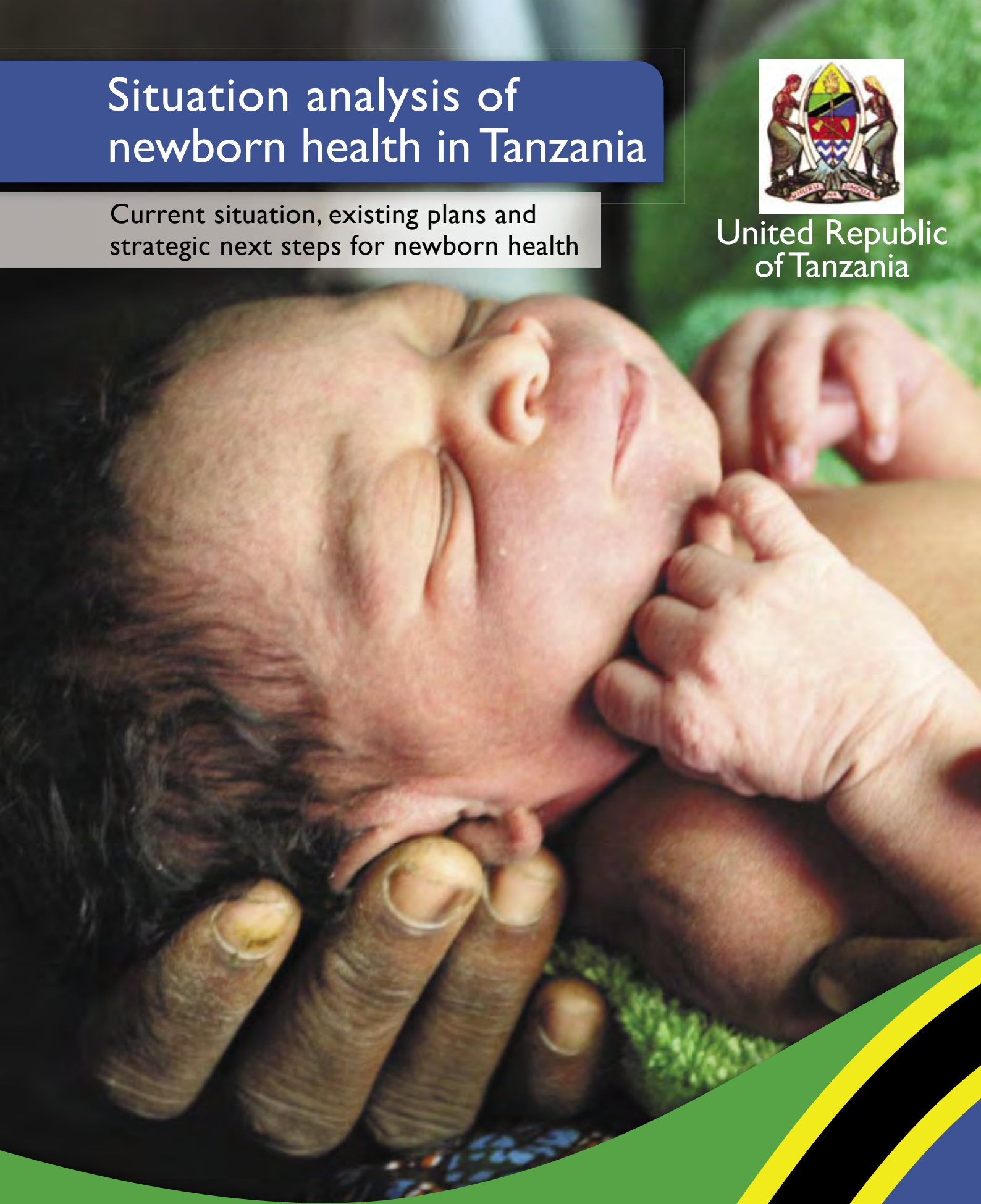
Situation analysis of newborn health in Tanzania

Current situation, existing plans and strategic next steps for newborn health

United Republic of Tanzania



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FOREWORD

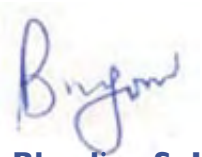
Reduction of maternal and newborn deaths is a high priority for all given the persistently high maternal and newborn morbidity and mortality rates over the past two decades in African countries; Tanzania included. It is one of the major concerns addressed by various global and national commitments, and reflected in the targets of the Millennium Development Goals, Tanzania Vision 2025, the National Strategy for Growth and Reduction of Poverty (NSGRP-MKUKUTA), and the Primary Health Services Development Program (PHSDP-MMAM), among others.

Maternal deaths are caused by factors attributable to pregnancy, childbirth and poor quality of health services. Newborn deaths are related to the same issues and occur mostly during the first week of life. Improving access to quality health services for the mother and newborn requires evidence-based and goal-oriented health and social policies and interventions that are informed by best practices.

This Situation Analysis of newborn health was developed as Tanzania renewed its national response to improving newborn care. The Reproductive and Child Health Section (RCHS) of the Ministry of Health and Social Welfare in collaboration with developmental partners, particularly Saving Newborn Lives/ Save the Children carried out this analysis to guide implementation of newborn health interventions in Tanzania. This Situation Analysis will provide information and guidance on the way forward.

It is the expectation of the Government, particularly the Ministry of Health and Social Welfare, that all stakeholders will make optimal use of this analysis to support the implementation of newborn health interventions, in line with the national health policy and existing Integrated Management of Childhood Illness (IMCI) standards, guidelines and protocols.

The Government highly values the commitment of all stakeholders in working toward the goals of the National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania. Together, we can improve the health of Tanzanian mothers, babies and children, and build a stronger and more prosperous nation.



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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ARV	Antiretroviral drugs for AIDS
BCC	Behaviour change communication
BCG	Bacille Calmette-Guérin vaccine for tuberculosis
CCHP	Comprehensive Council Health Plan
CHMT	Council Health Management Team
DHS	Demographic and Health Survey
DMO	District Medical Office
DPT	Diphtheria, Pertussis and Tetanus vaccine
EmOC	Emergency Obstetric Care
EPI	Expanded Programme on Immunisation
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
IHI	Ifakara Health Institute
IMCI	Integrated Management of Childhood Illness
IMR	Infant Mortality Rate
IPTp	Intermittent Preventive Treatment for malaria in pregnancy
ITN	Insecticide Treated Net
IUGR	Intra-Uterine Growth Restriction
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
MDG	Millennium Development Goal
MMC	Muhimbili Medical Centre
MMR	Maternal Mortality Rate
MOHSW	Ministry of Health and Social Welfare
NGO	Non Governmental Organisation
NMR	Neonatal Mortality Rate
PMNCH	Partnership for Maternal, Newborn and Child Health
PMO-RALG	Prime Minister's Office Regional Administration and Local Government
PMTCT	Prevention of Mother-to-Child Transmission of HIV
RCHS	Reproductive and Child Health Survey
RDS	Respiratory Distress Syndrome
SP	Sulphadoxine-Pyrimethamine
TB	Tuberculosis
TBA	Traditional Birth Attendant
TEHIP	Tanzania Essential Health Interventions Project
TT	Tetanus Toxoid vaccine
U5MR	Under-Five Mortality Rate
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

INTRODUCTION

What is known about newborn mortality?

Globally

- Deaths during the first month of life – the newborn period – account for 40 percent of the nearly 10 million child deaths under the age of five years. This amounts to nearly 4 million deaths annually.
- Ninety-nine percent of newborn deaths occur in developing countries.
- Three-quarters of deaths occur in the first seven days of life; about half of these deaths occur on the first day of life.
- Many more babies die as stillbirths and countless others are born with life-threatening disabilities.

In Tanzania

- Tanzania has substantially reduced child mortality in the past five years, but most of the decline has come after the first month of life and neonatal mortality has not reduced.
- Each year, at least 51,000 Tanzanian newborns die; an additional 43,000 babies are stillborn.
- The three main causes of neonatal death in Tanzania are well known: 32 percent die from infections; 27 percent die from complications of preterm birth; 26 percent die from birth asphyxia.
- Up to two-thirds, or 34,000 newborn lives could be saved if essential care reached mothers and babies.
- At the current rate of progress, Millennium Development Goal 4 could be met, especially with more attention to newborn survival.

