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## Bottleneck analysis approach to accelerate newborn care services in two regions in Ghana: implications for national newborn care



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#### ABSTRACT

*Objective*: The aim of this work is to describe application of a data-driven approach (bottleneck analysis [BNA] approach process) to accelerate newborn care services in two regions and what effect it had on national-level newborn care interventions in Ghana. *Study design*: A mixed-method approach was used for the study. The BNA tool generated

quantitative data and group discussions provided phenomenological explanations to identified service gaps.

*Methods*: Regional newborn care health service assessments were conducted in November 2013 through desk reviews, field and health facility visits and coaching/mentorship. The BNA tool (an excel-based tool) directly utilized service coverage data and programme monitoring and review reports in Ghana. Outputs were generated based on service coverage indicators: supply side/health system factors (commodities, human resource and access), demand side (service utilization) and quality/effective coverage. National targets were used as benchmarks to assess gaps in coverage indicators.

Results: Key health system bottlenecks included absence/stock-out of essential newborn care commodities/resuscitation kits and absence of updated policies at services delivery points. In both regions, less than 55% of health facilities had at least 80% of midwives

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trained to provide essential obstetric and newborn care, management of preterm babies, resuscitation and inpatient paediatric care. In addition, less than 35% of pregnant women were assisted by a skilled birth attendant (midwife) and monitored with a partograph in the two regions. Demand-side bottlenecks included cultural preference for home deliveries, limited knowledge on importance of postnatal care and poor community involvement. The BNA approach in the two regions resulted in the development of national and other regional operational plans and monitoring and evaluation framework for newborn care services in Ghana over the period 2012–2016, and a relative improvement in neonatal mortality at the regional and national level.

Conclusion: The BNA tool and approach provided data-driven planning for newborn care service delivery in a low-income setting. It identified gaps in service coverage based on empirical data at lower levels of the health system and garnered strategies in addressing bottlenecks to newborn care services at the national level.

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#### Introduction

Global attention and efforts have focused on the attainment of the health-related millennium development goals (MDGs), especially MDGs 4 and 5 (which focused on child and maternal health) and currently the sustainable development goal 3 (which focuses on good health and well-being).<sup>1,2</sup> Globally, some appreciable progress has been made in reducing mortality in children older than 1 month of age (around 3.2% per year); there is an unacceptably slow pace (1.8% per year) or even stagnation in the reduction of neonatal mortality.<sup>1</sup> Progress to reducing maternal and newborn mortality has been uneven globally.<sup>3,4</sup> In sub-Saharan Africa, few countries were on track to meet MDGs 4 and 5 on child mortality and maternal heath, respectively.<sup>5,6</sup> In Ghana, neonatal deaths account for 43% of child deaths, up from 36% in 1990.<sup>1</sup>

Major causes of neonatal mortality include complications from preterm birth, birth asphyxia and neonatal infections.<sup>7</sup> Data-driven interventions for prevention and treatment of the causes of neonatal deaths have proven effective even in low-income settings.<sup>7,8,9</sup> Unfortunately, newborn care and survival have received limited attention in terms of awareness, action and monitoring, especially in high-burden countries. In the last decade, 77 countries reduced neonatal mortality rate by over 25% including 12 low-income countries.<sup>4</sup> Such impressive progress is possible especially when applying an integrated strategy that links key interventions across the continuum of care, from prepregnancy care through to the postpartum period.<sup>5,7</sup>

Although Ghana made some progress in the reduction of under-5 mortality till 2008 of 80/1000 live births,<sup>10</sup> there has been a reversal in reduction of under-5 mortality to 82/1000 live births during the last 5 years.<sup>11</sup> Neonatal deaths have become an important component of under-5 deaths, accounting for 40% of under-5 and 60% of infant mortality in Ghana.<sup>10</sup> Regional variations in under-5 mortality exist.<sup>10</sup> The Northern region had the highest under-5 mortality of over 124 deaths per 1000 live births in the country and was one of the regions with the highest infant mortality rates (66 per 1000 live births).<sup>7</sup> Similarly, the Upper East region of Ghana had under-5 mortality of over 98 deaths per 1000 live births. In both regions, the

percent contribution of neonatal mortality rate to overall infant mortality rate was 59%.<sup>10</sup>

A number of initiatives and frameworks have been developed and implemented by the Ministry of Health/Ghana Health Service to address the problem of high under-5 mortality including the Child Health Policy, Millennium Accelerated Framework, Accelerated Expanded Programme on Immunization (EPI) with the introduction of new and additional vaccines, as well as the Global Funded programmes for malaria, tuberculosis and human immunodeficiency virus (HIV).<sup>12</sup> The challenge is that there are major gaps in access to and utilization of these interventions, and the reality, however, is that most of the interventions under these frameworks have focused on the postneonatal period with little attention to newborn care.<sup>13</sup> The need to put up additional measures and for concerted efforts focused on ensuring a sustained, rapid decline in neonatal mortality has thus become a priority for accelerating the reduction of newborn deaths in Ghana, and especially in the worst affected regions, was identified.<sup>14</sup>

Increasing service coverage and quality of neonatal interventions are key to achieving the goals of the every newborn action plan (ENAP).<sup>8,15</sup> Similar to Ghana, many lowand middle-income countries (LMICs) lacked appropriate policies and guidelines for providing quality health care to newborns.<sup>4,9,17</sup> It is recognized that concerted effort to address health system bottlenecks could accelerate universal coverage of quality essential newborn care to all newborns.<sup>8,9</sup>

The bottleneck analysis (BNA) approach is a conceptual framework for effective planning, implementation and monitoring of interventions, originally based on Tanahashi's Health Service Coverage Evaluation methodology<sup>17,18</sup> which examines supply, demand and quality determinants of health intervention coverage. Enabling environmental determinants have been added to account for the social norms, policy, coordination and financial factors.<sup>8,9,18</sup> The maternal-newborn bottleneck analysis tool compiled as part of the international ENAP development process (every NBC tool), utilizes the notion that certain barriers prevent individuals, families and the community from being the beneficiaries of essential newborn interventions and services.<sup>12</sup> Removal of the bottlenecks could result in increased programme coverage and

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