



The Republic of Uganda
MINISTRY OF HEALTH

SITUATION ANALYSIS OF THE NATIONAL NEWBORN HEALTH IN UGANDA

2023 UPDATE

EXECUTIVE SUMMARY



Image on front cover: Mother breastfeeding daughter at health clinic in Buyende, Uganda.

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SITUATION ANALYSIS OF THE NATIONAL NEWBORN HEALTH IN UGANDA – 2023 UPDATE

EXECUTIVE SUMMARY

CONDUCTED BY:



Makerere University Centre of Excellence
for Maternal Newborn and Child Health (MNCH)
"A hub for information, research, capacity building and collaborations"



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FOREWORD

Over the past decade, Uganda has made significant strides in enhancing healthcare services, particularly in maternal and newborn health. However, despite the recent reduction in newborn mortality from 27/1,000 live births (UDHS 2016) to 22/1,000 live births (UDHS 2022), the number of newborns dying remains unacceptably high, underscoring the need for intensified efforts and strategic interventions. This report provides a detailed assessment of our current challenges and opportunities.

The findings of this analysis are both enlightening and motivating. They highlight the critical areas where our healthcare system must evolve to meet the needs of our youngest and most vulnerable citizens. By focusing on community-level practices, health facility readiness, and the integration of new policies and guidelines, we can chart a course toward substantial improvements in newborn health.

This report also aligns with our national and international commitments, including the Sustainable Development Goals, and the National Development Plan III to reduce Neonatal Mortality Rate to less than 12/1,000 live births by 2030. It serves as a foundation for policymaking, program development, and resource allocation, ensuring that we are well-equipped to address the needs of newborns across the country.

I extend my heartfelt gratitude to all the partners, stakeholders, and researchers who contributed to this vital work. Your dedication and expertise are invaluable as we strive to create a healthier future for Uganda's newborns.

Together, let us commit to the recommendations outlined in this report and work collaboratively to achieve the targets set forth for newborn health in Uganda.

Dr. Henry G. Mwebesa

**DIRECTOR GENERAL,
HEALTH SERVICES**

ACKNOWLEDGEMENTS

The completion of the “**Situation Analysis of the National Newborn Health in Uganda – 2023 Update**” is a testament to the collaborative efforts of numerous individuals and organizations committed to improving newborn health in our nation. I would like to express my sincere appreciation to the Centre of Excellence for Maternal, Newborn and Child Health at Makerere University School of Public Health, the National Planning Authority, and the Child and Family Foundation Uganda for their leadership and coordination in conducting this study. Your tireless efforts and expertise have been crucial in providing an in-depth understanding of the current state of newborn health in Uganda.

Special thanks go to the following for their professional contribution; Professor Peter Waiswa (MUSPH) for leading the conceptualization, execution and report writing of the Newborn situation analysis 2023; Dr. Nathan Tumwesigye (FHI360) and Dr. Ezekiel Mupere for leading the scoping review of the newborn situation in Uganda; and Dr. Muwanguzi Abraham (NPA) leading the Health Facility Assessment

I would like to thank all individuals and institutions that contributed to the development and review of this report. My heartfelt thanks go to The Reproductive and Child Health team at the Ministry of Health for their technical support and guidance throughout this work, and several individuals who contributed to the development of the protocol, methodologies, analysis and report writing and reviewing. Peter Waiswa, Dr. Monica Okuga, Dr. Gertrude Namazzi, Ronald Waswa, Nasser Kasadhha, Immaculate Namukasa, Dr. Ronald Kananura. Dr. Richard Mugahi, Dr. Jesca Nsungwa, Dr. Deogratias Migadde, Agnes Namagembe, Dr. Margaret Nakakeeto, Dr. Victoria Nakibuuka Dr. Olive Sentumbwe, Dr. Bongomin Bodo, Sharon Tsui, Dr. Richard Kagimu, Phillip Omadi, Agatha Babirye Kayemba, Shabira Pergande, Dr. Daniel Mwanja, Dr. Philippa Muso, Dr. Elias Kumbakumba and Dr. Ronald Mulondo. We also would like to appreciate the additional technical contributions and review from the Exemplars in Global Health team - Dr. Gloria Ikilezi, Jordan-Tate Thomas, Ryan Fitzgerald, Erica Yarmol-Matusiak, and Michael Peters. Reviewers: Prof Joy Lawn (LSHTM), ELMA Foundation and UNICEF Maternal and Child Health teams- Ms. Grace Latigi, Dr. Atnafu Getachew. Field organization, logistics and coordination: Darius Kajjo, James Kalungi, Financial coordination; James Kalungi, Ms. Grace Latigi, James Lutwama and Elizabeth Nambi. I also acknowledge the efforts of the district health teams, health facility staff, Village Health Teams, and community members who participated in the data collection process. Your cooperation and insights were essential in achieving a comprehensive and accurate analysis.

