, these components can play critical roles in their optimal functioning.

The important factors that influenced the success of the implementation of the earlier newborn health strategy, including inclusiveness, mutual respect, and collective ownership, will be further strengthened. An SCNC representative has been appointed to the Safe Motherhood Committee and vice versa. The SCNC coordinator is a key member of the Child Health Committee. These factors strengthen links and help promote an optimal continuum of care. The SCNC will provide advice, mobilize resources, review progress, and resolve constraints to progress, sustain advocacy, and provide strategic technical support.

Key Activities

- 1.1. Ensure adequate involvement of key stakeholders in governance of newborn care.
 - 1.1.1. Review composition of oversight committees at the national level to bring all relevant stakeholders on board.
 - 1.1.2. Work with Regional Clinical Care Department to oversee implementation of newborn care strategy activities at the regional level.
 - 1.1.3. Continue quarterly meetings of oversight committees. with the regional newborn focal people included biannually.
 - 1.1.4. Facilitate the activities of focal people for newborn health in regions where they are inadequately supported.
 - 1.1.5. Continue organization of annual stakeholders' conferences.

STRATEGY 2: STRENGTHEN/DEVELOP/UPDATE POLICIES AND TOOLS

In the previous 5 years, focus was mostly on ENC, including activities such as Helping Babies Breathe, Essential Care for Every Baby, Essential Care for Small Babies, and KMC. These will be continued, and basic ENC will be strengthened at all levels. Additionally, policies will address major gaps, such as QoC in general, and more so in the care of at-risk/small, and sick babies; provision of psychosocial support to parents experiencing adverse outcomes and loss of babies; priorities in neonatal screening, including for sickle cell disease and any other condition that may be prioritized by the SCNC later; and follow-up care of newborns related to quality of survival, such as neurodevelopment assessment, including evaluation for hearing and visual problems and commencement of ECD. To avoid needless expense and suit individual group requirements, both electronic and hard copies of all relevant documents will be developed to suit local needs.

Key Activities

- 2.1. Expand services for ENC at all levels.
- 2.2. Expand facility-based care for at-risk, small, and sick babies, applying the required level of care at appropriate hospitals.
 - 2.2.1. Develop policies on distribution of the appropriate category of care providers, such as doctors, pediatricians/neonatologists, midwives, nurses (including pediatric and neonatal nurses), and ancillary staff at various levels.

- 2.2.2. Develop/adapt/adopt relevant guidelines, manuals, job aids, etc., for facility-based care of at-risk/small and sick babies at appropriate hospitals.
- 2.2.3. Develop policies related to the equipment, supplies, and other commodities for level II and III care at the hospital level.
- 2.2.4. Develop policies and tools, and expand implementation of newborn screening program, including sickle cell disease and other relevant conditions, as determined by the SCNC.
- 2.2.5. Develop policies and tools to address the initiation of psychomotor support for mothers in the neonatal period.
- 2.2.6. Develop/strengthen/update policies and tools to promote optimal follow-up care of all newborns including the at-risk, small and sick babies, including neurodevelopment assessment with evaluation for hearing and visual problems and initiation of ECD activities.
- 2.3. Continue advocacy for policy change to allow availability and use of appropriate commodities for newborn care at peripheral facilities and communities as determined by the SCNC.
- 2.4. Develop policies and guidelines for providing transportation for mothers and babies for referral, appropriate for the various levels. The policies shall provide the support set in the national guidelines for the mother/baby during transport.
- 2.5. Print copies of all documents developed and ensure all relevant guidelines and job aids are available at facilities caring for newborns, especially at SCNUs and NICUs. Where appropriate, supply electronic copies of select documents to avoid needless expense.

STRATEGY 3: IMPROVE HEALTH FINANCING AND RESOURCE MOBILIZATION

Adequate financing of newborn activities has been a major challenge in implementing newborn care interventions. The challenge will be even greater now that the focus is shifting to care of at-risk/small, and sick babies at facility level, which is far more expensive, and also because donor funding may decrease in the future. Dependence on donations is yet another challenging problem that needs to be addressed. Therefore, in moving forward, it is essential to mobilize enough funds (internally and externally) and ensure efficient utilization of resources.

Key Activities

- 3.1. Advocate for improved Government of Ghana funding.
 - 3.1.1. Establish a resource mobilization subcommittee with terms of reference for newborn care.
 - 3.1.2. Develop and implement an innovative sustainable resource mobilization plan.
- 3.2. Establish mechanisms by which changes in policies are communicated to the national HIS for incorporation into tariffs.
- 3.3. Advocate for increased allocation of funds for newborn care in line with prioritization of newborn care in the MOH/GHS strategic objectives and program of action.
- 3.4. Improve private-sector investment in newborn care.
 - 3.4.1. Build capacity of health managers and champions at national and regional levels in resource mobilization and to respond to request for proposals.



- 3.4.2. Target local private sectors (industries/companies) and develop policies to coordinate private-sector support.
- 3.4.3. Ensure equitable funding of newborn care.
- 3.4.4. Remap current partner support for newborns and target orphan regions for additional support.
- 3.4.5. Negotiate appropriately with partners to ensure equity in funding.

STRATEGY 4: ESTABLISH RELIABLE NATIONAL AND DISTRICT HEALTH INFORMATION AND MONITORING AND EVALUATION SYSTEMS

Consistent maintenance and use of reliably recorded data based on correctly assessed and documented indicators is an essential and critical part of the health system. This is required not only for statistical purposes but also to evaluate and document QoC. The last mentioned component, in particular, influences mortality and even the quality of survival, both of which have far-reaching consequences for the country. This area is also one of the most challenging components.

Review of some of the facility data in selected hospitals indicated that causes of death are not always documented correctly (Narayanan 2018). This is partly because detecting the exact cause poses significant challenges in the newborn. During visits to hospitals, deaths due to infections were far fewer, so infections were not considered to be an important problem and many more deaths were documented as being due to prematurity, per se. Sometimes, diagnosis at admission was taken as the cause of death. Even in babies who died after a week or later, the cause of death was noted as prematurity when issues such as sepsis could have been the cause. It is essential to rectify the situation and, through discussions with experts from professional bodies, define acceptable guidelines for determining possible diagnosis. Major challenges include lack of availability of required laboratory tests and lack of evidence provided by the results of some blood cultures, which may be negative even when sepsis is likely to be the diagnosis. In addition, an inappropriate cause of death may be noted, such as “respiratory distress,” which is just a symptom. Establishing correct causes of death is important so that appropriate interventions are planned to decrease neonatal mortality.

It is noteworthy that there is already a “cause of death” register, and some training has been carried out in this area. There will be further promotion for using the “cause of death” register at all levels. The existing e-tracker system will also be strengthened to help with collecting data.

Other important components include perinatal and neonatal death audits/reviews. Currently, the national guidelines cover only perinatal audits. Perinatal audits include stillbirths and early neonatal deaths in the first week of life. Neonatal audits cover all neonatal deaths, including those occurring up to 4 weeks after birth. Both are important because although most of deaths occur in the first week of life, 25% occur during the subsequent 3 weeks. As newborn care improves, babies will survive longer, and some deaths that occur later will likely to be due to complications that may be preventable, such as health care-acquired infections. The latter require careful audits with a focus on determining how they can be avoided in the future.

It will be worthwhile for the SCNC to review these audits and include stillbirths and neonatal deaths up to 4 weeks of life in the audit. Where there are a larger number of stillbirths and neonatal deaths, presentations at these meetings can include:

- A summary of stillbirths and neonatal deaths, classifying them in relevant groups, and presenting trend graphs so that changes are clear over subsequent months/years
- Select cases: The concerned obstetrics and pediatrics departments can identify specific cases that need discussion. It will be particularly useful to select cases that had preventable causes/issues so

practical guidelines can be developed and implemented to reduce stillbirths and neonatal deaths.

Key Activities

- 4.1. Establish a technical team (including policy, planning, monitoring, and evaluation, and the Center for Health Information Management) to review and agree on appropriate newborn indicators relevant to all levels and which to capture in the DHIS.
- 4.2. Promote registration of births and deaths.
- 4.3. Use appropriate sources for data/indicators. By policy, all births and all deaths, including stillbirths and neonatal deaths, are to be recorded in the source document for mortality in all facilities.
 - 4.3.1. Review and produce source registers as appropriate for each level to capture required data to measure approved indicators.
 - 4.3.2. Ensure availability of revised source registers at relevant levels.
 - 4.3.3. Scale up e-tracker nationwide to use in data collection.
 - 4.3.4. Enforce use of the standard register for recording cause of death.
- 4.4. Ensure proper documentation. Ensure proper data capture, classification, definition, reporting, and understanding of all indicators.
 - 4.4.1. Train responsible officers at all levels in proper documentation.
 - 4.4.2. Support quarterly data validation and harmonization at all levels, involving the MOH and all stakeholders.
 - 4.4.3. Advocate for use of common software to address incompatible software used by other service providers.
 - 4.4.4. Advocate for the MOH, including the Health Facility Regulatory Authority, to strengthen its coordinating role over its agencies, including the private sector, for data reporting.
- 4.5. Improve perinatal audits/reviews. (Currently, only perinatal audits are carried out. However, depending on SCNC recommendations, all neonatal deaths may be included in this component.)
 - 4.5.1. Simplify the perinatal death audit system for easier compliance.
 - 4.5.2. Reorient health managers on perinatal death audits and compliance.
 - 4.5.3. Advocate for inclusion of perinatal and neonatal death audits in the MOH/GHS performance appraisal system.
 - 4.5.4. Advocate for documentation of perinatal and neonatal death audits performed in the DHIS, including proportion of recommendations implemented in order to monitor progress.