Each year, four million newborns die around the world, nearly all of them in developing countries. Over one million newborns die every year in sub-Saharan Africa alone. Half of these deaths occur on the first day of life, and up to three-fourths occur within the first seven days.[1] In 2006, the global number of children dying before their fifth birthday was estimated to have fallen to 9.7 million.[2]

Tanzania is making great strides in reducing child mortality, but has demonstrated slower progress in reducing neonatal deaths.[3] Each year, 51,000 newborns die in Tanzania, which places it among the top five countries with the most newborn deaths in sub-Saharan Africa.[4] Tanzania's newborn deaths represent 29 percent of all child deaths in Tanzania.

In order to meet Millennium Development Goal (MDG) 4 for child survival, newborn deaths must be reduced. The MDGs represent the broadest commitment in history to address global poverty and ill health. MDG 4 commits the international community to reducing mortality in children aged younger than five years by two-thirds between 1990 and 2015. Only six African countries are among those on track to meet MDG 4. Since 1990, the average reduction of under-five mortality in sub-Saharan Africa has been just one percent per year.[2] Tanzania has seen a 2 percent reduction per year since 1990, but has shown remarkable gains since the year 2000.[3] At the current rate of progress, MDG 4 could be met, especially with more attention to newborn survival.

One area where Tanzania has made considerable progress is in reducing neonatal tetanus. Concerted efforts to vaccinate pregnant women in the remaining high risk districts would allow Tanzania to achieve neonatal tetanus elimination certification.

Credit: Karim Manji

Tanzania recently developed the National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania (2008-2015),[5] which was launched by President Jakaya Kikwete in April 2008.[6] In line with the new national Road Map/One Plan, this situation analysis provides a descriptive overview of the current situation for newborn health in Tanzania, while synthesising existing plans, policies and programmes of relevance in order to guide action for newborn health. This has been through a national ownership process that will inform future discussions and operational strategies for newborn health, as well as maternal and child survival. This situation analysis highlights a number of opportunities for immediate action.

Actions at the health facility level to save newborn lives

- *Improve infrastructure and supplies* – ensuring every district hospital has a neonatal unit, practices Kangaroo Mother Care (KMC) and all health facilities have functional equipment and essential drugs such as gentamicin for treating neonatal sepsis
- *Recruit and retain quality staff* – filling vacant posts and addressing turnover among existing staff; ensuring competence in key skills such as neonatal resuscitation
- *Improve guidelines and service delivery* – establishing or improving procedures for routine postnatal care *and* management of preterm and sick newborns
- *Integrate services* – linking emergency obstetric services with newborn care and improving transport and referral mechanisms
- *Use data locally for quality improvement* – recording and auditing neonatal deaths and stillbirths

Actions at the family and community level to save newborn lives

- Identify a means to reach every mother and baby in the early postnatal period (within the first two days after birth)
- Invest in primary health care at the village level by ensuring appropriate supervision, remuneration and working conditions for village health workers
- Strengthen community - Integrated Management of Childhood Illness (IMCI) to effectively reinforce healthy behaviours, recognition of danger signs and timely care-seeking, to identify harmful traditional practices and awareness of key newborn health packages, such as routine postnatal care, KMC and IMCI
- Engage communities in birth preparedness, including planning to give birth at a health facility and emergency transport
- Reduce the economic burden of a facility birth on women and their families

These actions depend on leadership at all levels. Tanzania's decentralised health system ensures that public health interventions are linked to those who need them but more effort is needed to integrate newborn health packages into district level budgets and planning.

Newborn lives can be saved by implementing appropriate policies, improving staffing levels and supervision in health facilities and providing an enabling environment for community-level care. There is an immediate opportunity for Tanzania to implement the recommendations within the Road Map/One Plan to improve newborn health from the highest level in both public and private health facilities and to influence the care newborns receive at home.

Over 51,000 newborns die each year in Tanzania, most from preventable and treatable causes. Tanzania's future depends on the ability of these newborns to survive and thrive. This situation analysis sheds light on the current state of care and the opportunities to save lives. While better data, policy change and revised guidelines will make a difference, it takes people to act to save newborn lives. Will you use this information to become a champion of the country's most vulnerable and precious citizens?

I believe we can certainly prevent two-thirds of newborn deaths through essential Maternal, Newborn, and Child Health Care packages....Addressing newborn health is a catalyst for improving both maternal and child health and accelerating progress towards implementation of MDG 4 and 5.

His Excellency President JE Kikwete
Launch of Deliver Now for Women and Children *Campaign, 22 April 2008*[7]

Methodology and literature review

This situation analysis was conducted through a review of the literature, a six-district survey, and an analysis of three hospitals in the capital city of Dar es Salaam. The literature review included published and unpublished data related to neonatal morbidity and mortality. PubMed was used to conduct searches for published material, which was supplemented by dissertations, information from the Ministry of Health and Social Work (MOHSW), official government and agency websites, and informant interviews with key personnel in relation to newborn care in Tanzania. Most of the literature was in the area of Prevention of Mother-to-Child Transmission of HIV (PMTCT) and antenatal care. There was less on demography and neonatal care. The areas of intrapartum and postpartum/postnatal care had the least number of published studies.

To supplement the literature review with new data, a survey of six districts in 21 regions of Tanzania was conducted using a structured questionnaire, which was adopted for the purpose of this situation analysis. Health facilities were selected for comparison between the public (governmental) and private (non-governmental) sectors. Six medical students were employed to survey these districts. Several meetings and training sessions were held between these students and the consultant. Household surveys of women with a birth in the last year were conducted using the structured questionnaire, in addition to open-ended questions. These were adapted from the Ifakara Health Research and Development Centre, now Ifakara Health Institute (IHI) and were translated in Kiswahili for ease of administration. All data were entered into the Epi-Info database and analysed using simple ratios and proportions. The findings are quoted throughout this report; the full report and household questionnaires are included as Appendices 1 and 2.

Table 1: Survey zones and districts for the purpose of this situation analysis

ZONE	DISTRICTS	FACILITIES VISITED		
Central zone	Manyoni	Manyoni district hospital	Itigi health centre	Kintinku health centre
Lake zone	Kahama	Kahama district hospital	Lowa health centre	Igalilimi health centre
Northern zone	Babati	Babati district hospital	Dareda volunteer hospital	Magugu health centre
Southern zone	Kilwa	Kinyonga Kilwa district hospital	Masoko health centre	Mpara dispensary
Southern highlands	Njombe	Kibena Njombe district hospital	Njombe mjini health centre	Uwemba health centre
Western zone	Nkasi	Nkasi designated district hospital	St Joseph Chala health centre	Kirando health centre

An analysis of hospital care in the capital of Dar es Salaam was conducted in September, 2007. Three municipal hospitals--Amana, Mwananyamala and Temeke--were selected. Existing documents and facility-based data pertaining to newborn and maternal health were reviewed. Structured questionnaires were administered to health officials in charge of the labour and neonatal wards, or the place where newborns were kept. Interviews were also conducted with mothers attending reproductive and child health clinics with a child less than six months of age. Data were analysed by a data master sheet and Epi-Info 2005 software. The full report and survey tool are included as appendices.