I am also grateful to our partners and funders, including ELMA Philanthropies, UNICEF, USAID through the USAID MCHN Activity by FHI 360, that provided financial and technical support for this study. Your contributions have been invaluable in making this analysis possible. Let us use the findings and recommendations of this report to drive forward our collective efforts in improving newborn health in Uganda. Together, we can ensure a healthier start for all newborns in our country.

Dr Richard Mugahi

**COMMISSIONER, REPRODUCTIVE
AND CHILD HEALTH DEPARTMENT**

EXECUTIVE SUMMARY

1. The Aim of the SITAN

The overarching goal of this evaluation was to assess the current national situation of newborn health and the changes over time in Uganda to offer an evidence-based foundation to inform policy, programs, newborn strategies and future research in Uganda. Specifically, the objectives the assessment included;

1. To determine the trends and causes of neonatal mortality at the regional level
2. To assess the community level capacity to care for newborn babies, including:
 - I. To evaluate capacity of community level health systems to deliver newborn care (including to conduct community sensitization, mobilization, continuity of care and referral of maternal and newborn emergencies)
 - II. To assess the community level newborn health care practices
3. To assess the capacity of health facilities to provide care that ensures newborn babies survive and thrive, including:
 - I. To assess health facility readiness for intrapartum care and care for the sick and small newborn babies
 - II. To assess current newborn clinical care practices, including follow-up care, for small and sick newborns at facility level and adherence to quality of care standards
4. To document the existing policies and programmes for newborn care, and their coverage across the country
5. To map out critical stakeholders' and their contribution to newborn care
6. To provide evidence-based recommendations to improve newborn care and referrals.

2. How the SITAN was done

This was a mixed-method cross-sectional survey conducted in all 15 regions of Uganda, incorporating a variety of methodologies to comprehensively analyze the newborn health care situation in the country. A scoping review was conducted to establish a broad understanding of the existing newborn literature, context, policies, and guidelines. The analysis included secondary data analysis from the Uganda Demographic and Health Survey (UDHS) 2022, DHIS2, and a community survey that reached 3,542 households in different parts of the country. To gain deeper insights, 29 key informant interviews (KIIs) were conducted with stakeholders at the national, district, and health facility levels. The study also involved 9 focus group discussions (FGDs) with Village Health Teams (VHTs) and 90 detailed case studies, providing a thorough qualitative dimension to the analysis. In addition, a health facility-based readiness survey which was done at 43 public healthcare facilities that included the 2 national referral hospitals, all the 16 regional referral hospitals, 12 district hospitals, and 13 high-volume Health Center IVs (HCIVs).

3. Why Newborn Health In Uganda Matters Now

High Number of Newborn Deaths

Uganda's last SITAN was conducted 15 years ago. Since that time, there have been regional and national epidemiological and mortality transitions and changes in best practices for newborn care. Since the previous SITAN, Uganda neonatal mortality rate had stagnated at around 27 deaths per 1,000 live births. The recent UDHS 2022 revealed a nearly 20 percent reduction to reach 22 deaths per 1,000 live births. This shows that efforts put in place by the government, partners, and society are beginning to bear some fruits. However, Uganda remains off track to meet SDG 3.2 (NMR of 12 deaths per 1,000 live births) and the aligned National Development Plan III (NDPIII), Sharpened Plan II and Health Strategic Plan (HSP) 2020/25 target of 19 deaths per 1,000 live births unless it doubles its efforts (MOH, 2020, 2022; UN, 2015; NPA, 2020).

However, according to the latest UN estimates, Uganda experienced 62,000 deaths per year around the time of birth (4,800 maternal deaths, 26,000 stillbirths, and 32,000 neonatal deaths). With 1.7 million births per year and 250,000 neonates needing special newborn care services each year, Uganda has a huge burden yet the investment is so far limited. Additionally, Uganda has not yet achieved the 2020 set joint targets for better care that included at least 80% of babies and mothers receiving postnatal care (PNC), and 80% districts with one or more WHO level 2 newborn care units (UNICEF & WHO, 2020). Currently, Uganda is in its early phase III NMR (30-16) of the integrated mortality transition framework (described in the next section), indicating an improvement in maternity and mild improvement in special neonatal care with 50% relative reduction. To make further progress in reducing perinatal mortality, Uganda needs a transition to intensive neonatal care which entails universal coverage for intensive care units.