STRATEGY 5: ENSURE EQUITABLE AVAILABILITY OF AN ADEQUATE, COMPETENT HEALTH WORKFORCE

An adequate-sized, competent, equitably distributed health workforce is necessary in all areas but critical in specialized care, such as in SCNUs and NICUs. Staff cadre, specialization, and numbers required per at-risk/small, and sick newborns by level of care need to be developed to serve as a guide for regional/district and health facility managers as they plan to establish/strengthen newborn care units.



Training will be tailored to various categories of the health workforce depending on their level of operation using a variety of teaching approaches as determined through SCNC consensus. A training needs assessment will be conducted, and appropriate training manuals will be adapted/developed for each category of staff at different levels of care. Training will cover all components of the intervention package as finalized by the SCNC. Wherever possible, the training institution curricula will be reviewed with relevant stakeholders to make sure some of the basic aspects of newborn care are included in pre-service training. However, while some aspects of more specialized newborn care in SCNUs and NICUs can be introduced into pre-service education, pediatricians and neonatal nurses primarily receive this training and experience after basic qualification through special courses/fellowships. Besides establishing the correct diagnosis and provision of proper care, training will also cover documentation of correct causes of death.

Basic training will also be carried out in two additional areas:

- Psychosocial support for mothers experiencing adverse events, focusing on identifying the problem and providing prompt, basic, sympathetic support and early referral to relevant specialists, supported by the maternal health program for additional assistance where required: Because this component is relatively new, some of the enabling environments listed below for ECD will be useful in its promotion and implementation.
- Basic training in ECD, especially on preventive care, sensitization on the importance of nurturing care and stimulation, and early detection of problems in babies during the first month of life, providing nurturing compassionate care in the neonatal period: The last mentioned includes correct management of pain and making sure to follow the dictum of “do no harm” since the brain is still developing and is continuing to grow. The fastest growth occurs during pregnancy and continues through age 3. Following the newborn period, infants will need to be referred to suitable, trained staff in the area of child health, per the UNICEF/WHO Nurturing Care Framework (WHO et al. 2018). Key components include good health, adequate nutrition, responsive caregiving, security and safety, and learning opportunities. ECD too is still a new initiative in many centers in LMIC. Considerable advocacy, training, and mentoring are needed to improve QoC. Advocacy is also needed to promote enabling environments for nurturing care, including enabling policies, supportive services, empowered communities, and caregivers’ capabilities.

Key Activities

- 5.1. Ensure availability of adequate numbers of competent health care providers appropriate for each level of care.
 - 5.1.1. Advocate for appropriate, equitable distribution of defined groups of competent care providers (including use of mapping of data) at various levels of care working different daily shifts based on policies developed.
 - 5.1.2. Adopt suitable task-shifting/task-sharing activities as required. Where feasible, practice task sharing with mothers when applying KMC and FCC, but ultimately aim to provide the required quota of specialized doctors and nurses.
 - 5.1.3. Advocate for review of routine rotation of skilled staff, especially after specialized in-service training, to avoid needless loss of trained, competent health care providers.
- 5.2. Increase the competency of the care providers to enable them provide appropriate services.
 - 5.2.1. Train trainers, tutors, and preceptors on capacity-building of care providers to suit the different levels of care using tools developed/adapted (see below bullet).

- 5.2.2. Advocate to address the disconnect between in-service and pre-service training to the extent that is feasible. Pre-service is often behind in terms of new strategies, policies, and guidelines that are introduced in the in-service training by MOH/GHS.
- 5.2.3. Create a platform to address common challenges between service delivery and academia/training institutions.
- 5.2.4. Engage colleges to adapt subspecialty courses, such as pediatric programs, to address newborn care and develop courses for neonatal nurses.
- 5.2.5. Continue in-service training programs for relevant health workers on management of at-risk, small, and sick babies.
- 5.2.6. Support the training of relevant health staff on newborn screening programs, including sickle cell screening, and follow-up management.
- 5.2.7. Scale up the GHS customer care training program using the GHS Handbook on Customer Care to improve health worker attitudes and promote compassionate/respectful behavior with clients. This translates to nurturing or compassionate care for newborns.
- 5.2.8. Provide drill corners in all facilities for continuous skills practice by service providers.
- 5.2.9. Initiate/promote computerized self-learning interactive systems with audio-visual aids (videos). Globally, videos on skills related to neonatal care are available (Global Health Media Project 2019).

STRATEGY 6: IMPROVE QOC

QoC is an important part of all intervention programs. It is now widely recognized that mere capacity-building of health care providers on knowledge and even skills will neither improve QoC nor have an impact on outcomes, such as neonatal mortality. QI is not only related to services rendered by care providers but also an important component of all health system building blocks. Care providers also need administrative support and internal and external supervision/mentoring, and they need to be equipped with sufficient, good-quality commodities that are properly maintained, focusing on repairs/replacement of parts. Maintenance, review, and use of correctly maintained, reliable data are also critical to document and maintain QoC.

QoC will apply to all activities that health care providers dispense to clients. At the same time, Ghana began implementing the QoC initiative (Quality, Equity, Dignity), covering maternal and newborn care that is linked to the revised Baby-Friendly Hospital Initiative. In view of this this component will be an important part of the QoC component of updated newborn health strategy, especially since facilities face challenges in promoting exclusive breastfeeding up to 6 months, more so in small and convalescing sick babies. Newer components, such as supporting lactation and optimal use of human milk, need to be considered. While hiring lactation consultants may initially be challenging due to limited funds, innovative methods to provide support to mothers need to be explored with existing staff, plus task shifting/sharing. A team approach, where all care team members promote breastfeeding and use of own mother's milk at facilities and at home, will be beneficial. Interactions with similar partners in institutions in other countries may also be fruitful, provided both have a reasonably clear idea of the other's requirements and limitations. Interactions with facilities in HIC and in well-functioning centers in other LMIC (south-to-south collaboration) will also be helpful.

Ghana already adopted the WHO International Code of Marketing of Breast-milk Substitutes (WHO 1981). It will be useful to ensure that that relevant personnel, including pediatricians, are again familiarized with the key recommendations to ensure that they know the importance of following the recommended actions to further support breastfeeding and use of human milk. Coordinating with child health and nutrition strategies, where relevant, will be beneficial.



Key Activities

- 6.1. Ensure that active, functional QI activities/components are incorporated in all health system building blocks.
- 6.2. Establish functional QI teams in facilities with clear terms of reference to ensure optimal service provision. They can be independent or combined with the infection control teams noted below. While these teams are common for all departments in facilities, small subgroups can be established within relevant units to specifically cover newborn care, including at-risk, small, and sick babies.
- 6.3. Ensure continued mentoring/supportive supervision.
 - 6.3.1. Support internal supervision within facilities.
 - 6.3.2. Support external supervision from designated supervisors/supportive supervisory teams with the necessary skills through visits to relevant health facilities and group meetings, promoting a collaborative approach.
 - 6.3.3. Advocate for introduction of innovative approaches, such as use of digital health apps.
- 6.4. Strengthen prevention of infection.
 - 6.4.1. Promote WHO/UNICEF Water and Sanitation for Health Facility Improvement Tool services at health facilities (WHO 2017f).
 - 6.4.2. Establish functional infection control system in health facilities, taking into consideration the special needs of small and sick babies (see "Establish functional QI teams in facilities with clear terms of reference to ensure optimal service provision"). Add an annex related to IP for these vulnerable babies to the national document on IP. Ensure that it is distributed to all units caring for these babies and that the guidelines are followed.
 - 6.4.3. Promote rational antimicrobial stewardship, adopting the recommendations of the new Ghana National Action Plan on Antimicrobial Resistance, making adaptations relevant to newborn care where necessary, including in neonatal units.
- 6.5. Scale up MBFHI. This component is extremely important. Although early initiation of breastfeeding improved significantly, exclusive breastfeeding up to 6 months and continued breastfeeding essential for newborns and older infants needs to be strengthened. In addition to breastfeeding promotion and support, the MBFHI implementation package also focused on providing respectful and quality care for mothers and their babies. Scale-up of the programmatic activities should be implemented as noted below:
 - 6.5.1. Review evaluation report of piloted the Mother and Baby Friendly Health Facility Initiative in Upper East Region for lessons for scale-up.
 - 6.5.2. Scale up MBFHI countrywide as appropriate based on lessons learned from evaluation of Upper East pilot program, possibly through a phased approach with orientation and involvement of relevant stakeholders.
 - 6.5.3. Promote adherence to the WHO International Code of Marketing of Breast-milk Substitutes (WHO 1981).
- 6.6. Ensure behavior change activities are introduced in facilities, since appropriate behavior of the health care providers is important to improve QoC.