CHAPTER 1:
THE STATE OF TANZANIA'S NEWBORNS

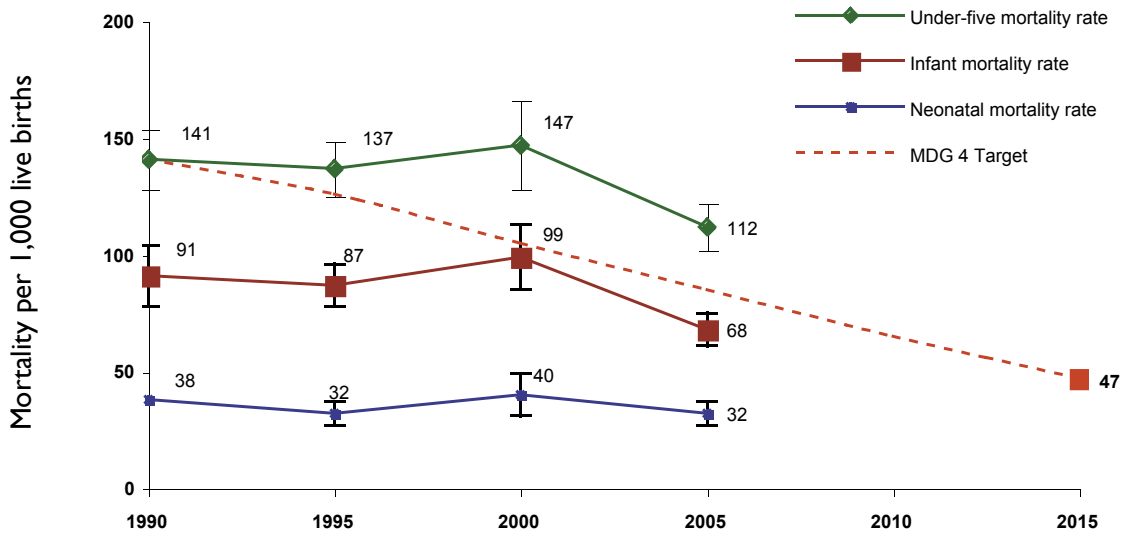
Neonatal survival: current levels and trends

The United Nations (UN) estimates that 1.6 million babies are born each year in Tanzania. However, official statistics indicate that only 140,000 live births are registered annually, less than 10 percent of the total estimated births.[2,8] Many stillbirths and neonatal deaths, as well as maternal and child deaths, occur without being counted in official statistics. Since the rate of birth and death registration is so low, Tanzania primarily relies on population-based birth-history surveys to obtain direct, retrospective estimates to understand the burden of neonatal mortality in the country.[3]

Of the 179,000 deaths of children under-five each year, one in three - 51,000 deaths - are babies within the first month of life. The neonatal mortality rate (NMR) as recorded by the 1992 Tanzania Demographic and Health Survey (TDHS) was 38 deaths per 1,000 live births. Though a decrease in NMR was recorded in 1996, 40 deaths per 1,000 live births were recorded in 1999. By 2004, however, the NMR had decreased again to 32 deaths per 1,000 live births.[9-12] During this same period, the under-five mortality rate (U5MR) fell from 141 to 112 per 1,000 live births – a drop of over 20 percent [9-12] **(Figure 1.1).**

One recent study largely attributed the recent decline in child mortality to important improvements in Tanzania's health system, including doubled public expenditure on health; decentralisation and sector-wide basket funding; and increased coverage of key child-survival interventions, such as IMCI, insecticide-treated nets (ITN), vitamin A supplementation, immunisation, and exclusive breastfeeding. Survival gains in TDHS 2004-05 were recorded among the age group that would be the primary beneficiary of these interventions; that is, mainly post-neonatal infants.[3]

Figure 1.1: Rate of progress toward MDG 4 for under-five, infant and neonatal survival in Tanzania



Source: [9-12]

In addition to the immense burden of neonatal death, between 8,000 and 13,000 Tanzanian women die due to pregnancy-related causes each year. Due to the use of different methodologies, it is difficult to accurately determine trends in maternal mortality. However, Tanzania clearly remains among the ten countries with the highest number of maternal deaths in Africa.[4, 13]

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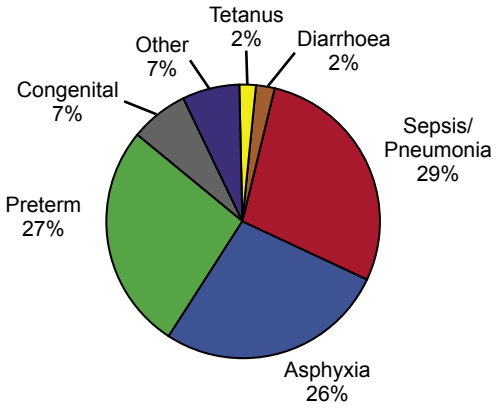
Causes of newborn death and illness in Tanzania

Tanzania's official data published in the annual health statistical abstract capture only pre-discharge facility births; the majority of babies born at home and late neonatal deaths, especially deaths that occur from infection, are missed. Many facilities do not have up-to-date records and reviews of death that are linked to the regional and national data collection systems. This problem was clearly evident in the six districts of the six regions surveyed in this situation analysis.

Due to the low quality of facility-based information on the number and causes of newborn deaths, causes of neonatal deaths have been estimated based on modelled facility-based data.[14] According to these estimates, 85 percent of newborn deaths in Tanzania are due to three main causes: severe infections, primarily sepsis and pneumonia (28 percent); birth asphyxia (26 percent); and complications of preterm birth (27 percent).[4, 15] **(Figure 1.2)**

Figure 1.2: Estimated causes of newborn deaths in Tanzania



Source: [4,15]

The importance of counting newborn deaths and their causes

There is little chance that deaths occurring outside of Tanzania's health facilities will be recorded, let alone certified as to the cause or causes of death. When death occurs at home or in a hospital facility where information is poorly recorded, a post-mortem interview with a family member or health worker can be done to obtain a possible cause of death. This structured interview is called a verbal autopsy and elicits signs, symptoms and other pertinent information that can later be used to assign a probable underlying cause of death. Verbal autopsy data are gaining acceptance as a source of cause-of-death statistics in settings where many deaths occur at home and facility data is often unreliable.[16]

Verbal autopsy has been used in Tanzania to determine perinatal causes of death.[17] A study done in the Hai district of the Kilimanjaro region showed a perinatal mortality rate of 58 deaths per 1,000 live births. Verbal autopsy could establish the cause of death in 105 out of 121 deaths (87 percent). Hospital records only captured around one-third of all deaths, and cause of death could only be established in 38 percent of cases. The specificity of determining the cause of death using verbal autopsy was 100 percent and sensitivity was 61 percent.[17]

The six district survey conducted for this report found a number of data collection issues related to neonatal mortality:

- Not all neonatal deaths occurring at health facilities were recorded. Some neonatal deaths were classified as paediatric deaths due to lack of a neonatal unit and linked data collection systems.
- Health workers were not always aware of the neonatal period or the main categories for reporting causes of neonatal death.
- Hospital records often did not include newborn deaths that occurred at home. The responsibility for capturing these deaths rested on the village/street leaders. Often, many home deaths were unrecorded.
- Health management information systems (HMIS) were poorly managed, which sometimes led to large discrepancies between District Medical Office (DMO) data and health facility data.
- There was no perinatal death review process in any of health facilities visited.

Birth asphyxia

Although most babies breathe spontaneously at birth, up to 10 percent of newborns require some assistance to initiate breathing. Less than one percent of babies need extensive resuscitation.[18] Suctioning and provision of oxygen is often successful as an intervention.[19] Preventing deaths from birth asphyxia requires special resuscitation skills in only a small proportion of neonates. However, when resuscitation is needed, it must be administered in a timely manner. Without immediate intervention, babies who survive oxygen deprivation to the brain may suffer severe and lifelong developmental disabilities.

Asphyxia may arise from compression or prolapse of the umbilical cord during birth. Asphyxia following birth may be caused or accentuated by obstruction of the nasopharyngeal pathway, including aspiration of fluids. Several surveys have been conducted since 1980 on the incidence of birth asphyxia in hospital settings that place incidence between 20-25 percent. In a 1992 study of the neuro-developmental outcome of birth asphyxia in neonates, Msemo reported the incidence to be 23 percent. One-quarter of these cases exhibited severe forms of asphyxia and poor outcomes, especially among those neonates with APGAR scores of less than five (out of a possible score of 10) at five minutes after birth. Massawe, et al demonstrated the use of simple face-mask in resuscitation of the asphyxiated neonate.[20]

A study conducted in a Special Care Baby Unit in the Kilimanjaro Christian Medical Centre examined 246 admissions over a three month period. Two-thirds of the deaths (31 newborns) occurred during the first 24 hours of life. Of the 27 infants who were admitted for treatment of asphyxia, 11 (41 percent) died.[21] One-third of asphyxia-related deaths were among infants born at home. About one-third of these deaths could have possibly been avoided had the infant received simple life-saving measures, such

as care by a birth attendant who could have cleared the airway and initiated respiratory support.