Benchmarking Uganda in the Integrated Mortality Transition Framework

Based on work emerging from a partnership between the Exemplars in Global Health program and Countdown to 2030, Uganda was benchmarked along an Integrated Mortality Transition Framework (IMTF), the results of which can help prioritize activities to accelerate reductions in maternal and neonatal mortality. [Boerma T, Campbell OMR, Amouzou A, Blumenberg C, Blencowe H, Moran A, Lawn JE, Ikilezi G. Maternal mortality, stillbirths, and neonatal mortality: a transition model based on analyses of 151 countries. *Lancet Global Health* 2023;11:e1024-31. [https://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X\(23\)00195-X.pdf](https://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(23)00195-X.pdf)], [Campbell OMR, Amouzou A, Blumenberg C. The Countdown to 2030 Exemplars Collaboration, et al. Learning from success: the main drivers of the maternal and newborn health transition in seven positive-outlier countries and implications for future policies and programmes. *BMJ Global Health* 2024;9:e012126. https://gh.bmj.com/content/9/Suppl_2]

Between 2000 and 2020, Uganda advanced from Phase II into early Phase III of the integrated mortality transition framework (IMTF), discussed in more detail within a chapter of this report.¹ The IMTF categorizes countries into five phases by mortality levels, with phase I representing the highest mortality levels and phase V representing the lowest. Progress across the framework highlights phase-specific characteristics linked to mortality decline, such as fertility decline in stages I and II, increased health-care access in stages II and III, shifting causes of death from stages II to IV, improved care quality in stages III and IV, and reduced inequities in stages IV and V. Uganda being in phase III indicates declines in fertility and improvements to health service coverage. This progression also indicates that although Uganda has experienced declines in fertility and increases in health service coverage, efforts are needed to further reduce fertility rates, continue narrowing equity gaps, and expand health service coverage to increase accessibility while improving quality of care for key MNH services.

To further contextualize Uganda's historical progress and guide efforts for further mortality reductions into lower phases of the transition, four indicators (total fertility rate, antenatal care coverage, institution-

al delivery rate, and c-section rate) were benchmarked nationally and subnationally using results from the Uganda 2022 DHS survey. These indicators were compared to ranges typically seen in countries with similar mortality rates within Phase 3. Uganda was broadly on track (indicator is within the typical coverage level ranges) for most indicators but was notably not on track (indicator is not within typical coverage level ranges) for total fertility rate (TFR), with the exception of Kampala. At the subnational level, although most regions are generally on track across the four benchmarked indicators, Karamoja, Acholi, Busoga, and Buganda are regions that are mostly on track but at risk of becoming off track.

Results from this analysis indicate that targeted efforts may be warranted in the four benchmarked areas to further reduce mortality and promote accelerated reductions. As TFR in Uganda is broadly not on track for most regions with rates typically higher than what would be expected for a country in Phase 3, additional efforts to prioritize women's empowerment initiatives, especially among younger women, such as increasing female education rates and increasing availability and demand for family planning services, may be necessary. For health services, although coverage for key MNH services (e.g., institutional delivery, antenatal care coverage, and c-sections) has increased, and most regions in Uganda are on track for Phase 3, further efforts may be required for sustained improvement. These efforts could include targeted subnational initiatives to mitigate financial and logistical barriers to improve coverage and, at the national level, continued prioritization of improving the quality of care of key MNH services now that coverage levels have improved.

Uganda needs to double its annual rate of reduction in NMR if it is to achieve the SDG targets

To achieve the UN SDG 3.2, Uganda needs to have a neonatal mortality rate of less than 12 deaths per deaths per 1000 live births by 2030 and 19 deaths per 1000 live births by 2025 to realize its targets set in national health plans.

However, Uganda is in her early phase III integrated maternal, neonatal, and stillbirth mortality transition framework (IMTF), with huge subnational variations in total fertility rate. According to Countdown 2030 data, a total of 1,714,000 babies are born annually in Uganda; translating to 4,695 babies per day- indicative of very high fertility rates. Of these births, **32,000 end up as newborns deaths; 26,000 stillbirths; and 250,000 newborns needing newborn special care** annually.

Although some progress in improving systems for maternal and newborn care has been recorded in the past few years, Uganda needs to **move twice as fast** with an annual reduction rate of neonatal mortality of 4.7% to achieve the SDG 3.2 target NMR of 12/1000 live births by 2030 as well as the National Development Plan III target of 19/1000 live births by 2025.

Furthermore, to realize these targets by 2030, joint support for national acceleration plans for maternal and newborn health is needed, with a special focus on humanitarian context and areas showing substantial inequalities.

Source: UDHS 2000, UDHS 2006, UDHS 2011, UDHS 2016, UDHS 2022.

New evidence and WHO standards For Newborn Care

In the recent past, the World Health Organization (WHO) has come up with new recommendations for newborn care, especially around the care of small and sick newborns. WHO now recommends at least 80% of districts with one or more level 2 newborn care units. To achieve these targets, Uganda will have to make significant investments.

In addition, WHO also recommends KMC as an important intervention for small and sick newborns at both community and health facility settings. Given the above recommendations, it is paramount to understand the current situation of newborn health in the country in order to prioritize investments and required proven impactful interventions.

KEY FINDINGS FROM THE SITAN

Policies, standards and guidelines

The Government of Uganda and partners has made efforts in the last decade to contextualize global policies and programs into national essential maternal and newborn clinical care guidelines and standards of care. Efforts have been made to align or revise national policy guidelines to WHO recommendations.