- 6.7. Advocate for and support establishment of QI systems in the private sector with relevant authorities, such as the Health Facility Regulatory Authority.
- 6.8. Introduce QI activities into community-based care related to CHPS compounds, CHWs, and CHNs.
- 6.9. Promote appropriate incentives/rewards, such as certificates of recognition, and awards given to top-performing health facilities/groups/health care workers.
- 6.10. Explore establishment of accreditation processes.

STRATEGY 7: ENSURE CONTINUOUS AVAILABILITY OF ESSENTIAL DRUGS, EQUIPMENT, AND OTHER COMMODITIES

There shall be focus on constructing units appropriate for managing at-risk/small and sick newborns, including adequate spacing between babies, extra space for practicing continuous KMC and FCC, and strictly adhering to having only one baby in a cot/incubator. It will be equally important for facilities to ensure there is clean water supply 24/7, electricity and a backup generator, and proper waste disposal.

It is also important to ensure that equipment, drugs, and logistics for basic ENC are available at all levels. Priority also needs be given to providing essential equipment, drugs, and logistics required for managing at-risk/small and sick newborns according to level of care. Quality and cost-efficiency will be considered for all procurement, including donations. Proper training of staff in equipment operation, basic maintenance, and disinfection/sterilization will be enforced. Resources for maintenance, repairs, and replacement of parts or equipment, when necessary, will also be addressed.

Key Activities

- 7.1. Develop a practical, feasible procurement plan for equipment, commodities, and drugs for the next 5 years for all newborns, including at-risk/small and sick babies.
- 7.2. Develop and implement suitable, specially designed, well-equipped infrastructure for the care of at-risk/small and sick babies according to national criteria.
- 7.3. Identify, with prioritization, the key drugs, equipment, other commodities and supplies, including single-use items where feasible, at the various levels of care noted in the intervention package.
 - 7.3.1. Collaborate with the GHS Stores, Suppliers, and Drug Management Division to prioritize the equipment, commodities, drugs, and supplies, including single-use items where feasible, to be procured at each level of care.
 - 7.3.2. Define technical specifications for essential drugs, equipment/medical devices, and other commodities. Items, including drugs, will be in the appropriate sizes and concentrations for the newborn whenever possible.
 - 7.3.3. Ensure that the appropriate types of equipment, commodities, and supplies selected are suitable for each level of care.
 - 7.3.4. Advocate for adequate warehousing/storage, distribution, and supply chain management. Institute a system to reduce waste due to expired drugs.
 - 7.3.5. Advocate for subsidies on Food and Drug Administration of Ghana registration and import of essential medicines, such as surfactant and hepatitis B immunoglobulin.
 - 7.3.6. Advocate for local manufacture of commodities (e.g., through one district one factory policy of government), taking care to ensure high-quality products.



- 7.3.7. Advocate for tax incentives for pharmaceutical companies that produce newborn formulations at reasonable cost.
- 7.4. Plan and implement activities to promote regular maintenance, repair, and replacement of parts or equipment.
 - 7.4.1. Train relevant staff using suitable manuals and job aids on maintaining equipment and supplies in an appropriate, safe manner without risks to babies and users, and on avoiding stock-outs of recurrent supplies.
 - 7.4.2. Train relevant staff, including biomedical engineers, on maintaining and reprocessing reusable equipment and commodities correctly.
 - 7.4.3. Ensure regular maintenance, repair, and replacement of parts/equipment, initially through negotiating longer periods of guarantee at purchase and later with locally available agencies, with the aim of ultimately having suitable biomedical engineering units linked with appropriate hospitals.

STRATEGY 8: STRENGTHEN COMMUNITY ENGAGEMENT AND SBCC ACTIVITIES AT ALL LEVELS

Most newborns spend the majority of the neonatal period of the first 4 weeks at home. After normal deliveries, mothers should stay in the facility for 24 hours, though in some health centers, they may go home earlier. Even among babies in the SCNU/NICU, some spend more time at home; only a small proportion of very small and sick babies spend longer periods in hospitals. It is important that this area of community-based care is well covered and promoted. Positive family and community engagement are critical for the baby's well-being. This is essential for all babies but has special relevance to small and sick babies who recovered to help ensure that they do not go home, get sick, return late to the hospital, and die. SBCC activities that promote optimal family and community actions are beneficial, as is the value of community partnerships, community mobilization, and champions in promoting optimal behaviors. Mobile technology use, ongoing in many districts, can also be strengthened and expanded so CHNs and CHVs can contact and support mothers and families.

Note: SBCC strategies are required not only at community level but also at facility level. They can be effectively carried out in the antenatal clinic, postnatal wards, SCNUs/NICUs, and follow-up newborn clinic (see also Strategy 6's activity on ensuring behavior change activities are introduced in facilities).

Key Activities

- 8.1. Strengthen use of tools/SBCC materials for providing counseling to mothers of normal and at-risk/small, and sick babies in health facilities.
- 8.2. Establish links among facility doctors, nurses/midwives, and CHNs and CHVs. Promote use of digital technology, including mHealth, and consider feasibility of more innovative activities.
 - 8.2.1. Strengthen/expand mapping of facilities, CHPS compounds, CHNs, and CHVs.
 - 8.2.2. Develop/strengthen links among facility health workers and CHNs and CHVs.
 - 8.2.3. Improve and increase use of mHealth using mobile phones to help care providers in facilities inform CHNs/CHVs about babies discharged from health facilities, especially from SCNUs/NICUs, so that CHNs/CHVs can visit them at home. They can then counsel them on preventive care at home, taking babies for follow-up visits, detecting problems, and early care seeking.

- 8.3. Train health promotion officers in innovative ways to engage the community, community health officers, and village volunteers, including using counseling cards and mother support groups.
- 8.4. Use community radios and other innovative SBCC techniques, including traditional methods, community dialog meetings, social media, and mass media, to promote required behaviors.
- 8.5. Launch a campaign to educate the health care providers and entire communities on components of ENC, including using chlorhexidine for cord care, other elements of preventive care, early detection of problems, and appropriate care seeking.
- 8.6. Establish suitable community partnerships involving community groups and CSOs in promoting newborn care.
- 8.7. Build capacity of newborn champions to support newborn care and coordinate with facility champions where available.
 - 8.7.1. Train newborn champions, provide them with counseling tools and SBCC materials, and link them with CHNs and CHVs.
 - 8.7.2. Appoint newborn champions in all regions.
 - 8.7.3. Institute and support regular forums with all champions.
 - 8.7.4. Create/strengthen the common national platform for newborn champions to share ideas.
 - 8.7.5. Strengthen inclusion of newborn health in Child Health Promotion Week activities.

STRATEGY 9: STRENGTHEN INCLUSIVE PARTNERSHIPS, INCLUDING PUBLIC-PRIVATE PARTNERSHIPS

A key principle for implementing this strategy is inclusive partnership with all relevant stakeholders at various levels. This includes professional bodies and private organizations at all levels, as each has its own strength. Care, of course, has to be taken to avoid conflicts of interest. Within health facilities, a good collaboration shall be promoted between obstetric and pediatric departments, since maternal and newborn health are integrated. The time of birth is important, when both groups have to work together.

Midwives play a key role in providing care at birth and basic ENC. Since the care of at-risk, small, and sick babies is an important addition to the intervention package, the Paediatric Society of Ghana, the Society of Obstetricians and Gynaecologists of Ghana, the Ghana College of Nurses and Midwives, and the Nursing and Midwifery Council now need work together. These groups will work together to determine how best to collaborate and provide more specialized medical and nursing care in facilities (SCNUs/ NICUs).

Key Activities

- 9.1. Promote close collaboration among various stakeholders, including CSOs and district assemblies, in planning and overseeing key interventions to support newborn care at different levels.
 - 9.1.1. Strengthen links among health care providers serving the mother and baby.
 - 9.1.2. Strengthen links among CHWs and health facility care providers for babies.
 - 9.1.3. Establish links/partnerships (including private-public one) with technology groups, such as those involved in digital health/mHealth, to use mobile phones to link with community workers for follow-up of babies and to promote collection of data where required.