Respiratory Distress Syndrome (RDS) is akin to asphyxia, but represents a more long-lasting challenge to establishing an effective breathing pattern. A prospective, unmatched case-control study of 256 neonates with RDS and 256 controls was conducted in Muhimbili Medical Centre (MMC) in Dar es Salaam. RDS contributed to six percent of all neonatal admissions and was significantly associated with low birth weight (LBW) and asphyxia. More than half (52 percent) of the neonates died; 88 percent of these deaths occurred within the first seven days of life.[22] As mechanical ventilation for newborns with pneumonia is not available in any Tanzanian health facilities, neonates with severe respiratory distress are left to fend for themselves, sometimes with the minimal assistance of nasal prong oxygen.

Long-term illness and disability outcomes for newborns

Very little is known about the long-term burden of neonatal illness and disability in Tanzania. Almost all data available are hospital-based and information at the community level is scarce. The scarce information available indicates that anaemia, cerebral palsy, rickets and kernicterus (brain damage caused by jaundice) are widely prevalent among neonates who survive illness and injury during the neonatal period. Currently, with support from the Bill & Melinda Gates Foundation, a wide scale morbidity and mortality survey among pregnant women and newborns is being conducted in Dar es Salaam. More information is needed about long-term outcomes, including appropriate intervention packages and cost-effectiveness information.

Preterm and low birth weight

Preterm birth (less than 36 completed weeks of gestation) contributes to 28 percent of neonatal deaths globally.[1] There are many reasons for premature delivery, but in many cases, the causes are unknown. Reasons for premature delivery include high maternal blood pressure, acute infections, multiple births, hard physical work and stress. In one Tanzania study by Klingenberg et al in 2003, risk of death increased with decreasing gestational age.[21] The mortality rate was 12 percent for term infants, compared to 26 percent for infants with gestational ages of less than 37 weeks. Accessing accurate data on the prevalence of prematurity itself is difficult due to unknown gestational age. This is compounded by the fact that HMIS registers do not differentiate between low birth weight and prematurity.

Low birth weight (less than 2,500 grams) is an important risk factor in up to 80 percent of newborn deaths.[1] Globally, 16 percent of all births, or 17 million infants, are born every year with low birth weight. UNICEF/WHO estimate that 13 percent of Tanzanian newborns are born with low birth weight, which is similar to the average for sub-Saharan eastern and southern African countries.[2]

The TDHS 2004-05 asked mothers to estimate whether their infant was 'very small,' 'small,' 'average,' or 'large.' They were also asked to report the actual birth weight, if it was known. Because the majority of infants were born at home, a large amount of data were missing concerning infant weight at birth. Eleven percent of births were classified by the mothers as either 'very small' or 'small.' Among infants who were weighed at birth, only seven percent were classified as low birth weight.[12] Both of these figures are lower than the UNICEF/WHO estimates.[2]

Most, but not all premature infants weigh less than 2,500 grams. There are two main causes of low birth weight with different risks and causes: prematurity and intrauterine growth restriction (IUGR). Babies with IUGR, or poor growth in utero, are smaller than expected. It is rare for babies who are full term to die directly because of being small. This constitutes probably less than one percent of all newborn deaths. IUGR is much more common in Asia than Africa, although there is some evidence from East Africa that links traditional practices, such as food avoidance and purging during pregnancy, to IUGR.[23]

Preterm babies are those born before the normal 37 weeks of gestation. Most preterm babies are born between 33 and 37 weeks. Preterm babies

have a risk of death that is approximately 13 times higher than full term babies. Some babies are born both preterm and with poor growth in utero, such as twins or other multiple births. Malaria during pregnancy can increase the risk of preterm birth and/or growth restriction. Babies who are preterm and exhibit growth restriction have an even higher risk of death. The TDHS 2004-05 reports an NMR of 86 deaths per 1,000 live births among small or very small newborns, compared to a rate of 26 for average size or larger babies.[12]

Seasonal variation is noticed in low birth weight, due to variations in endemic malaria.[24] Similar associations emerged from a study conducted in northern rural Tanzania by Hinderaker et al which showed an adjusted odds ratio of 5.8 for risk of perinatal death among babies with low birth weight (i.e., an almost six-fold increase in the risk of death.).[25]

Preterm birth and low birth weight are also associated with a large burden of disability. A hospital-based study at MMC showed a low birth weight incidence rate of 16 percent, of which 12 percent were babies of less than 28 weeks gestation. Sixty percent were between 29-36 weeks gestation and 28 percent were term. Almost one-third of the low birth weight babies developed health problems, resulting in a 3.5 times higher risk of morbidity compared to normal weight infants.[26] Among the 100 babies admitted with a birth weight below 1,500 grams, 33 percent developed metabolic bone disease, which is related to a greater demand for calcium.[27] Thirty percent of low birth weight babies died within six weeks of discharge, which indicates a need for follow-up care after discharge. Follow up care should include support for breastfeeding, thermal care and early recognition of danger signs.

Failure to thrive (weight less than two standard deviations below the age mean) is also common among preterm babies. A study at Muhimbili National Hospital showed the prevalence of failure to thrive to be 2.4 percent. Just over half (54 percent) were preterm, while 46 percent were term babies. The primary cause of failure to thrive was poor feeding technique and a lack of breastfeeding support.[28]

Hypothermia is a common risk for newborns, even in tropical climates. Among admissions over a four month period during the hot season, 21 percent of neonates were found to have hypothermia.[29] Low birth weight babies are particularly susceptible and need extra care to ensure they are kept warm and dry. Many common practices, such as bathing immediately and frequently after birth, can be detrimental to newborn health. Simple solutions, such as skin-to-skin care, are often not practiced. Although hypothermia is highly preventable, it is not routinely monitored, even in health facilities.

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Infections

Sepsis and pneumonia: Together, sepsis and pneumonia account for 30 percent of newborn deaths in Tanzania. The term 'sepsis' encompasses a broad spectrum of infections, many of which are preventable by administration of appropriate antibiotic therapy to the mother, hygienic practices during birth, and antibiotic treatment for the baby. Sepsis was the most common cause of death noted in a study conducted in the Mbulu and Hanang districts of rural northern Tanzania.[30] The newborn's skin is a potential site of invasive infections, particularly in settings where environmental conditions serve as sources of contamination. While prophylactic and therapeutic use of antibiotics has reduced the rate of neonatal deaths from infections worldwide, resistance to commonly used antibiotics has begun to emerge. This fact emphasizes the need to promote low-cost approaches to infection prevention, such as hand washing and proper hygiene, as well as the need for rational and selective use of antibiotic therapy.

Symptoms of pneumonia are often indistinguishable from sepsis. Pneumonia results from primary causes, such as viral or bacterial systemic infections. It can also arise from secondary causes, such as inhalation of meconium at birth, or the inhalation of food, fluids or foreign objects.

Diarrhoea: Mixed feeding, particularly with unclean water, is the single leading cause of diarrhoeal disease in newborns. Neonatal diarrhoeal disease is almost entirely preventable by exclusive breastfeeding. Appropriate environmental sanitation, including hand washing, is another key strategy. The TDHS 2004-05 reports a diarrhoea prevalence rate of 7 percent among infants less than six months of age.[12] The prevalence of diarrhoea in children in the next two older age cohorts (6-11 months; 12-23 months) was three to four times higher, which likely reflects the end of an exclusive breastfeeding period and the introduction of complementary food and fluids.