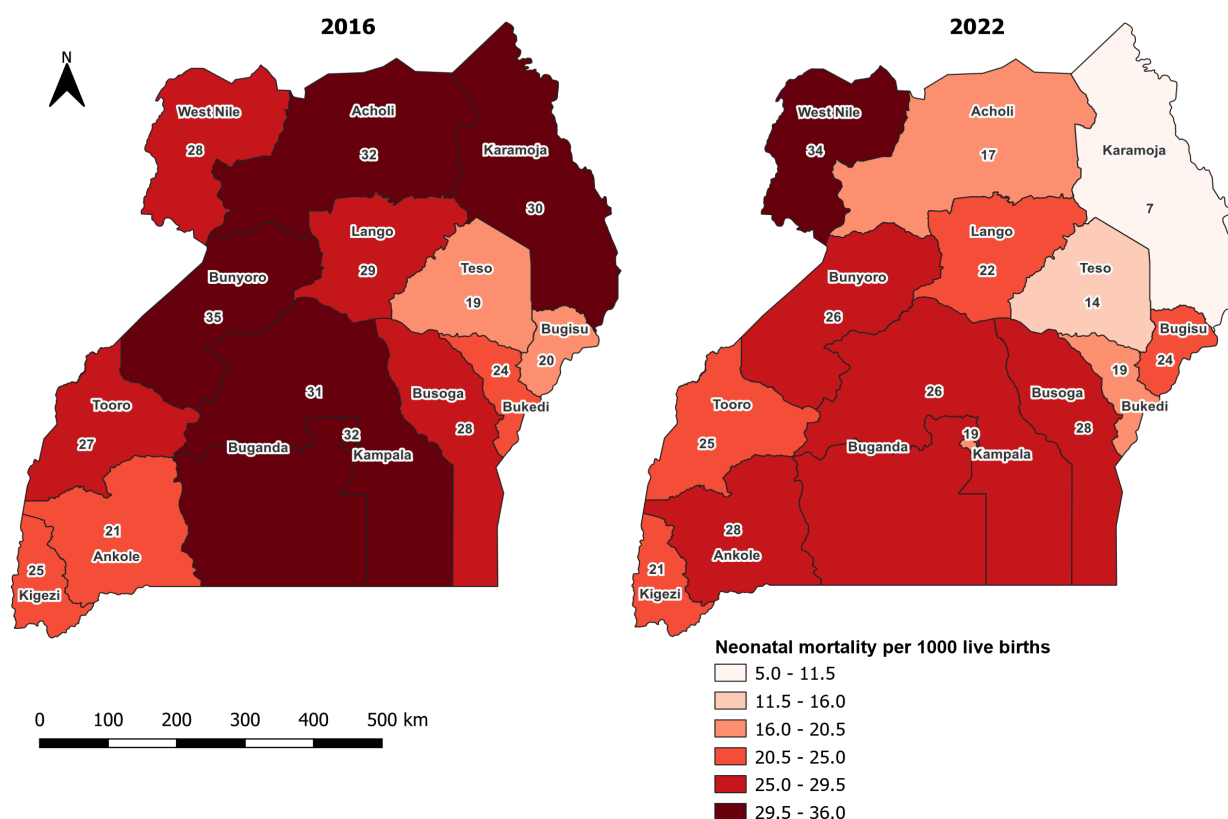
These current key guidelines guiding newborn care in Uganda include: Reproductive, Maternal, Newborn, Child, Adolescent And Healthy Aging-Sharpended Plan II 2020/21-2025/26; Clinical Protocols for Managing Small and Sick Newborns 2023; Uganda MOH Essential Maternal and Newborn Clinical Care (EMNC) Guidelines 2022; National Standards for Improving the Quality of Maternal and New Born Care 2018; MOH Integrated Management of Pregnancy and Childbirth Pregnancy, Childbirth, Postpartum; Newborn Care: A guide for essential practice 2016 and, National Integrated Early Childhood Development Policy (2016). Despite the adoption of these guidelines, dissemination and implementation is still sub-optimal.

On the other hand, Uganda is missing PNC guidelines, partly impeding the realization of the ENAP target of 80% postnatal coverage for both mothers and their babies.

Neonatal Mortality

Based on the recent UDHS, it was reported that Uganda's NMR is still unacceptably high at a rate of 22 deaths per 1000 live births (UBOS, 2022). Sub-national variations in mortality still exist, with the highest in West Nile (34 deaths per 1000 live births) and the lowest in Karamoja (7 deaths per 1000 live births). The NMR of 7 deaths per 1000 live births in Karamoja is a surprise given past rates and needs to be investigated further. Based on MPDSR findings, birth asphyxia was the leading cause of newborn deaths (60% of deaths), followed by prematurity and related complications (23%) and neonatal sepsis (7%). Birth asphyxia is preventable and therefore this high percentage of deaths due to asphyxia point to challenges in intrapartum care especially neonatal resuscitation.