- 9.1.4. Establish and strengthen links/partnerships for financing service delivery and providing required infrastructure.

STRATEGY 10: STRENGTHEN APPROPRIATE RESEARCH

A major aim is to have evidence-based information that can be scaled up, so encouraging local research on key relevant topics can be beneficial. Priority topics will be finalized in discussions with the GHS Health Research and Development Division, schools of public health in the country (e.g., the University of Ghana, Legon; Kwame Nkrumah University of Science and Technology; and the University for Development Studies), and the SCNC in collaboration with academia and development partners.

Key Activities

- 10.1. Define research priorities for preventive and curative care of at-risk/small and sick babies that are appropriate for Ghana.
- 10.2. Promote collaborative research with partners.
- 10.3. Establish a repository for all information on newborn care.
- 10.4. Include research dissemination as part of annual stakeholder meetings.
- 10.5. Disseminate research links and findings through social media and other platforms.

Oversight/Funding Issues

The financial management of the funding for the Ghana National Newborn Strategy and Action Plan will follow the MOH/GHS existing financial management arrangement. Management arrangements will also conform to the MOH's existing common management arrangement with partners and the government's decentralization policy, as applicable. The GHS Family Health Division (FHD) is the secretariat of the SCNC and reports to the director general of the GHS. The deputy director responsible for reproductive and child health in the FHD is the overall coordinator of the newborn action plan, but relevant departments and divisions of the MOH/GHS will continue to carry out aspects of the action plan. Regions and districts will implement the Newborn Health Strategy and Action Plan in the spirit of integration without losing focus on newborn care. Focal people will be appointed at the regional and district levels, and they will continue to oversee activities related to newborn care on behalf of the respective regional and district health management teams.

Appendix 1

LIST OF FIELD INTERVIEWERS FOR EVALUATION OF THE GHANA NATIONAL NEWBORN HEALTH STRATEGY AND ACTION PLAN 2014–2018

(The interviewers interviewed key partners at the various levels noted.)

	Name	Designation and Organization
1.	National Partner 1	
	Dr. Amofah George	Consultant
	Ebenezer Amanor Addo	Data Manager, Family Health Division (FHD), Ghana Health Service (GHS)
	Dr. Linda Vanotoo	Public Health Specialist, Private Consultant
	Saul Williams Evans	Health Officer, Communicate for Health
2.	Greater Accra Region	
	Dr. Cynthia Bannerman	Public Health Specialist, Private Consultant
	Dr. Joan Wood	Member, Paediatric Society of Ghana
	Doris Amarteifio	Administrator, FHD, GHS
	Dr. Jocelyn Asibey	Pediatrician, Eastern Regional Hospital, Koforidua
	Dr. Naa Amanua Chinbuah	Pediatrician, PATH
3.	Ashanti Region	
	Dr. Naa Djama Glover	Pediatrician, Korle-Bu Teaching Hospital
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	Eunice Sackey Martey	FHD, GHS
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	Joyce Amponsah Arhin	Quality of Care, Institutional Care Division, GHS
	Dr. Paulina Appiah	Newborn Focal Person, Brong Ahafo
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Appendix 2

LIST OF PARTICIPANTS, BOTTLENECK ANALYSIS WORKSHOP, SEPTEMBER 26–27, 2018

Name	Designation and Organization
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Ms. Domitilla Debpuur	GHS, Upper West Region
Ms. Dinah Amoah	GHS, Western Region
Ms. Portia Agbo	GHS, Western Region
Ms Abiba Iddi	GHS, Northern Region
Dr. Briamah Abubakari	GHS, Northern Region
Dr. Ibrahim Donkor	GHS, Upper West Region
Dr. Patrick Atobrah	GHS, Upper East Region
Dr. Ashura Bakari	GHS, Ashanti Region
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Dr. Jocelyn Asibey	GHS, Eastern Region
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Name	Designation and Organization
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Ms. Eva Mensah	GHS, Office of Director General/Headquarters
Mr. Ebenezer Amanor Addo	FHD, GHS/Headquarters
Ms. Marie-Charlyne F. Kilba	Paediatric Society of Ghana
Ms. Mercy Agtuahene	GHS, Health Promotion/Headquarters
Dr. Gloria Quansah Asare	GHS, Office of Director General/Headquarters
Ms. Elizabeth Adote	GHS, Office of Director General/Headquarters
Ms. Salamatu Futa	US Agency for International Development
Ms. Rebecca Akahe	National Health Insurance Authority
Dr. Emmanuel Amoah	Regional Health Directorate/Eastern Region
Paul Senyo Gawu	GHS, SSDM
Dr. Naana Wireko Brobby	Komfo Anokye Teaching Hospital, Ashanti Region

Appendix 3 Glossary

Term	Definition
Neonatal mortality rate	Probability of dying during the first 28 completed days of life. The rate is expressed as the number of deaths within the first 28 completed days of life per 1,000 live births.
Early neonatal deaths	Deaths that occur in the first 7 days of a baby's life.
Late neonatal deaths	Deaths occurring after the seventh day but before the 28th completed day of life.
Perinatal mortality rate	Deaths in the perinatal period, including late pregnancy from 28 weeks, birth to the first week of life. Includes stillbirths and early neonatal deaths. The perinatal mortality rate is expressed as the number of stillbirths and early neonatal deaths per 1,000 total births.
Total stillbirths	The birth of a dead, viable baby (gestational age \geq 28 weeks). Stillbirth rate is the number of stillbirths related to fetuses \geq 28 weeks' gestation per 1,000 total births.
Fresh stillbirth	The birth of a dead baby with no signs of maceration/disintegration of the skin, where the death is assumed to have taken place during labor and the process of delivery.
Post-term	A baby born between 42 weeks, 0 days and beyond.
Late term	A baby born between 41 weeks, 0 days and 41 weeks, 6 days.
Full term	A baby born between 39 weeks, 0 days and 40 weeks, 6 days.
Early term	A baby born between 37 weeks, 0 days and 38 weeks, 6 days.
Preterm	A baby born $<$ 37 completed weeks of gestation.
Late preterm	A baby born after 34 completed weeks and before 37 completed weeks of gestation (between 34 weeks, 0 days and 36 weeks, 6 days or 34 to $<$ 37 completed weeks' gestation).
Moderate preterm	A baby born between 32 completed weeks and before completion of 34 weeks (between 32 weeks, 0 days and 34 weeks, 6 days or 32 to $<$ 34 completed weeks' gestation).
Very preterm	A baby born after 28 completed weeks' gestation and before 32 completed weeks' gestation (between 28 weeks, 0 days and 32 weeks, 6 days or 28 to $<$ 32 completed weeks' gestation).
Extremely preterm	A baby born at $<$ 28 completed weeks' gestation (lower limit not clearly defined but may be taken to 22 weeks, which is currently recommended globally for fetal viability).

Appendix 4A

Essential Care for All Babies (Level I Care)

Selected key components/interventions (not exhaustive; see references Committee on Fetus and Newborn 2012, AAP and ACOG 2017, and National Neonatology Forum of India 2019 for further details to finalize the standards of newborn care being developed by the Ghana Health Service)

Infrastructure
<ul style="list-style-type: none"> • Labor and delivery rooms with newborn corners for provision of care, including basic resuscitation • Postnatal ward with babies roomed in with their mothers and, where feasible, a stabilization corner for babies awaiting transfer • 24/7 clean water supply • 24/7 electricity supply with generators • Proper waste disposal
Health Workforce
<ul style="list-style-type: none"> • Doctor(s) • Midwives • Pharmacist • Ancillary staff
Equipment/Supplies/Drug
<ul style="list-style-type: none"> • Soap, preferably liquid soap, alcohol-based hand rubs, and other supplies for infection prevention • Radiant warmer • Clean linen for drying and wrapping • Equipment and supplies, such as washing machines and dryers, autoclaves, weighing scales, digital thermometer, measuring tape, newborn-sized self-inflating bags and masks, low-pressure suction machines/appropriate suction bulbs, and supplies for cord care • Equipment/supplies/drugs: Equipment for basic resuscitation, vitamin K, eye drops/ointment, vaccines, antibiotics, source of oxygen (ideally with blenders to provide required percentages), and pulse oximeters for monitoring oxygen levels • Note: Oxygen to be used only when essential; not for routine resuscitation. • Proper care records/tools for data maintenance, including partographs, case records, delivery room, postnatal follow-up care registers, and registers to record deaths



Appendix 4A Cont'd.