Tetanus: An estimated two percent of newborn deaths in Tanzania are caused by tetanus.[4] Delivery of two or more doses of tetanus toxoid (TT2+) during pregnancy, as per the Expanded Programme on Immunisation (EPI) schedule, has helped reduce this burden in recent years. While reported tetanus cases are lower than the true number of cases in Tanzania, 19 cases of neonatal tetanus were reported in 2004, compared to 41 in 2000.[8] Tetanus still affects those with the least access to care, such as rural populations and the poorest of the poor who have not been reached by vaccine campaigns and give birth in unhygienic conditions. Traditional practices related to care of the umbilical cord after birth are primary contributors to the incidence of tetanus. In addition to vaccination, prevention strategies have focused on behaviour change communication to amend these dangerous practices, such as the application of cow dung to a newly cut umbilical cord.[31]

Malaria: Malaria is rarely a direct cause of newborn death. However, it has a significant, indirect effect on neonatal deaths since malaria during pregnancy causes low birth weight – the most important risk factor for newborn death. Malaria is also a risk factor for stillbirth, particularly in areas of unstable transmission, where malaria levels fluctuate greatly across seasons and from year to year, resulting in lower rates of partial immunity.[4]

Pregnancy alters a woman's immune response to malaria, particularly in the first malaria-exposed pregnancy. This can result in more episodes of infection, more severe infection (for example, cerebral malaria), and anaemia, all of which contribute to a higher risk of death. Malaria causes an estimated 15 percent of maternal anaemia, which is more frequent and severe in first pregnancies than in subsequent pregnancies.[32]

Congenital malaria is defined as the presence of malarial parasites in peripheral blood within the first seven days of life and lower birth weight. It is associated with a history of prenatal maternal anaemia and fever. The incidence of congenital malaria varies according to the type of sample materials used to calculate these data, such as peripheral blood of neonates or cord blood. The lack of clear signs and symptoms makes congenital malaria easy to overlook; one study at MMC showed the actual prevalence of congenital malaria to be five times higher than diagnosed.[33]

HIV/AIDS and Sexually Transmitted Infections: While HIV/AIDS is not a major direct contributor to newborn death, various studies have showed that HIV is highly associated with poor pregnancy and neonatal outcomes, including increased fetal wastage, abortions, prematurity, low birth weight, and IUGR.[34-35] According to official statistics, antenatal HIV sero-prevalence is 9 percent nationally[8] and recent UN estimates suggest 33,000 infants are infected each year through mother-to-child transmission of HIV.[36] HIV antenatal prevalence was highest in the Mbeya and Kagera regions at around 15 percent. Reproductive tract infections such as syphilis, gonorrhoea, and chlamydia are linked to HIV/AIDS as well as adverse pregnancy outcomes. The complications of syphilis in particular are severe, but treatment is cheap and effective. Antenatal syphilis prevalence in Tanzania was reported to be 7 percent in 2004.[8]

Congenital Malformations

Congenital malformations leading to neonatal mortality are relatively rare. The most common anomalies associated with high mortality and morbidity in Tanzania are neural tube defects and gastrointestinal malformations.[37] In hospital settings, these are reported to contribute to three to eight percent of neonatal deaths. These data coincide with population-based estimates that report seven percent of deaths in Tanzania are due to congenital causes.[14] Micronutrient supplementation and nutritional counselling would improve fetal growth and development as well as maternal health.

Karim Manji

Maternal health and newborn survival

The main causes of neonatal mortality are intrinsically linked to the health of the mother and the care she receives before, during and immediately after giving birth. Many neonatal infections, such as tetanus and congenital syphilis, can be prevented by screening, and preventive or curative treatment of the mother during the antenatal period. Asphyxia and birth trauma are most often associated with the failure to diagnose a potential problem during labour. This results in a critical delay in accessing an appropriate level of obstetric service and a consequent need for more aggressive birth management.

Poverty, inequity and social determinants of illness and mortality

Poor families are disproportionately affected by newborn mortality. In Tanzania, newborn mortality is 67 percent higher in the poorest families compared to better-off families.[12] Newborns born in urban areas to women with higher education levels have a significantly greater chance of surviving the first month of life, though urbanisation does not guarantee survival. The growing population of urban poor, particularly around Dar es Salaam, have particular health risks that are often overshadowed in a simple disaggregation of urban and rural.

Poverty and low socio-economic status are linked to unstable family environments and support networks. Muhimbili National Hospital records an average of 70-80 abandoned or orphaned newborns annually. Newborn abandonment is a serious and growing problem in Tanzania. The causes of abandonment range from economic hardship, rapid urbanisation, sexual abuse, lack of family planning and adolescent pregnancies. In developing countries, such newborns are at high risk of infection, malnutrition and even HIV. HIV sero-positivity among abandoned babies at Muhimbili National Hospital was 15 percent, which is three times higher than the baseline prevalence in newborns.

Conclusion

Each year in Tanzania, 51,000 newborns die. Many of these deaths are uncounted in official statistics. Tanzania has only recently begun to realise that the incredible burden of neonatal mortality touches everyone, but is concentrated among the poorest and most marginalised populations.

The main causes of newborn death in Tanzania can be prevented and treated by improving existing care of birth asphyxia, complications of preterm birth and infections. Many newborn deaths could be averted with simple preventive measures, such as hygienic care at birth and during the postnatal period, keeping the newborn warm, and early and exclusive breastfeeding. These actions would also help save the mother's life and prevent illness as the child grows older.

An important research gap concerns the burden of disability among children who survive the newborn period, but who do not reach their full potential due to incident or illness during the first month of life.

Karim Manji

CHAPTER 2:
COVERAGE AND QUALITY OF SERVICES FOR NEWBORN HEALTH

For most effective care, a continuum linking maternal, newborn and child healthcare through the lifecycle and between homes and health facilities is needed.

His Excellency President JE Kikwete
Launch of Deliver Now for Women and Children *Campaign, 22 April 2008*[7]

Saving newborn lives through a continuum of care

Health services for mothers, newborns and children are best provided within a continuum of care, which ensures linkages throughout the lifecycle and connects essential health packages throughout adolescence, pregnancy, childbirth, and the postnatal and newborn periods. It also emphasises seamless care between households and health facilities by improving home based practices, mobilising families to seek care and increasing access to quality care at health facilities.[38] If all mothers and babies in Tanzania were reached with these existing packages which included high impact interventions, up to 34,000 newborn lives could be saved.[4]

Karim Manji

Antenatal care

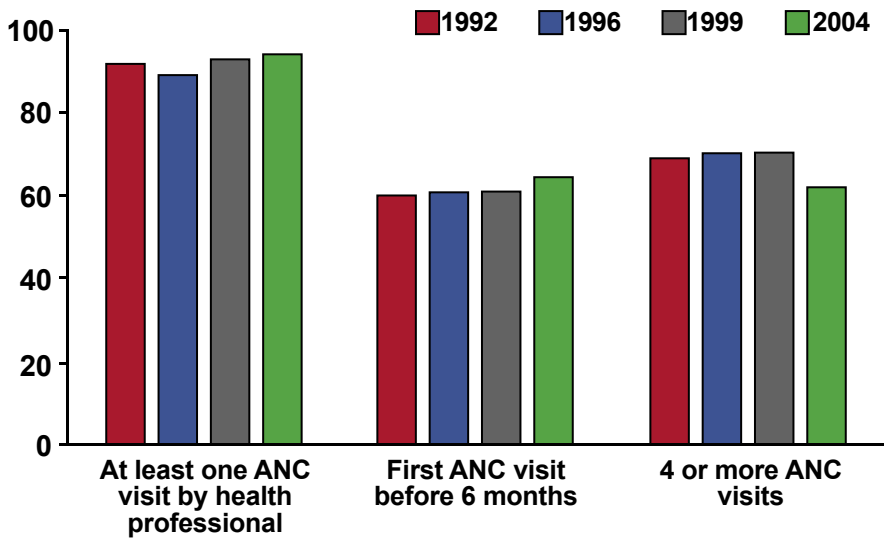
Antenatal care (ANC) is an important package for improving neonatal health and survival, especially in settings with weak health systems and high neonatal mortality.[39] ANC is often an entry point to the formal health system and provides a platform to deliver a number of effective interventions and counselling messages. It is recommended that all pregnant women attend ANC at least four times with a health provider trained in midwifery skills. The first visit should take place before 20 weeks' gestation. Pregnant women, their families and health providers should be able to recognise danger signs and complications of pregnancy, and know when and how to seek referral care. ANC should also help women prepare for birth with a skilled attendant and to be able to recognise and seek care for maternal and newborn emergencies. Focused ANC should be practiced in every health facility that provides services to pregnant women.

