Neonatal and maternal mortality: An ongoing challenge

The number of babies who die each year in the first 28 days of life—also known as the neonatal period—has been a serious health challenge for decades. In the 1990s, approximately 5 million neonatal babies died each year in the first month of life. Over the past three decades, investments in health care infrastructure and improvement in practices have significantly reduced these numbers. However, according to 2020 estimates (based on pre-COVID-19 numbers), approximately 2.4 million babies still die each year in the neonatal period—most from easily preventable or manageable conditions. Most of these deaths occur in low- and middle-income countries. A baby born in sub-Saharan Africa has a tenfold higher chance of dying than one born in a high-income country.

Maternal mortality is as challenging an issue as neonatal mortality. Each year, 295,000 mothers die around the world, with maternal mortality being the health indicator with the greatest disparity between high-income and low- and low-middle income countries.

Neonatal mortality in Ghana mirrors the global picture. More than 20,000 neonatal babies die in the first month of life annually, which is more than half of all deaths in children under five years of age in Ghana. There is significant regional disparity in these deaths. For example, in the Greater Accra Region encompassing the capital of the country, for every 1,000 live births, 10 neonates die. In contrast, in the Upper East Region, for every 1,000 live births, 27 neonates die in the first month of life.

In addition, 2,700 women die in Ghana each year of causes related to pregnancy and childbirth—a statistic that has not declined significantly over the last two decades. These are, for the most part, preventable deaths, with causes rooted in gaps in access to health care services or inappropriate care for the management of pregnancy and childbirth.

Preventable infections

Globally, infections cause 10 to 20 percent of the 295,000 maternal deaths and over a third of the 2.4 million newborn deaths each year—rates that hold true for Ghana as well. Any initiative to accelerate reduction in maternal or neonatal mortality must include effective prevention, screening, and treatment of infections in mothers and their babies. An effective strategy against infections includes screening and treating dangerous infections during pregnancy. In many countries, including Ghana, antenatal screening and treatment for important infections that affect the mother and/or baby throughout pregnancy is often unavailable, late, inconsistently or incorrectly administered, and poorly resourced.

Multiple studies have found strong associations between infections in pregnancy and poor maternal and neonatal outcomes. These include spontaneous termination of pregnancy, premature labor, stillbirth, preterm birth, low birth weight, and neonatal and perinatal mortality and morbidities. For example, neonates born to mothers who had antenatal urinary tract infections (UTIs) were 3.5 times more likely to develop neonatal sepsis. Additionally, certain sexually transmitted infections (STIs)—in particular, HIV and syphilis—are associated with transmission of infection from mother to offspring, either in utero or during labor and delivery.
In Ghana, a significant proportion of neonatal mortality is attributable to infections or complications of low birth weight and preterm births. These are conditions with causes often rooted in pregnancy or its management. According to Ghana’s National Reproductive Health Policy and Standards, disease screening is an integral part of antenatal care (ANC). However, even as Ghana has prioritized prevention of mother-to-child transmission of infections including but not limited to HIV, evidence to date indicates that screening for infections apart from HIV (e.g., syphilis, hepatitis B, and even UTIs) often remains suboptimal. This is particularly the case at peripheral levels of the health system, even as one in six pregnant women is seropositive for infections including hepatitis B and group B Streptococcus.

Bundling solutions for prevention

There are a number of infections that require testing and screening at discrete time points during pregnancy. A robust evidence base has demonstrated that bundling multiple tests during ANC visits can be efficient and cost-effective. Simplified, inexpensive, and rapid tests and regimens are available to prevent mother-to-child transmission of HIV, syphilis, and bacterial infections such as reproductive and urinary tract infections; these can be included as a consolidated kit at or near the point of care. Compelling evidence from high-, middle-, and low-income settings has shown that improved practices—such as early screening, diagnosis, and management of infections such as HIV, syphilis, and hepatitis B, as well as improved linkage to care during pregnancy—result in improved maternal and neonatal health outcomes.