Key Interventions

- Skilled attendance 24/7
- Prevention of infection based on national guidelines
- Basic care at birth: immediate drying, wrapping (including head), eye care, cord care, vitamin K, and recording of weight and, ideally, gestational age
- Basic neonatal resuscitation
- Prevention of mother-to-child transmission of HIV
- Skin-to-skin contact and early initiation of breastfeeding within 1 hour
- Basic care in the postnatal ward and follow-up clinic
- Functional team for quality improvement with infection control
- Suitable plan for early transport of at-risk/small and sick babies to appropriate referral center, established through mapping of relevant facilities
- Counseling on preventive care, breastfeeding, identification of problems, and care seeking
- Postnatal follow-up as established by the Ghana Health Service
- Proper data collection, transmission to district health information system, review/use to document and promote quality of care

Appendix 4B

Special Care for At-Risk, Small, and Sick Newborns, Special Care Newborn Unit (SCNU): Level II (A and B)

Selected key components/interventions (not exhaustive; see references Committee on Fetus and Newborn 2012, AAP and ACOG 2017, and National Neonatology Forum of India 2019 to finalize the standards of newborn care being developed by the Ghana Health Service)

Level II will have all components of level I in addition to elements noted below.

Infrastructure
<ul style="list-style-type: none"> • Rooms to house babies needing level II care with adequate spacing between babies, including extra rooms to support running the SCNU and ideally for kangaroo mother care (KMC) and family-centered care • Space for interventions common to several departments, including laboratories, radiology equipment and supplies, including ones for mobile radiological assessments, blood banks, and pharmacies, and for housing common equipment, such as washing machines, dryers, autoclaves, and incinerators
Health Workforce
<ul style="list-style-type: none"> • Doctors trained in neonatal care, with ideally at least one pediatrician • Nurses trained in components of neonatal nursing care required for level II care • Additional staff in the hospital to run sections such as laboratories, radiology section, blood banks, and pharmacy, covering more requirements of these more vulnerable babies • Ancillary staff for all supportive services, including cleaning • Task shifting and sharing through use of trained ancillary staff and in KMC/family-centered care with assistance from the mother/family member after orientation to assist in nonspecialized care of the baby
Equipment/Supplies
<ul style="list-style-type: none"> • For warmth, radiant overhead warmers and incubators for the SCNU, along with regular cots • Supplies for feeding babies who cannot swallow or suck properly, such as for intragastric and cup/<i>paladai</i> feeding (a <i>paladai</i> is a traditional feeding device with an open projecting trough) • Supplies for advanced resuscitation as in the American Academy of Pediatrics/National Resuscitation Program in some of the SCNUs where feasible • All essential elements for safe use of oxygen • Equipment, supplies, drugs (including required antibiotics), and fluids for safe administration of IV fluids and drugs in required small doses/volumes and concentrations suitable for small babies • Routine laboratory tests, including equipment for management of jaundice and exchange transfusion Note: Unlike in high-income countries, where few exchange transfusions are carried out, in low- and middle-income countries, they are far more common, as babies are brought in late with high levels of serum bilirubin. The resources for tests for bilirubin levels with earlier availability of reports and expertise for exchange transfusion should, ideally, be available in the better-functioning SCNUs based on set national criteria.



Appendix 4B Cont'd.

Key Interventions

- (All elements noted below must include training with focus on quality improvement and ensure that in building up competency, proper implementation covering prevention of infection, and safety are addressed, focusing on the dictum “do no harm,” particularly as the baby’s brain is stilling developing.)
- Care of preterm/low-birthweight babies, ideally through KMC and family-centered care and, where unavoidable or inadequate, adopting correctly implemented, more conventional methods
- Thermal care
- Prevention of infection following standards set by the World Health Organization, including the Water and Sanitation for Health Facility Improvement Tool, handwashing, use of hand rubs, proper disinfection/sterilization of surfaces and equipment as appropriate, use of single-use supplies where feasible, care to prevent infection while carrying out procedures, and working with motivated, functional quality improvement and infection prevention committees
- Prioritization of nurturing/compassionate quality of care in all implementation activities, functioning through the quality improvement committee that can also cover infection prevention
- Extra support for feeding where required through intragastric feeding, use of cups/*paladai*, and avoidance of bottles
- Safe use of the baby’s own mother’s milk (as followed in Ghana), including short-term storage, and encouraging sucking on the “emptied” breast after expression of milk where feasible to promote maturation of the sucking reflex and longer breastfeeding later
Note: In most centers, own mother’s milk is the best option. **Note:** Use of “donor” milk carries the potential risk of transmission of HIV and is feasible only when special precautions are taken and in more advanced centers with quality human milk banks. Alternatives include standard baby formulas. Human milk fortifiers and preterm formulas are costly and may be reserved for centers successfully working with very preterm and very-low-birthweight babies and where they can be afforded.
- Safe use of oxygen
- Management (prevention and treatment) of common problems, such as apnea of prematurity, hypoglycemia, respiratory distress syndrome, jaundice, infections, and some neurological problems, such as seizures
- Safe, appropriate administration of IV fluids for babies who cannot be fed
- Use of continuous positive airway pressure where required; may be more applicable in selected district hospitals that are doing better: This device also requires the safe use of oxygen.

Appendix 4B Cont'd.

Key Interventions
<ul style="list-style-type: none"> • Effective SBCC strategies to promote high-quality preventive care, early detection of problems, and prompt care seeking, implemented in the facility itself and linked with community-based interventions involving community health volunteers and community health nurses, using mHealth techniques and home visits: Promotion of appropriate behavior also applies to health care providers to achieve and further improve good quality of care. • Innovative methods to improve transportation of babies from subdistrict levels and for referral, where required, to neonatal intensive care units in regional/teaching hospitals • Prioritization of proper reliable data collection, maintenance, transmission to DHIMS, and review and use of data for statistical purposes, and to note trends for documenting quality of care and take necessary remedial steps • Perinatal/neonatal audit with active, mutually respectful involvement of the departments of obstetrics and pediatrics/neonatology • Careful follow-up of discharged babies: Ghana has invested in early childhood development, which will be an important component. Elements such as selective neonatal screening, including for sickle cell disease; early assessment for hearing problems; examination of the eyes for evidence of retinopathy of prematurity; and assessment of growth and development are important. Until resources improve, routine follow-up services can be provided through special care newborn units, but it may be necessary to sometimes send selected babies to special follow-up clinics associated with larger regional or teaching hospitals.



Appendix 4C

Intensive Care for Small and Sick Newborns, Neonatal Intensive Care Unit (NICU): Level III (A and B)

Selected key components/interventions (not exhaustive; see references Committee on Fetus and Newborn 2012, AAP and ACOG 2017, and National Neonatology Forum of India 2019 to finalize the standards of newborn care being developed by the Ghana Health Service)

Level III will have all components of levels I and II in addition to elements noted below.

Infrastructure
<ul style="list-style-type: none"> Similar to level II but even greater need for 24/7 clean water supply, electricity supply with generator, and waste disposal to be able to deal with the functioning of a larger number and more sophisticated nature of equipment Resources for kangaroo mother care and family-centered care still important
Health Workforce
<ul style="list-style-type: none"> More specialized doctors: pediatricians and neonatologists More specialized nurses trained in caring for small and sick babies and specifically trained neonatal nurses Other specialized staff need to be available in the hospital, such as those in better-equipped 24/7 laboratories, including those with resources for blood gas estimation, a radiology department with resources to carry out portable X-rays, pharmacies, pediatric surgeons and anesthesiologists, ophthalmologists trained in examining babies' eyes, audiologists, respiratory therapists, and physiotherapists Ancillary staff (more will be required) Actual increase in the number of staff required, as the deficit cannot be managed with only task shifting/sharing—many interventions are more specialized and cannot be carried out if a care provider has to look after too many babies
Equipment/Supplies
<ul style="list-style-type: none"> Additional pulse oximeters and other monitors Equipment and supplies for advanced resuscitation (equivalent to National Resuscitation Program of the American Academy of Pediatrics), surfactant therapy, mechanical ventilation, high-frequency ventilation, and additional support for nutrition, such as total parenteral nutrition and peripheral introduction of central venous catheters
Key Interventions
<ul style="list-style-type: none"> (All elements noted below must include training with focus on quality improvement and ensure that in building up competency, proper implementation covering prevention of infection, and safety are addressed, focusing on the dictum “do no harm,” particularly as the baby’s brain is still developing.) Advanced resuscitation (National Resuscitation Program) Surfactant therapy Expansion of safe oxygen usage

Key Interventions

- Extra support for IV fluid administration through peripherally inserted central venous catheter
- Ultrasound examination for peri/intraventricular hemorrhage
- Advanced management of serious infections
- Intermittent mechanical ventilation
- Suitable transport system for collection of referred babies
- Neonatal screening for common disorders and follow-up support
- Pediatric surgery, including management of congenital defects