Essential components of focused antenatal care

- Maternal education, including self-care during pregnancy and birth preparedness
- Iron/folate supplementation
- Intermittent Preventive Treatment IPTp, Sulfadoxine pyramethamine (SP) prophylaxis for malaria and case management
- Tetanus toxoid immunisation (2 doses)
- Weight gain monitoring
- Fetal heart rate monitoring
- Assessment of fetal lie
- Check for oedema
- Eye check for jaundice
- Urine testing (bacteriuria/urinary tract infections)
- Faecal testing for worms and other infections
- Blood pressure/hypertension screening
- Blood testing including screening for anaemia
- Testing and management of sexually transmitted infections, including syphilis
- Counselling and testing for HIV/AIDS, prevention of mother-to-child transmission (PMTCT) including antiretroviral (ARV) drugs

According to the TDHS 2004-05, 94 percent of women received antenatal care from a health professional at least once.[12] As expected, nurses and midwives were more likely than other health professionals to provide ANC (72 percent). Women also went to Maternal and Child Health (MCH) aides (16 percent) for ANC less often than they went to doctors (2 percent) and clinical officers (four percent). Just three percent of women received no antenatal care at all. THDS data indicate that ANC coverage has remained stagnant over the last decade. **(Figure 2.1)**

Figure 2.1: Antenatal care attendance in Tanzania, 1992-2004



Source: [9-12]

Number and timing of antenatal visits: While coverage of one ANC visit is high, there is a significant decrease in the number of women who receive the recommended four or more visits at 62 percent.[12] The number of pregnant mothers in Tanzania making four or more ANC visits appears to have declined slightly from 70 percent from 1999.[9]

Although the majority of Tanzanian women make the recommended number of ANC visits, the timing of the visits is not ideal. More than 80 percent of women make their first visit after the first trimester of pregnancy; the median number of months pregnant at first visit is 5.4.[12] One-third of women do not seek ANC until their sixth month or later. There is little variation between urban and rural women in terms of how far they have progressed in their pregnancy at the time of their first ANC visit.

Reports from two district hospitals indicate that implementation of focused ANC is inadequate (personal communication with providers, 2008). In the six district survey of women for this report, only half attended four or more ANC visits. Twenty-one percent of the 157 women interviewed had their first ANC visit after six months gestation.

Quality and availability of services: According to the Tanzania Service Provision Assessment (TSPA) 2006, 82 percent of health facilities offered ANC.[40] Two-thirds of these facilities offered ANC five days a week. Forty-five percent had the essential supplies for basic ANC, such as iron and folic acid tablets, TT vaccines, blood pressure apparatuses and fetoscopes. Availability of these basic supplies varied by region as well as by managing authority (e.g. between government and private, for-profit facilities).[40]

The six district survey for this report found that health workers who provided antenatal care at the reproductive and child health clinics of the district hospitals and health centres were not all trained in midwifery skills. For example, at Kinyonga, Nkasi and Manyoni district hospitals and health centres, mothers were seen by public health nurses and auxiliary nurses. It was also observed that screenings for blood pressure, haemoglobin levels, syphilis and urinalysis for asymptomatic bacteriuria were not routinely conducted at all facilities.

The shortage of essential equipment and trained staff is a likely contributor to low coverage of focused ANC interventions. Table 2.1 provides the proportion of women attending ANC who reported receiving specific interventions. Coverage was particularly low for counselling items, which reflects the TSPA 2006 finding that only 13 percent of ANC facilities had three crucial items – client cards, guidelines, and visual aids – to deliver focused ANC services.[40] The six district survey found that even when it was provided, counselling rarely addressed important newborn health issues such as breastfeeding, cord hygiene, temperature control or detection of danger signs. **(Table 2.1)**

Table 2.1: Coverage of ANC interventions

Service	Six district survey	TDHS 2004-05
IPTp for malaria prevention	78% (123 women)	53%
Folate and iron supplementation	62% (97)	61%
Tetanus immunisation	45% (70)	80%
Urine sample taken	38% (59)	42%
De-worming	36% (56)	N/A
Blood sample taken	33% (52)	54%
Counselling and testing for HIV	22% (34)	N/A
Family planning information	21% (33)	N/A
Physical/body examination	15% (23)	N/A
Advice about nutrition and diet	3% (5)	N/A
Advice on pregnancy and delivery	1% (2)	N/A
Information on signs of pregnancy complications	N/A	47%

Source: Six district study conducted for this report and reference[12]

Tetanus immunisation: According to the recent TDHS, approximately 80 percent of pregnant Tanzanian women received at least one dose of tetanus toxoid (TT), while 56 percent received two or more injections (TT2+).[12] These results roughly reflect those of the 1999 Tanzania Reproductive and Child Health Survey (TRCHS), which found that 83 percent of pregnant women received at least one dose of TT, and 61 percent of women received two injections.[9] The proportion of women who received immunisation was fairly equally distributed across both education levels and wealth quintiles. One notable exception was a higher uptake among women of the highest education and wealth strata. Recent WHO/ UNICEF statistics indicate that 86 percent of Tanzanian infants are protected against tetanus at birth.[41] According to the Tanzania Annual Health Statistical Abstract report of 2006, the percentage of pregnant women who attended antenatal clinics and were vaccinated with TT2+ has increased from 75 percent in 2000 to about 85 percent in 2005. **(Table 2.2)**

Table 2.2: Trend in tetanus immunisation according to HMIS

YEAR	1st ANC	Vaccinated TT+2	Children Protected	Children born alive	Neonatal tetanus cases recorded
2000	1,385, 650	1,045,967 (75%)	900,868 (86%)	789,678	41
2001	1,484,113	1,117,857 (75%)	941,885 (84%)	801,781	43
2002	1,420,485	1,166,103 (82%)	1,103,401 (97%)	733,304	36
2003	1,334,120	1, 155,332 (87%)	1,033,716 (90%)	895,426	32
2004	1,393,460	1,183,594 (85%)	1,119,529 (95%)	898,706	19

Source: [8]

Younger mothers and women experiencing pregnancy for the first time are more likely than other women to receive two or more doses of TT. Urban women are also more likely than rural women to receive two or more doses during pregnancy. The data imply that a substantial proportion of births in rural areas (47 percent) may not be protected against tetanus. According to the TSPA 2006, TT vaccination services were available in 80 percent of facilities. Immunisation was offered on most, but not all days that ANC services were offered.[40]

Preventing malaria during pregnancy: In order to prevent adverse effects in the mother, fetus and newborn, it is recommended that every pregnant woman take two doses of SP as intermittent preventive treatment, receive IPTp, and sleep under ITN. According to the TDHS 2004-05, only 22 percent of women received the complete IPTp and only 16 percent regularly used ITN.[12]

The six district survey found wide variations in IPTp between districts, ranging from just 20 percent coverage of pregnant women who attended ANC in Kahama district to 91 percent of women who attended ANC in Kilwa district. A high percentage of pregnant women who attend ANC were given *Hati Punguzo* vouchers that could be exchanged at authorised retailers for an ITN for a small top-up amount.

Prevention of Mother-to-Child Transmission of HIV: PMTCT services included pre- and post-test voluntary counseling and HIV testing for pregnant women (VCT), counseling on infant feeding practices, family planning counseling and/ or referral, and providing prophylactic ARV drugs to HIV-positive women and their newborn babies. According to the 2006 TSPA, just 13 percent of facilities offered any PMTCT services; only three-quarters of those facilities had all items necessary to offer the minimum PMTCT package.[40] However, a gap still remained in women's access to these services. According to recent UN estimates, 99,000

Table 2.3: PMTCT uptake and HIV rates in antenatal clinics according to health facility records

District	Number attending	% VCT	% HIV+ (of those tested)	% HIV+ counselled on feeding options	% HIV+ receiving Nevirapine during ANC visit and delivery	% HIV exposed newborns receiving NVP (hospital deliveries only)
Babati	11757	7%	3%	0%	0%	5%
Manyoni	9491	7%	8%	0%	58%	55%
Nkasi	13286	9%	5%	0%	52%	52%
Njombe	16670	15%	11%	52%	52%	52%
Kilwa	4238	4%	31%	-	100%	98%
Kahama	30477	76%	1%	21%	48%	21%