While some regions have shown notable progress, neonatal mortality in Busoga has remained relatively high, showing no change or reduction within the same period, suggesting potential challenges in healthcare delivery. A reduction in Kampala (from 32 deaths per 1000 in 2016 to 19 deaths per 1000 in 2022) has been noted. West Nile experienced a setback with an increase in neonatal mortality rates from 28 deaths per 1,000 live births in 2016 to 34 deaths in 2022.



Source: UDHS 2023

Coverage and Equity Gaps in Essential Newborn Care

Fertility and Teenage Pregnancy Rates

Uganda's total fertility rate (TFR) remains high in Uganda, and is not on track relative to peers that have reduced mortality for phase III of the integrated mortality transition framework in the majority of the regions other than Kampala. In 2022 **Karamoja and Bukedi had the highest TFR rates**, at 6.7 and 6.5 respectively.

According to UDHS 2022, the teenage pregnancy rate has virtually stagnated from 25% in 2016 to 24%. Strategies aimed at keeping young girls in school, women empowerment with improved contraceptive access are some of the strategies to tame the high fertility and teenage pregnancies.

ANC 4+ Coverage In Uganda

There was a marked improvement in antenatal care (ANC) attendance (four visits and above) from the previous SITAN from 47% to 67.8% in 2023. Of those that attended ANC, 32% had their first ANC attendance in the first trimester of pregnancy. ANC4+ coverage in Uganda is on track nationally, rising from 39.7% in 2000 to 67.8% in 2022, demonstrating strong coverage increases over time, with some subnational variation. Conversely, Buganda is not on track for phase III of integrated mortality transition framework with ANC4+ coverage of 49.9%. Bunyoro is on track but at risk of lagging with 60.3%

ANC4+ coverage. Six regions, Lango, Karamoja, and Ankole, Bugisu, Kigezi and West Nile are ahead of track, above the expected ANC4+ coverage for regions in phase 3. While regional variation is large, urban/rural gaps are narrowing, indicating improvements in equitable access to healthcare.

Birth Preparedness

Birth preparedness is a strategy to promote the timely use of skilled maternal and neonatal care especially during delivery/childbirth. Birth preparedness is usually carried out by the pregnant mother and her spouse/family. The key elements in birth preparedness include identification of a facility where delivery will take place and a skilled attendant, arranging transportation, preparation of the items that will be used during delivery, preparation of the baby's clothes, and identification of a companion/attendant during the labour process.

From the survey, almost all (90%) of the mothers made some form of preparation for birth. This was similar across all age groups with no urban-rural difference. The only exception was in Karamoja region where only 35% of the women prepared for birth. This could be because of its nature as a nomadic community and high poverty levels. Special programs should be designed, and extensive sensitization carried out to counteract this.

Institutional Deliveries

Over the years, institutional delivery rate in Uganda has improved from 37% in 2000 to 90% in 2023. Institutional delivery and skilled birth coverage facilitate the provision of interventions at the most crucial time points. Despite the notable improvement in health facility deliveries, home deliveries are still common, especially among non-educated women, women 40 years and above, and those living in rural areas. Regional variations in home deliveries showed the highest in Islands (32.8%), Lango/Acholi (20.3%), South Buganda (16.9%) and Bugisu (19.3%) regions. Regional equity gaps decreased from 38.1% in 2016 to 14.8% according to the 2022 UDHS. Government run facilities handled most deliveries (83.4%), 40.7% in health centres and 42.7% in hospitals while 7.3% delivered from private facilities (PNFPs and PFPs).

Notably 33.8% of teenage mothers could not identify signs of labour. However, delays 1 (the delay to make a decision to seek care) and 2 (the delay to reach the facility) still exist within the community because of insufficient birth preparedness and lack of proper transport means. Postnatal coverage for mother and baby was still very low at 59.9% and 10.5% respectively.

C-Section Rates

C-section rates in Uganda increased from a national average of 2.6% in 2000 to 13.5% in 2023. The highest prevalence of caesarian sections was noted in South Buganda region (22.6%) followed by Tooro (16.7%) and Greater Kampala Metropolitan (15.1%). The regions with the lowest prevalence of C-sections were Karamoja, Islands, Lango/Acholi, Bunyoro and Bugisu regions. Karamoja and island areas are not on track for phase 3 with a C-section rate of 4.3% and 4.5 respectively.

Role of Community Health Workers

Community Health Workers (CHWs), known as Village Health Teams (VHTs) in Uganda, are vital in enhancing neonatal health. These community-based workers were introduced to provide preventive and curative services, focusing on maternal, newborn, and child health at the community level. For maternal and newborn health care, they are expected to aid in identification of high-risk pregnancies, conducting home visits to encourage essential newborn care, educating mothers and caregivers on newborn health, conducting community-based surveillance, and promoting maternal and child health

services. Despite their critical contributions, VHTs face challenges such as poor motivation, insufficient tools and supplies, and lack of transportation.