Appendix 5

Key Newborn Care Interventions By Type of Facility

Intervention	Subdistrict Facilities/Health Centers/Polyclinics	Most District Hospitals (Public, Quasigovernment, Faith-Based, Private), Level II	Regional Hospitals Level II/III	Teaching Hospitals Level III
Care at birth, basic resuscitation with newborn corner	Yes	Yes	Yes	Yes
Advanced resuscitation (endotracheal intubation, cardiac massage, and drugs)	No	Yes, in some	Yes	Yes
Short-term skin-to-skin contact at birth and when necessary during transport for referral	Yes	Yes	Yes	Yes
Rooming-in of normal babies with mother with basic care in the postnatal period	Yes	Yes	Yes	Yes
Care of the at-risk, small, and sick babies	No, only initial stabilization	Yes	Yes	Yes
Kangaroo mother care	Skin-to-skin contact should be initiated before referral of small babies	Yes	Yes	Yes
Use of own mother's milk, early initiation of breastfeeding within 1 hour of birth for all normal-weight/term babies, and support of breastfeeding, including safe, clean expression of milk where required for small babies who cannot suckle but can tolerate feeds	Yes, temporary use of expressed breast milk during transport if baby can tolerate feeds	Yes	Yes	Yes
Extra support for feeding (I/G feeds, use of cups/ <i>paladai</i>)	No, with a few exceptions where feasible	Yes	Yes	Yes
Use of IV fluids	No	Yes	Yes	Yes
Safe use of oxygen (ability to reliably adjust the percentage of oxygen supplied to the baby and monitor the baby's oxygen saturation) Note: Oxygen should be used only when necessary. Most resuscitations of term babies do not require it.	May be difficult in the initial stages but should eventually be available wherever oxygen is used	Yes	Yes	Yes
Infection prevention appropriate for the level of care	Yes	Yes	Yes	Yes

Intervention	Subdistrict Facilities/Health Centers/Polyclinics	Most District Hospitals (Public, Quasigovernment, Faith-Based, Private), Level II	Regional Hospitals Level II/III	Teaching Hospitals Level III
Management of common neonatal problems	Refer except for minor problems that can be treated locally	Yes	Yes	Yes
Respiratory support (continuous positive airway pressure)	No	Yes, in some	Yes	Yes
Perinatal/neonatal audit	Yes, adapted for the level	Yes	Yes	Yes
Data maintenance commensurate with the level of care, transmission of data to the district health information system, and review and use of data to document and improve quality of care	Yes	Yes	Yes	Yes
Routine postnatal follow-up care based on World Health Organization recommendations	Yes	Yes	Yes	Yes
SBCC strategies to promote high-quality, preventive care, early detection of problems, and prompt care seeking implemented in the facility itself and linked with community-based interventions involving community health volunteers and community health nurses using mHealth techniques, community mobilization, and home visits. Establish links with the community.	Yes	Yes	Yes	Yes
Follow-up for special problems, such as hearing and visual problems, growth, and early childhood development	No	Yes, in some	Yes	Yes
Advanced care, such as mechanical ventilation, pediatric surgery, and neonatal screening	No	No	Yes, in some	Yes



Appendix 6

SOURCES FOR MATERIALS/TOOLS FOR FACILITY-BASED NEWBORN CARE

(The list includes items from both a high-income and a low-income country that have already gone through these exercises, can promote exposure to well-advanced agencies, and encourage south-to-south links.)

Sources for defining levels of care through signal functions and for setting up special care newborn units

American Academy of Pediatrics (AAP), American College of Obstetricians and Gynecologists. Kilpatrick SJ, Papile L, Macones GA, eds. 2017. Guidelines for Perinatal Care. 8th ed. Elk Grove Village, Illinois, USA: AAP.

National Neonatology Forum of India, Accreditation Requirements for Level II A and B and Level III A and B

UNICEF, National Neonatology Forum. 2018. *Toolkit for Setting Up Special Care Newborn Units, Stabilisation Units and Newborn Care Corners*. New York City: UNICEF.

Sources for quality of care, guidelines, training manuals, videos, and job aids for newborn care

World Health Organization (WHO). 2018. Handbook for National Quality Policy and Strategy: A Practical Approach for Developing Policy and Strategy to Improve Quality of Care. Geneva: WHO.

WHO. 2019. WHO Global Learning Laboratory for Quality UHC. WHO website. <https://www.who.int/servicedeliverysafety/areas/qhc/gll/en/index4.html>.

WHO Collaborating Center for Training and Research in Newborn Care: <http://www.newbornwhocc.org/> (has a number of documents on training, guidelines, equipment, forms for the neonatal unit, etc.)

AAP. 2019. Helping Babies Survive. AAP website. <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/helping-babies-survive/Pages/default.aspx>.

WHO. 2003. Kangaroo Mother Care: A Practical Guide. Geneva: WHO.

Edmond K, Bahl R, WHO. 2006. Optimal Feeding of Low-Birth-Weight Infants: Technical Review. Geneva: WHO.

UNICEF, National Neonatology Forum. 2018. *Toolkit for Setting Up Special Care Newborn Units, Stabilisation Units and Newborn Care Corners*. New York City: UNICEF.

Royal College of Paediatrics and Child Health (RCPCH), Royal College of Ophthalmologists, British Association of Perinatal Medicine, BLISS. 2008. UK Retinopathy of Prematurity Guideline. London: RCPCH.

Global Health Media Project, for videos on skills for newborn care: <https://globalhealthmedia.org/>

Quality of Care Network. Quality, Equity, Dignity: A Network for Improving Quality of Care for Maternal, Newborn and Child Health: <http://www.qualityofcarenetwork.org/about/vision-and-objectives>

India Ministry of Health and Family Welfare (MOHFW). 2014. Facility Based Newborn Care (FBNC): Operational Guidelines for FBNC Trainings. New Delhi: India MOHFW.

WHO. 2013. Pocket Book of Hospital Care for Children: Guidelines for the Management of Common Childhood Illnesses. 2nd ed. Geneva: WHO.

National Neonatology Forum of India: <http://www.nnfi.org/>

WHO. 2018. Survive and Thrive: Transforming Care for Every Small and Sick Newborn. Geneva: WHO.

Miscellaneous aspects of newborn care and programmatic issues

Healthy Newborn Network: <https://www.healthynewbornnetwork.org/>

US Agency for International Development (USAID) Maternal and Child Survival Program Resource Center: <https://www.mcsprogram.org/resources/>

USAID/Every Premie–SCALE: <https://www.everypremie.org/resources/>

for technical briefs on continuum of care, do no harm, and *Ghana: Profile of Preterm and Low Birth Weight Prevention and Care*.

Selected documents with newborn indicators

(Note: Most of the sources have a combination maternal, newborn, and child indicators, so choose the appropriate indicator for the newborn based on the requirement of the country's national strategy for newborn care.)

WHO. 2014. Every Newborn: An Action Plan to End Preventable Deaths. Geneva: WHO.

Quality, Equity, Dignity Network Indicator Monitoring Framework Quality, Equity, Dignity: A WHO Network for Improving Quality of Care for Maternal, Newborn and Child Health Link : https://www.who.int/maternal_child_adolescent/documents/quality-care-network-objectives/en/

Every Woman Every Child. 2015. The Global Strategy for Women's, Children's and Adolescents' Health (2016–2030). New York City: United Nations.

WHO, UNICEF. 2017. Metrics Report Cards: Improving and Using the Data to Accelerate Progress to End Preventable Maternal and Newborn Deaths and Stillbirths. Geneva: WHO.

WHO. 2017. Reaching Every Newborn National 2020 Milestones: Country Progress, Plans and Moving Forward. Geneva: WHO.

Moller AB, Newby H, Hanson C, et al. 2018. Measures matter: a scoping review of maternal and newborn indicators. PLoS One. 13(10):e0204763. doi: 10.1371/journal.pone.0204763.

Appendix 7

BASIS FOR SELECTION OF AND STEPS FOR OPTIMAL ACHIEVEMENT OF SET GOALS AND OBJECTIVES

Note: These components are essential to be able to initiate, verify, and monitor the objectives correctly. Some activities have already been initiated, but they will have to be completed to an adequate extent and standards appropriate for the country set in the first year (2019) so that the monitoring can commence. The national Subcommittee on Newborn Care will play an important role in developing the key standards and guidelines. Some of the key issues are noted below.