Source: Six district study conducted for this report

pregnant women in Tanzania are in need of PMTCT treatment, but just 15 percent of pregnant women who need treatment actually receive it.[42] PMTCT coverage in the six districts visited in this study was very low, as was PMTCT uptake among pregnant women. The number of women in need of treatment may be underestimated due to inadequate coverage of VCT. **(Table 2.3)**

Sexually Transmitted Infections: According to the TSPA 2006, ANC service providers routinely provide STI treatment in approximately 2 in 5 facilities.[40] Half of ANC facilities have medicines to treat each of the four main sexually transmitted infections: syphilis, gonorrhoea, chlamydia, and trichomoniasis. Private for-profit and faith-based facilities are more likely to screen women during antenatal visits for anaemia, urine protein, urine glucose, and syphilis and are also more likely to have the capacity to conduct these tests. [40]

Birth preparedness: ANC provides an opportunity to help women prepare for childbirth by providing information about pregnancy danger signs, skilled care at childbirth and healthy postnatal practices. According to the TDHS 2004-05, only half of women were informed of signs of pregnancy complications during ANC.[12] Alarmingly, even if women were informed of pregnancy complications, just eight percent of health facilities had all the medicines necessary for treatment.[40]

In addition to counselling skills, health providers are encouraged to use visual aids and client cards to help women prepare for childbirth. However, just 13 percent of health facilities assessed in the Tanzania Service Provision Assessment Survey (TSPA) had all items available for effective counselling. Many mothers interviewed in the six district survey reported that they had to buy gloves, nylon sheets, razor blades and cotton wool to be accepted in the health facilities for delivery. They also reported having purchased blankets, new clothes and special dishes for their babies. Other women reported having put money aside for emergencies. For those who opted to deliver at home, a gift in kind such as a *khanga* was prepared for the attendant at birth.

Karim Manji

New information on community level newborn care

Researchers at Tanzania's Ifakara Health Institute (IHI) with funding from Save the Children, WHO and the Bill & Melinda Gates Foundation, carried out focus group discussions and in-depth interviews about health in pregnancy and newborn care practices. These discussions included mothers, fathers, grandmothers, traditional birth attendants, care providers at reproductive and child health (RCH) clinics and on maternity wards, and village health workers in the Rombo, Moshi, Dodoma, Lindi Rural and Tandahimba districts.

Key findings about care at the community level

- Women prepared materials for childbirth and the newborn baby, and many set aside money for emergencies.
- Home deliveries were propelled by the cost and lack of availability of transport, informal payments, poor quality of care in health facilities, a lack of privacy, and a preference for familiar birth attendants.
- Hygiene was poor during home delivery.
- Despite many good essential newborn care practices, risky newborn care behaviours were observed in relation to resuscitation, drying and warming, breastfeeding, cord care, skin care, eye care and recognition of danger signs.

Needs within the community

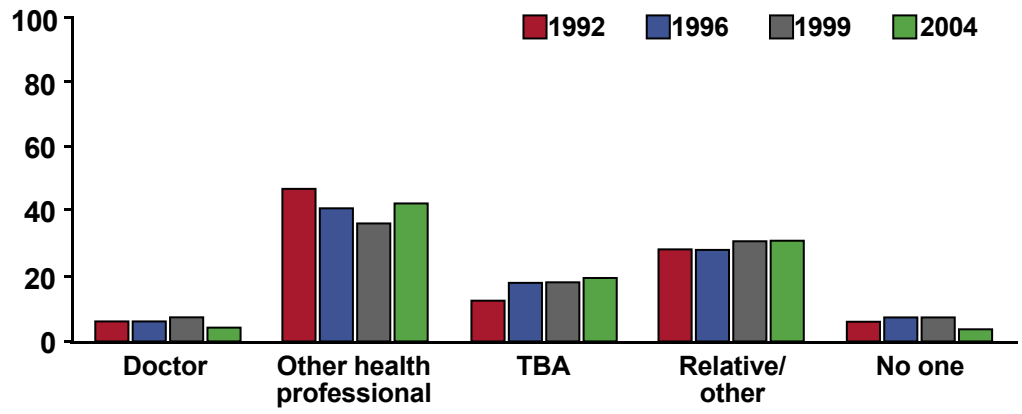
- Behaviour change communication (BCC) relating to birth plans and preparedness.
- Better provision of emergency transport.
- Improved hygiene for home births.
- Improved essential newborn care, including promotion of immediate and exclusive breastfeeding; information on danger signs and action needed for sick newborns; information on recognition of and action needed for low birth weight babies.

Source: [43]

Childbirth and intrapartum care

Forty-seven percent of babies in Tanzania are delivered at a health facility. Almost half (46 percent) of births in Tanzania are assisted by health professionals, including doctors, clinical officers, nurses, and midwives. Traditional Birth Attendants (TBAs) assist in 19 percent of deliveries. Relatives are the only ones present in 31 percent of births.[12] **(Figure 2.2)**

Figure 2.2: Trend in attendance during childbirth, 1992-2004



Source: [9-12]

Availability and quality of childbirth services

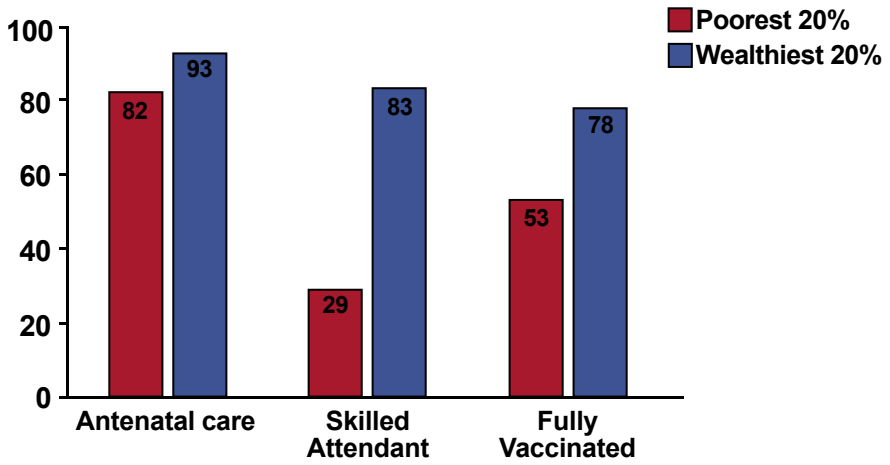
Preliminary findings from qualitative research conducted by IHI in northern, central and southern Tanzania reveal that women who give birth at home often deliver on dusty floors or banana leaves. TBAs report using a mat or a polyethylene sheet called a *lambo* as a delivery surface.[43] According to TSPA 2006, one quarter of facilities offer outreach services supporting safe home delivery, either through the support of trained TBAs or by dispatching retired midwives in the community.[40]

In one survey to assess the factors leading to home delivery, 9,000 women took part in interviews about their most recent birth. Almost all of those in contact with health facilities complained about the quality of services. Issues such as lack of money for transport and other indirect costs, the sudden onset of labour (often due to inaccurate calculation of due dates), a lack of privacy and negative staff attitudes were frequently raised as reasons for choosing home delivery.[44]

Women who deliver in health facilities often give birth in normal in-patient beds. In some cases women, are asked to use their *khanga* as bed sheets. The TSPA 2006 reported that normal delivery services were available in three-quarters of all health facilities in the country, including 96 percent of hospitals and 88 percent of health centres.[40] However, several issues remain concerning the quality of these services. One 2008 study assessed partogram use during delivery. It found that even though all midwives had received training on how to use the partogram, 50 percent of records did not include the duration of labour. The authors also reported substandard monitoring of fetal heart rates, blood pressure, temperature and pulse rates.[45]

It is well-known that the wealthiest families have better access to care. While outreach services such as antenatal care and immunisation have less inequity, childbirth services demonstrate extreme disparities. For example, skilled attendance coverage is nearly three times higher for the wealthiest families compared to the poorest. **(Figure 2.3)**

Figure 2.3: Differences in coverage of key packages by wealth quintile



Source: [12]

Emergency care

Emergency Obstetric Care (EmOC) is required to handle potentially life-threatening complications during pregnancy that affect both the mother and newborn. According to the 2006 EmOC survey of mainland Tanzania, comprehensive EmOC services were available in 65 percent of hospitals surveyed, and basic services were available in just 6 percent of surveyed health centres. None of the regions met basic EmOC requirement (four basic EmOC facilities per 500,000 people) and just nine out of 21 regions met the comprehensive EmOC requirement (one comprehensive EmOC facility per 500,000 people). Both essential drugs and supplies were lacking in several surveyed districts.[46]

Certain critical services, or signal functions, have been identified for the effective treatment of obstetric complications. This list provides a basis for training, assessing and equipping EmOC services.