The role of community health workers or VHTs in improving newborn care and linking families with health services and the opportunities to introduce newborn care in iCCM have been well documented in Uganda. However, the process for building VHTs programs needs to be adapted to the local setting, including the process of VHT selecting, training, deployment, supervision, and motivation within the context of a responsive and available health system. Although iCCM and IMNCI programs are highly well appreciated to improve health outcomes of sick newborns by stakeholders including community, evidence at countrywide implementation and impact is still limited. The contributions of VHTs in referral of sick newborns to health facilities and follow-up on referrals as per the iCCM policy are minimal. To maximize their effectiveness, it is crucial to ensure they receive adequate training, supervision, and resources.

Male Involvement during Pregnancy, Labour and Delivery

In Uganda, male involvement in maternal health still remains a big challenge despite the critical roles men play in decision making and providing financial, emotional and physical support. Traditionally, maternal, newborn and child health care is seen as a women's issue. However, over time, there has been some improvement with regards to male involvement in maternal, newborn and child health care. Involvement in this survey referred to presence of men during ANC, labour/delivery and helping out mothers during the postpartum period.

Only about a third (36.8%) of pregnant women were accompanied by male partners for antenatal care. Of these, majority (64.3%) participated in 1-2 visits. Regional disparity of male involvement was evident in antenatal care with greatest support in Ankole (80.7%), Bugisu (77.2%) and Greater Kampala Metropolitan (69.3%). The least male support during ANC was seen in Teso (26.2%) followed by Lango/Acholi/Acholi (37.8%) and South Buganda (40.8%).

Newborn Care Practices at Community Level

Essential newborn care practices were assessed as composite indicators (including optimal breastfeeding practices, optimal thermal care, and optimal cord care practices). Overall adoption of beneficial optimal essential newborn care practices was only 15% countrywide. We found optimal (all practices correct) cord care was 45%, optimal thermal care was 27% and optimal breast-feeding practices was 69%. Although Kangaroo Mother Care (KMC) was practiced widely for preterm and low birth weight babies at community level, the duration and number of times KMC was practiced per day varied with an average total duration of 2 hours a day. Furthermore, only 20% of babies who started KMC in health facilities were followed up at community level. There is still a maternal knowledge gap in the community on essential newborn care practices especially time for bathing (27.2% of mothers citing correct practices), breast feeding (69.2%), cord care (44.6%), newborn danger signs (62.7%) and post-natal care timing and duration.

With a national average of 15.1%, optimal newborn care index was generally poor across all regions. Regional variation in newborn care practices was evident, with Bugisu and Busoga with the highest percent practicing essential newborn care (20%) and Kigezi as the lowest at 3%.

Knowledge of newborn danger signs

Dangers signs awareness: About 6 in 10 mothers (62.7%) were able to correctly state 3 or more newborn danger signs while 24.7% correctly mentioned 2 signs and 12.6% mentioned one or did not mention any danger sign. Furthermore, 3 or more danger signs were mostly mentioned by adolescent/teenage mothers aged 15-19 years (70.3%) and mothers aged 45-49 years (77.5%). Interestingly, the

regions that had highest proportion of mothers who knew 3 or more newborn danger signs included Islands (87.1%), Karamoja (77%), Busoga (72.7%), Greater Kampala Metropolitan (65.2%) and Bugisu (81.7%). The most commonly mentioned signs included fever (78.7%), baby less active than usual (62%), difficulty in breathing (33.7%), convulsions (28%), failure to feed (24.2%), pus from the cord (11%), vomiting (10%) and, yellowing of eyes/palms (6.1%).

Care Seeking for sick newborns

Care seeking varied depending on the perceived severity of the newborn illness. The decision to seek care was taken by immediate family, especially the mother. Generally, care seeking for newborn illnesses was frequently delayed because of presence of home remedies as the first option for care. When this failed, care was sought from health facilities, often with referrals from one facility to another (higher level) due to inadequate health worker skills in managing sick newborns at the lower level facilities. It was found that 47% of the babies that fell ill were given home treatment first and only sought care at facilities when the baby did not improve. The most common type of remedies used at home included giving western medicines like syrups that were already at home (56%), tepid sponging (7.0%), herbs (7.0%) and cold water baths (1.2%). Home remedies were more likely to be used in rural areas (51%) compared to urban areas (45%). It was also noted that cultural beliefs and practices influenced the care of sick newborns. From the survey, 65% mothers sought care for their babies outside home after trying home remedies. Of these, the first level of care seeking for the majority (44%) was from a health facility, 39% from a drug shop/nearby clinic, and 12% from a hospital.

Newborn Referral

Functional ambulances were available at hospital level facilities and in 54% HC IVs. However, there was a notable challenge with provision of fuel for ambulances. For onboard thermal care maintenance, transportation incubators were generally unavailable across board. Thermal care during transportation was mainly provided by using blankets or skin to skin.