Basis for Goals and Objectives
<p>The key goals and objectives selected were guided by the need to:</p> <ol style="list-style-type: none"> 1. Progress toward achieving the neonatal component of Sustainable Development Goal 3.2.2. 2. Give priority to outcome indicators. 3. Continue adequate focus on essential newborn care at all levels. 4. Expand focus to newer components and promote the “Survive and Thrive” approach, such as: <ol style="list-style-type: none"> a. Quality care of at-risk/small and sick newborns b. Psychosocial support in the neonatal period to mothers/parents/families with problems, including those with adverse outcome, linking subsequently with maternal health in the continuum of care c. Early childhood development addressing the neonatal period, then linking with infant and child health in the continuum of care
Key Tasks/Activities
<ol style="list-style-type: none"> 1. Set clear definitions for the special care neonatal unit (SCNU) and neonatal intensive care unit (NICU) with specific criteria for the levels of care in keeping with global recommendations but adapted, where necessary, for Ghana. The key components include: <ol style="list-style-type: none"> a. Infrastructure b. Required health workforce, specifically the types and numbers related to the bed strength and/or total number of live births, of doctors, including specialists (pediatricians/neonatologists), midwives, nurses (pediatric/neonatal nurses), social workers, and other supportive/ancillary staff c. Additional support, including pharmacies, laboratories, radiology and other diagnostic tests, blood banks, and surgical units d. Key equipment, drugs, other commodities, and supplies e. Specific defined links with community health workers/volunteers and partners to promote optimal support for families <p>Note: In developing the criteria for each level, the subcommittee will also define the minimum requirements for each component at different levels to help document and monitor the objectives relevant to the care of at-risk, small, and sick newborns.</p>

Key Tasks/Activities

2. Clear definitions and feasible indicators for monitoring correct/acceptable implementation of kangaroo mother care
3. Toolkits (through development/adaptation/updating) with standards, manuals, job aids, counseling cards, and well-defined outlines for specific courses for in-service training and plans for establishing courses for training staff for running SCNUs and NICUs. Note:
 - a. Although an excellent national document on infection prevention has been developed, it is necessary to add a section on infection prevention suitable for the care of newborns at peripheral health centers, focusing on the delivery rooms and postnatal wards, and in hospitals addressing care in SCNUs, NICUs, delivery rooms, and postnatal wards.
 - b. All relevant tools, including standards/guidelines and job aids related to the care of the newborn, should be supplied in the appropriate manner to all facilities.
4. Strengthened plans for improving quality of care, including prevention of infection, related to essential newborn care (level I care) through skilled birth attendants at all levels, including community, subdistrict, and higher facilities
5. Clear-cut plans and implementation activities for improving quality of care, including prevention of infection, in SCNUs and NICUs, and supportive services in subdistrict facilities and the community to promote preventive care, basic follow-up care, and early referral of babies with problems
 Note: Quality of care is best improved when all key components of the health system are improved. However, this will take time, so some adapted guidelines should be developed as to what health care providers can do in the current situation, even though not ideal. Consider:
 - Appropriate capacity-building using standard/innovative methods and supportive supervision/mentoring (documented)
 - Suitable reward systems, such as issuing certificates/certification requiring follow-up evaluation
 - Developing modified methods through which even facilities that have not received all resources for full upgrading can initiate selected steps to improve quality of care
 - Documenting impact of quality improvement methods with suitable outcome indicators and data trends
 - Explore possibilities of developing accreditation practices
 - Clear guidelines for documenting correct causes of neonatal deaths to improve the quality of the classification and documentation by the end of 2019
 Note: This is important, as it will help improve classification of deaths and help to better address their prevention, with the goal of decreasing neonatal mortality.
 - Structured plans for commencing the necessary activities for newer components of care related to quality of survival, including support for mothers/families who have undergone adverse events, such as the loss of their babies, and early detection of problems and initiation of activities to support early childhood development: These will need to be linked/continued with funding for more specialized care through the continuum of care by family/maternal/child health.



Appendix 8

INDICATORS FOR REVIEW AND FINALIZATION BY THE SUBCOMMITTEE ON NEWBORN CARE

RECOMMENDATIONS FOR FINALIZING NEWBORN INDICATORS

Note: The World Health Organization is in the process of revising the key indicators relevant to reproductive, maternal, newborn, child, and adolescent health. When these are finalized, they too should also be reviewed, and relevant newborn indicators should be incorporated as appropriate into the national list of indicators. In finalizing the updated set of indicators to be used in Ghana during the next 5 years, available materials, including those provided in Appendix 5, will be carefully reviewed, keeping in mind the points noted below.

1. Determine and prioritize (to avoid having too many) which indicators are most suitable for the country. Note what steps need to be implemented to ensure that they are correctly recorded, sent to the Ministry of Health/Ghana Health Service in a timely manner, and reviewed monthly within the hospital to note trends in outcome that relate to quality of care, ensuring at the same time that the process does not become overwhelming.
2. Determine how best to address the major challenges in recording the correct diagnosis for newborn deaths and morbidity, which is particularly relevant to Ghana.
3. Give priority to indicators that can help document achievement of Sustainable Development Goal 3.2.2.
4. Although more challenging, incorporate feasible indicators to document quality of care.
5. Although some input, process, and output indicators are important, especially in newer areas, give priority to outcome indicators, especially as the main objective is to achieve Sustainable Development Goal 3.2.2.
6. Ensure that, as in the implementation of the intervention package, when planning at scale and considering equity with coverage of marginalized/underserved areas are a priority, the monitoring and evaluation component also follows these guidelines.
7. Identify which indicators can be reliably documented. For those selected, setting criteria for their definitions is essential to avoid errors in diagnosis. This is particularly important for components such as diagnosis of infections that present greater challenges.
8. Ensure that all babies have weight and length documented as recommended by the Ghana Health Service and, where feasible, gestational age is determined. These elements should also be correctly documented in the district health information system (DHIS), as currently they are not consistently recorded.
9. For newborns, hospitals should ideally maintain records separately for inborn and outborn babies. The outcome of the two are very different, with the latter generally having a worse outcome.

The draft list of indicators made by the National Technical Working Group for the National Newborn Health Strategy and Action Plan (2019–2023) is listed in the table below.

Indicators for Review and Finalization by the Subcommittee on Newborn Care (SCNC)

	Indicator	Numerator	Denominator	Source of Data/ Comments
A.	Stillbirth and Mortality Rates			
1.	Total institutional stillbirth rate	Total number of fetal deaths taking place after 28 weeks of pregnancy or weighing 1,000 g or more	Total number of “total” births	DHIS, by survey
2.	Perinatal mortality rate	Total number of stillbirths + neonatal deaths in the first week of life	Total number of “total” births	DHIS, by survey
3.	Neonatal mortality rate (per 1,000 live births)	Number of neonatal deaths within 28 completed days of birth	Total number of live births	DHIS, by survey
4.	Institutional/facility neonatal mortality rate	Number of neonatal deaths in institutions/ facilities within 28 days of life	Total number of live births	DHIS
5.	Institutional/facility neonatal mortality rate disaggregated by birthweight: 4,000 g or more, 3,500–3,999 g, 3,000–3,499 g, 2,500–2,999 g, 2,000–2,499 g, 1,500–1,999 g, 1,000–1,499 g, < 1,000 g	Number of neonatal deaths in institutions/ facilities within 28 days of life disaggregated by birthweight: 4,000 g or more, 3,500–3,999 g, 3,000–3,499 g, 2,500–2,999 g, 2,000–2,499 g, 1,500–1,999 g, 1,000–1,499 g, < 1,000 g	Total number of live births by categories of birthweight: 4,000 g or more, 3,500–3,999 g, 3,000–3,499 g, 2,500–2,999 g, 2,000–2,499 g, 1,500–1,999 g, 1,000–1,499 g, < 1,000 g	Special study in facilities as DHIS data cover birthweight under 2,500 g and \geq 2,500g
B	Delivery Rate by Skilled Birth Attendants and at Facilities			
1.	Delivery rate by skilled birth attendants	Number of babies delivered by skilled birth attendants	Total number of births	DHIS /surveys
2.	Delivery rate in facilities	Number of births in facilities	Total number of births	DHIS/surveys
C	Indicators Related to Training			
3.	Proportion of skilled birth attendants trained in essential newborn care (ENC)	Number of skilled birth attendants trained in ENC	Total number of skilled birth attendants	Surveys

Appendix 8 Cont'd.

	Indicator	Numerator	Denominator	Source of Data/ Comments
2.	Proportion of skilled attendants trained in integrated management of newborn and childhood illness	Number of skilled attendants trained in integrated management of newborn and childhood illness	Total number of skilled attendants	Surveys
3.	Proportion of community health nurses trained in ENC	Number of community health nurses trained in ENC	Total number of community health nurses	Surveys
4.	Proportion of community health volunteers trained in ENC	Number of community health volunteers trained in ENC	Total number of community health volunteers	Surveys
5.	Proportion of colleges training doctors, nurses, and midwives that have incorporated the full package of ENC as in the national guidelines in pre-service curricula for all relevant students	Number of colleges training doctors, nurses, and midwives that have incorporated the full package of ENC as in the national guidelines in pre-service curricula for all relevant students	Total number of colleges training doctors, nurses, and midwives	Surveys
6.	Proportion of doctors trained in care of at-risk, small, and sick babies at least for level II care as required in special care newborn units (SCNUs)	Number of doctors trained in care of at-risk, small, and sick babies required for at least level II care as required in SCNUs (in both SCNUs and neonatal intensive care units [NICUs])	Total number of doctors working in the SCNUs and NICUs	Surveys
7.	Proportion of skilled attendants (doctors and nurses) caring for postpartum mothers trained in the basic essentials of provision of psychosocial support to mothers requiring such support based on national set standards/ curriculum	Number of skilled attendants (doctors and nurses) caring for postpartum mothers trained in the basic essentials of provision of psychosocial support to mothers requiring such support based on national set standards/ curriculum	Total number of skilled attendants (doctors and nurses) caring for postpartum mothers	Surveys

Appendix 8 Cont'd.