Ghana Health Service and PATH: An enduring partnership

Over the past two decades, the Ghana Health Service (GHS) and PATH and have built a strong partnership to improve maternal and newborn health. PATH has worked with GHS to implement various successful projects in Ghana, resulting in policy, program, and research advancements that ultimately improve the health outcomes of Ghanaian mothers and their babies. Examples of successful joint projects include the Making Every Baby Count Initiative I, Prevention of Postpartum Hemorrhage Initiative, Oxytocin Initiative, and work under the United Nations Commission on Life-Saving Commodities for Women and Children.

Integrated Antenatal Care project overview

From November 2022 through March 2024, GHS and PATH worked together to improve diagnosis and management of maternal infections during the antenatal period. The project achieved this through an integrated technology-intervention bundle in a comprehensive maternal and newborn infection prevention and management approach.

Over a 24-month period, the team integrated screening and treatment for infectious diseases including hepatitis B, UTIs, group B Streptococcus, and STIs (e.g., chlamydia, gonorrhea, and syphilis) into routine ANC in five districts of Ghana’s Bono East Region. Working mainly at the primary health care level in nearly 70 facilities, the team addressed multiple needs: expanding the capacities of community-based and first-level health care providers in diagnosis and management of maternal infections, improving the availability of services through ANC, and strengthening connections between primary and referral facilities.

Interventions included point-of-care and laboratory diagnostics for infections, streamlined linkages and referral systems between primary and regional facilities, and social and behavior change communication activities with health care providers, patients, and communities.

A map depicting the five districts in which the Integrated Antenatal Care project is being implemented in Ghana's Bono East Region.

Key project activities

GHS and PATH collaborated on the following activities through the Integrated ANC project:

- Leading regional trainings to upgrade provider skills around infection screening and management as part of ANC. Trainings are augmented by on-the-job supportive supervision to build and maintain provider capacity and confidence in infection prevention and management.
- Expanding availability of diagnostics, screening facilities, and therapeutics at first- and second-level care facilities to optimize maternal and neonatal infection prevention and control at the primary health care level.
- Strengthening linkages between primary care facilities and district and regional hospitals to improve patient management and referral systems.
- Conducting social and behavior change activities to engage communities and increase demand for services by improving knowledge of maternal infections, risks to newborns, and prevention strategies.
Mobilizing human and financial resources through advocacy activities.
Developing a data management smartphone application to streamline screening management and referral of ANC clients via improved access to data.

Project accomplishments

The team achieved the following over the course of the project:

- 24,130 pregnant women screened.
- 1,499 ANC providers trained on improved screening and management of maternal infections.
- 63 health facilities across the hierarchy of care provided with improved logistics for screening of maternal infections.
- Mobile app-based system implemented for recording data on pregnant women, including testing and referrals.
- Screening for urinary tract infections, group B *Streptococcus*, and additional sexually transmitted infections introduced at facilities.
- A compendium of technical and social and behavior change materials developed for education of providers and communities.
- 2,028 community leaders engaged in health education on maternal infections.
- 1,347 health education sessions conducted through pregnancy schools reaching 8,546 pregnant women.
- 789,947 community members reached through FM radio community information center media campaigns on maternal infections.

Several elements have contributed to the project's success to date. Strong regional, district, and facility leadership and commitment has enabled rapid ramp-up and ownership of project activities. ANC providers are also keen to learn and put new skills into practice, seeing value in the intervention's impact on improving maternal and newborn health outcomes. The intervention has also been positively received by women, demonstrated by an increase in follow-up ANC visits and enhanced continuity of care. Local community leaders have also shown a high level of engagement, serving as project champions and building awareness in the community.

The team has also encountered a few implementation challenges. For example, the long distances required for sending follow-up samples (i.e., cultures) to adequately equipped labs have proved difficult. As part of endline project activities, upgrades have been made to municipal labs in order to help reduce time for sample transport.

As the project concludes, PATH and the GHS are working to ensure sustained impact through long-term integration and scale-up of these ANC interventions—not only to prevent maternal and neonatal deaths in Ghana, but to provide a replicable model for other low- and middle-income country settings around the globe.

For more information, visit: https://tinyurl.com/ANC-Ghana.

References