Congenital Anomalies (CA)

The burden of congenital anomalies is not well known in Uganda but is estimated to be at a prevalence of 6.6%. There is no national registry of birth defects. Findings from a hospital based survey in Kampala showed that the most prevalent defects in Uganda per 10,000 births are hypospadias (23.4/10,000), clubfoot (14.0), neural tube defects (10.3) and cleft lip and palates (7.6). Diagnosing congenital abnormalities in Uganda is challenged by several factors including affordability, accessibility to advanced diagnostic technologies, insufficient funds in healthcare, limited healthcare capability and structure and a shortage or non-existence of trained healthcare professionals. Therefore, there is a need for efforts to address CAs in Uganda through multi-sectorial and multidisciplinary approaches, healthcare development, awareness campaigns, prenatal and perinatal care programs, and capacity-building initiatives.

Health Facility Readiness and Quality of Care

Availability of NICUs by level of care: All National Referral Hospitals (NRHs) met the standards for level 3 Neonatal intensive Care Units (NICU) in terms of infrastructure to care for sick and small newborn babies. However, the Kawempe NRH NICU was found to be overcrowded to offer quality services. Only 4 of the 16 (25%) assessed Regional Referral Hospitals (RRHs) met level 2 care requirements, and only one district hospital met the standard for a level 2 NICU (8.3%), which is far below the WHO recommended target of 80%. Surprisingly, many NCUs lacked one or so equipment to meet the desired standard. There was also a lot of broken equipment in the hospitals assessed. Over-

all, newborn care infrastructure is insufficient at lower health facilities handling the highest number of deliveries.

Human resources for newborn care: Overall, no hospital was found to meet the MOH staffing norms for newborn care. None of the facilities had specialized neonatal care nurses, and we found only 3 neonatologists present in the facilities assessed. The RRH were found to be sufficiently equipped with pediatricians while on the contrary, 50% of the GHs lacked pediatricians. In most places, newborns are managed by general nurses and midwives.

Commodities and Equipment: Chlorhexidine for cord care was available at NRHs and only present in about half of the remaining facilities per level with least availability at RRHs (43.8%). Seven health facilities reported to have never received chlorhexidine gel. Tetracycline eye ointment and vitamin K were present at almost all levels of care during the facility assessment Caffeine citrate which is the preferred and recommended medicine for management of apnea of prematurity (AOP) was only found at the NRHs, 6/16 RRHs and 2/12 GHs. Overall, the readiness in terms of commodities for essential newborn care was excellent at NRHs and good at RRHs, GHs and HC IVs.

Although the two hospitals at the highest level of newborn care (Kawempe NRH and Mulago women and neonatal specialized hospital) had almost all the equipment, medicines and supplies needed for neonatal resuscitation, Kawempe NRH lacked oxygen blenders to deliver safe oxygen and effectively manage respiratory distress. On the other hand, more than half of the assessed RRHs and GHs lacked critical equipment including patient monitors, suction devices, and oxygen blenders critical for newborn resuscitation. Only 1/12 district hospitals had the necessary equipment, supplies and commodities to offer level 2 neonatal care. The assessment revealed non availability of functional CPAPs and patient monitors in 7 RRHs and 6 GHs respectively. It is worth mentioning that all RRHs and GHs had the recommended level 2 neonatal care equipment, however most of this equipment were non-functional and required repairing.

Kangaroo Mother Care (KMC): The adherence to quality KMC practices/standards was inadequate at all levels. Best KMC performance was seen at RRHs (61.1%) while the worst performance was at HC IV level (12.5%). NRHs and GHs almost had similar performance at 50% and 56.3% respectively.

Infection prevention and control (IPC): Seven domains of IPC were assessed including Personal Protective Equipment (PPE), facility hygiene, and hand hygiene, running water, waste management, equipment processing /disinfection /sterilization and IEC materials. Overall, the IPC readiness was excellent at NRHs (95.2%) and good at the other levels [RRH (88.3%), GH (80.8%), and HCIV (77.4%)]. The poorest IPC performance was in the domain of equipment processing/disinfection/sterilization with NRH (80%) and HCIVs (79.5%) scoring well while RRH (50%) and GH (45%) scored poorly. Many facilities lacked cidex while 3/9 of the GHs lacked a functional autoclave. Although PPE including masks, surgical and examination gloves were available in almost all facilities assessed, 2/16 (13%) of RRHs did not have face masks. Similarly, access to running water was not available in 1 RRH, 2 GHs, and 3 HCIVs.

In as much as readiness for IPC was found to be good at all levels of care, the quality of the IPC processes conducted was found to be fair at RRH (75.2%) and GH (77.2%) level but very poor at NRH (47.5%) and HCIV level (53.9%). At NRH level, proper waste disposal recommendations including waste segregation was not observed. There was also poor processing and sterilization/autoclaving of equipment at NRH level.

Recommendations

There is urgent need faster systems change. This requires leadership, investment and innovation at all levels of governance.