	Indicator	Numerator	Denominator	Source of Data/ Comments
8.	Proportion of skilled attendants (doctors and nurses) trained in the basic essentials of early childhood development based on national set standards/ curriculum	Number of skilled attendants (doctors and nurses) trained in the basic essentials of early childhood development based on national set standards/curriculum	Total number of skilled attendants (doctors and nurses)	Surveys
D.	Selected Resources/Services in Facilities			
1.	Proportion of subdistrict facilities with 24 hours of clean running water	Number of subdistrict facilities with 24 hours of clean running water	Total number of subdistrict facilities	Surveys
2.	Proportion of subdistrict facilities with bathroom facilities for patients, including women coming for deliveries	Number of subdistrict facilities with bathroom facilities for patients, including women coming for deliveries	Total number of subdistrict facilities	Surveys
3.	Proportion of hospitals (district and above) with 24 hours of clean running water	Number of hospitals (district and above) with 24 hours of clean running water	Total number of hospitals (district and above)	Surveys
4.	Proportion of hospitals (district and above) with 24 hours of electricity supply with generators	Number of hospitals (district and above) with 24 hours of electricity supply with generators	Total number of hospitals (district and above)	Surveys
6.	Proportion of subdistrict facilities with waste disposal based on national standards	Number of subdistrict facilities with waste disposal based on national standards	Total number of subdistrict facilities	Surveys
7.	Proportion of subdistrict facilities with a newborn baby corner in the delivery room, based on national standards	Number of subdistrict facilities with a newborn baby corner in the delivery room based on national standards	Total number of subdistrict facilities conducting deliveries	Surveys
8.	Proportion of hospitals (district and above) having a newborn baby corner in the delivery room, based on national standards	Number of hospitals (district and above) having a newborn baby corner in the delivery room based on national standards	Total number of hospitals (district and above) conducting deliveries	Surveys

Appendix 8 Cont'd.

	Indicator	Numerator	Denominator	Source of Data/ Comments
E.	Selected Practices in Facilities			
1.	Proportion of all facilities where the baby is placed in skin-to-skin contact on the mother's chest soon after birth	Number of all facilities (subdistrict facilities and hospitals) where the baby is placed in skin-to-skin contact on the mother's chest soon after birth	Total number of all facilities (subdistrict facilities and hospitals)	Demographic and Health Survey (DHS)
2.	Proportion of all facilities where breastfeeding is initiated within 1 hour of birth	Number of all facilities where breastfeeding is initiated within 1 hour of birth	Total number all facilities where deliveries take place	DHS
3.	Proportion of all babies who received exclusive breastfeeding up to 6 months	Number of all babies who received exclusive breastfeeding up to 6 months	Total number of babies who completed 5 months	DHS
4.	Proportion of hospitals (district and up) practicing kangaroo mother care based on the national guidelines	Number of hospitals (district and up) practicing kangaroo mother care based on the national guidelines	Total number of district-level and up hospitals	DHS
5.	Proportion of hospitals, district level and up, providing level II/SCNU care based on national standards	Number of hospitals, district level and up, providing level II/SCNU care based on national standards	Total number of hospitals, district level and up	Surveys
6.	Proportion of all subdistrict facilities and hospitals adhering to the set national infection prevention standards/guidelines suitable for each level	Number of all subdistrict facilities and hospitals adhering to the set national infection prevention standards/guidelines suitable for each level	Total number of all subdistrict facilities	Surveys
7.	Proportion of hospitals that can provide newborn screening tests, including for sickle cell disease, based on national standards/guidelines	Total number of hospitals that can provide newborn screening tests, including for sickle cell disease, based on national standards/guidelines	Total number of hospitals	Surveys

Appendix 8 Cont'd.

	Indicator	Numerator	Denominator	Source of Data/ Comments
F	Follow-Up Care			
1	Proportion of babies who had the first postnatal contact/visit between 1–48 hours of birth	Total number of babies who received the first postnatal contact/visit between 1–48 hours of birth	Total number of live births	Surveys
2.	Proportion of babies who had the second postnatal contact/visit on day 6/7 Note: Currently, the above two indicators (F1 and F2) are currently being referred to as “postnatal care.” This will be reviewed by the SCNC to change it to “postnatal contact/visit,” as the current indicator only documents the contact between the health worker and the mother and baby. It does not document the care provided during this contact.	Total number of babies who received the second postnatal contact/visit on day 6/7	Total number of live births	Surveys
3.	Proportion of newborn babies up to 28 days old with problems referred to the hospital after pre-referral treatment according to the national guidelines	Number of newborn babies up to 28 days old with problems referred to the hospital after pre-referral treatment according to the national guidelines	Total number of babies up to 28 days old referred to the hospital	Surveys
4.	Proportion of hospitals (district and up) with psychosocial support for mothers/families where the women have undergone adverse events related to birth, including the death of the baby	Number of hospitals (district and up) with psychosocial support for mothers/families where the women have undergone adverse events related to birth, including the death of the baby	Total number of hospitals (district and up)	Surveys

Appendix 8 Cont'd.

	Indicator	Numerator	Denominator	Source of Data/ Comments
	Proportion of hospitals (district and up) with activities related to and supporting early childhood development	Number of hospitals (district and up) with activities related to and supporting early childhood development	Total number of hospitals (district and up)	Surveys
G.	Miscellaneous Indicators for Further Discussion with SCNC for Appropriate Definitions			
1.	<p>These include case fatality rates due to specific causes, including complications of prematurity, birth asphyxia/adverse intrapartum events, neonatal infections, and deaths due to kernicterus following neonatal jaundice. Normally, in case fatality rates (e.g., in deaths due to birth asphyxia), the numerator is the number of deaths due to birth asphyxia and the denominator should ideally be the total number of cases of birth asphyxia. However, it is difficult to procure reliable data on the latter, especially in LMIC. In the US (Centers for Disease Control and Prevention), these are presented as vital statistics, with the numerator as the number of deaths due to the defined cause, such as birth asphyxia, and the denominator as 100,000 births. The denominator may have been kept high in keeping with the smaller numbers of deaths in a high-income country. The Technical Working Group for the Ghana Newborn Strategy felt that 1,000 live births would constitute a more appropriate denominator for low- and middle-income countries. An additional morbidity indicator included was the proportion of cases of neonatal jaundice that developed kernicterus that could help monitor care-seeking practices for jaundice.</p> <p>The technical working group felt these components were important, and they will be discussed in greater depth by the SCNC to finalize the list, define the numerators and denominators, and outline the methods of collection for the required data.</p>			

Appendix 9

KEY MILESTONES FOR THE NATIONAL NEWBORN HEALTH STRATEGY AND ACTION PLAN (2019–2023)

Year	Milestones
	(Some of the specific goals and objects will be defined after commencing implementation of the program.)
2018	Draft National Newborn Strategy and Action Plan for 2019–2023 developed.
2019	<p>National Newborn Strategy and Action Plan finalized and costed, and implementation plan developed and launched.</p> <p>Tools and updated indicators noted in appendixes developed for implementation of the newer components of newborn action plan.</p>
2020	<p>Tools adapted/developed for training and supervision/mentoring of facility health care providers relative to the care of at-risk, small, and sick babies.</p> <p>Indicators related to global Every Newborn Action Plan goals achieved by 2020. The following will be monitored:</p> <p>Neonatal mortality rate</p> <p>Stillbirth rate</p> <p>Review of implementation to assess the situation and look into effectiveness of the planned activities carried out.</p> <p>Adjustments will be then be made as required in the plans.</p>
2020 to 2023	<p>Objectives will be finalized relative to the following:</p> <p>Proportion of health care providers trained in at least level II or facility-based special care of at-risk, small, and sick newborns.</p> <p>Proportion of facilities and community sites with strengthening of essential newborn care</p>
2023	<p>Evaluation of the National Newborn Care Program 2019–2023 implemented.</p> <p>Updated bottleneck analysis carried out.</p> <p>Draft National Newborn Strategy and Action Plan 2024–2028 developed, to be published in 2024.</p>



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