Uganda has made some modest progress in improving newborn health after almost two decades of stagnation. Despite this, Uganda is not on track to achieve the set national and SDG targets for newborn health. In order for Uganda to achieve targets, it needs to do much more, to move twice as fast. To do so, Uganda will need focused leadership, investment, and innovation in implementation to achieve high coverage equitably. It will require packages of interventions, more than one system change, more than one level of care, and change beyond the ward into communities. The country should adopt a national plan and the MoH should ensure that all partners adhere to it. Based on the findings of the SITAN, here below are the major recommendations. Their implementation should be linked to the RMNCAH Sharpened Plan while also ensuring the mother-baby dyad.

- 1. Urgently address the high fertility rate, including efforts to reduce rates of teenage pregnancy**
 - Improve awareness and uptake of family planning methods, by leveraging the community health workforce and available social media platforms, to aid in demand generation
 - Ensure sufficient and equitable access to quality contraceptive commodities by strengthening supply chain, HRH capacity, and monitoring systems to reduce stockouts
- 2. Improve health service uptake and quality that links the mother and the baby**
 - Antenatal care: Sub-nationally ensure targeted efforts to mitigate financial and logistical barriers to improve coverage in specific regions (e.g. Karamoja and Buganda). At the national level, prioritize quality of care for key MNCH services now that coverage levels have improved
 - Increase amount of CEmONC facilities and upgrading of lower-level facilities to perform C-sections and other emergency procedures, especially bridging coverage gaps in regions such as Karamoja, Acholi and Busoga that are lagging behind. Nationally, there is urgent need to improve the quality of C/S and other CEmONC services.
 - Strengthen referral systems from lower-level to higher-level facilities including developing an innovative referral systems for sick and vulnerable newborn babies.
- 3. Operationalize quality maternal and newborn care in hospitals:**
 - Scale up small and sick newborn care at national and regional referral hospitals and at least 80% of general hospitals as recommended by WHO/UNICEF.
 - Ensure implementation of quality standards for newborn care, including resuscitation and infection prevention and control.
 - Adopt new neonatal intensive care unit (NICU) designs that meet updated standards and support kangaroo mother care (KMC) practices.
 - Ensure quality of care, particularly key for CPAP, + safe oxygen use
 - Ensure sufficient items are in place (right people, products and data collection tools) to aid in data monitoring and metric tracking for quality of care monitoring
- 4. The findings show that most births and most of the care for small and sick newborns occur in communities or in the PHC setting. Therefore, Uganda should develop and implement a package of care for newborns within the primary healthcare context:**
 - Develop guidelines for newborn care at community level and within primary healthcare facilities.

- Define standards for newborn care at primary healthcare facilities, including referral and follow-up protocols.
- Implement an aggressive engagement and education strategy for community members on maternal and newborn care with a special focus on Karamoja, Buganda, and islands and other hard to reach populations.

5. Review human resources for newborn care:

- Adopt or develop human resource norms for newborn care at different levels of the health-care system.
- Consider introducing specialized cadres for newborn care, such as neonatologists and neonatal nurses, to improve skills mix.
- Standardize pre-service training in newborn care and enhance ongoing professional development opportunities

6. Develop evidence-based policies and programs to address emerging areas of newborn health such as congenital abnormalities:

- The Ministry of Health should collaborate with stakeholders to develop evidence-based policies and programs to address emerging areas of newborn health such as congenital abnormalities, integration with HIV/AIDS and sickle cell disease prevention, post-NICU discharge follow-up, and management of neurological complications. These initiatives must prioritize prevention, early detection, and equitable access to high-quality care for all newborns in Uganda.

7. Foster Data-Informed Decision-Making:

- Strengthen data utilization mechanisms to enhance the use of routine data for maternal and newborn health.
- Provide training and capacity-building initiatives for healthcare providers and decision-makers on data analysis and interpretation.
- Develop user-friendly dashboards, reports, and policy briefs to present key findings in a clear and accessible manner.

8. Enhance mechanisms for partner coordination, management, and accountability:

- Strengthen national and subnational reproductive, maternal, newborn, child, and adolescent health and nutrition (RMNCAH/N) networks.
- Establish transparent frameworks for partner coordination, participation, contribution, and accountability.
- Foster organizational commitments to shared network goals and accelerate capacity for strong, equity-based RMNCAH/N programming.

9. Future research:

Prioritize implementation research (IR) in routine programming:

- Embed implementation research into all routine programming to facilitate the scale-up of effective and scalable programs.
- Ensure that program implementation is informed by evidence, including IR, to develop successful models for wider scale-up.

Review curriculum content, knowledge, and skills of the training institution.

- Whereas these institutions produce the country's workforce, they have not been a target for capacity building as most initiatives focus on in-service training.

Conduct research on maternal and newborn care in the private sector as they provide most of the care in urban settings.**Promote dialogue and action between academic, policy, and budgetary realms to capitalize on Uganda's existing expertise and address healthcare transitions effectively.**

These recommendations aim to address the identified gaps and challenges in newborn care in Uganda and provide a roadmap for improving implementation and outcomes at various levels of the healthcare system. By prioritizing these recommendations, stakeholders can work together towards achieving the Sustainable Development Goal targets and ensuring equitable access to quality maternal and newborn healthcare services across the country.

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