Signal functions for treatment of obstetric complications	Basic EmOC	Comprehensive EmOC	Facilities* (%)
Administer parenteral antibiotics	✓	✓	60%
Administer parenteral oxytoxics	✓	✓	33%
Administer parenteral anticonvulsants	✓	✓	21%
Perform manual removal of placenta	✓	✓	53%
Perform removal of retained products	✓	✓	46%
Perform assisted (instrumental) vaginal births	✓	✓	24%
Perform safe blood transfusions		✓	36%
Perform surgery (births by caesarean section)		✓	39%

*Among those facilities offering delivery services
Source: [4, 40]

Neonatal resuscitation: A crucial part of Emergency Obstetric Care

It is difficult to predict whether or not a newborn will have difficulty breathing at birth. If simple resuscitation was available for 90 percent of the babies that needed it, at least 2,000 newborn lives would be saved per year. (See page 28 for lives saved methodology). All facilities and health providers should therefore be equipped to offer neonatal resuscitation.

The six district survey found that only two district hospitals (Kahama and Njombe) and Dareda Voluntary Hospital had an oxygen concentrator for newborn resuscitation. However, other equipment for resuscitation such as a suction machine, ambu-bags, and cannulae were present in all district hospitals. Drugs for resuscitation, such as adrenaline, were present in the majority of surveyed health facilities, but were not used because of a lack of trained health personnel.

In order to build capacity in this essential skill, neonatal resuscitation should be included in midwife training at all levels. Resuscitation has also been suggested as an additional signal function for both basic and comprehensive EmOC. Regular facility audits should ensure that equipment is available and functioning.

One important indicator of EmOC is access to caesarean section for those who need it. Access to these services varies by region, and is particularly related to the proximity of a hospital. Just 5 percent of facilities nationwide are equipped to provide caesarean sections, but 92 percent of hospitals provide this service.[40] Three percent of babies born in Tanzania are delivered by caesarean section, the same proportion estimated by the 1999 TRCHS[9,12] and below the expected level of between 5 and 15 percent. Although the acceptable case fatality rate is less than one percent, the EmOC survey reported a case fatality rate of 3.3 percent.[46]

Many obstetric and neonatal emergencies are directly linked to delays in accessing skilled care. While most Tanzanians live within walking distance to a health facility, many peripheral facilities are not equipped to handle even normal childbirth, or do not have staff available 24 hours per day as most hospitals do. Women in labour are typically transported to a health facility by means of bicycle stretchers or motorcycles, as very few families are able to afford a hired car.[43] When complications

occur at a lower level health facility, prompt referral to a higher level facility is required. Just 40 percent of facilities have a system of emergency transportation to refer mothers and babies with complications.[40]

Immediate and essential newborn care

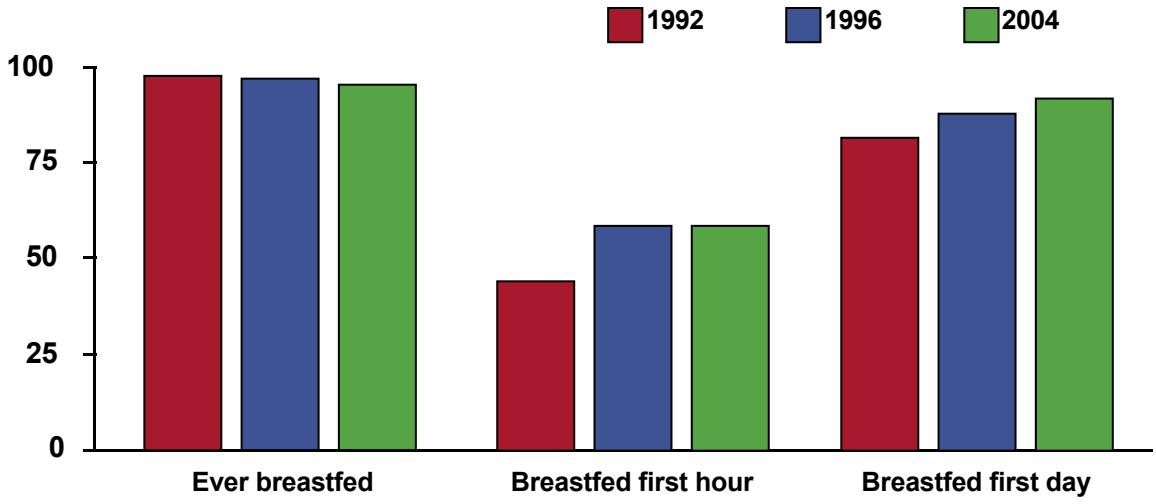
Immediately drying and wrapping the baby after delivery is an important practice to prevent hypothermia in newborns. IHI revealed that drying and warming of newborns was usually done immediately after delivery and mothers, TBAs and health workers were careful to make sure newborns did not get cold.[43]

Delaying the first bath is also recommended to prevent hypothermia. Mothers and TBAs in the IHI research reported wide variations in bathing practices, ranging from within 30 minutes of birth to waiting for 40 days, or *arobaini*, the duration of the traditional Islamic period of seclusion after birth. Cold water was reportedly used in some circumstances if the babies appeared weak or were not breathing.[43] According to the 2006 TSPA, five percent of facilities reported routine early bathing.[40]

Practices associated with cord cutting vary, but the importance of cord care is well recognised. Clean cord cutting is common for births in formal health facilities where appropriate instruments are used. TBAs reported using razor blades, knives and other local instruments to cut the cord during home births, which were rarely disinfected before cutting.[43]

Early breastfeeding is one of the most important interventions for newborn health and survival. The TDHS 2004-05 reported that 59 percent of newborns were breastfed within one hour and 92 percent within the first day. **(Figure 2.4)** However, 35 percent of mothers reported having given their newborns a pre-lacteal feed, a practice that can result in infections and decreased breastfeeding. One possible explanation for this could be the quality of health provider counselling on breastfeeding benefits and techniques, which was found to be poor.[47] There were mixed feelings about the benefits of colostrum.[43] In the six district survey, 41 percent of mothers interviewed initiated breastfeeding within the first hour of life, and 90 percent within the first day. However, 65 percent of women also gave pre-lacteal feeds, mostly consisting of water, to their newborns. Many women noted that water was given before the "real milk" came in because the baby was thought to be thirsty. Reasons provided for giving the baby water included soothing the throat, cleaning the stomach, and feelings that the breast milk was "delayed."

Figure 2.4: Trends in early breastfeeding, 1992-2004



Source: [9-12]

Kangaroo Mother Care (KMC) "Kumkumbatia mtoto kifuani"

Kangaroo Mother Care includes:

- *Kangaroo position:* skin-to-skin on the mother's chest, secured with a cloth or wrap
- *Kangaroo nutrition:* exclusive breastfeeding whenever possible
- *Kangaroo support:* the mother is the primary caregiver, and healthcare staff provide support to the mother to take care of her infant in the hospital and family support KMC practice at home

Existing methods of caring for small babies

Incubators are widely used in developed countries for the care of very small and premature babies. However, because of their high cost, many hospitals in developing do not have incubators. Where incubators are available, often they do not work due to power cuts or missing parts. The number of babies needing to use the incubator often exceeds the number of available incubators. In addition, the prolonged stay in hospital associated with incubator care is often very costly for most families, and contributes to overcrowding of the already small space in neonatal units.

Alternative method: Kangaroo Mother Care

As soon as the small baby is stable and has no complications, Kangaroo Mother Care (KMC) is initiated. KMC involves provision of warmth through skin-to-skin contact of the mother and baby's bodies. The baby is undressed except for a cap on the head, nappy and socks, and is placed upright between the mother's breasts with its head turned to one side. The baby is then tied to the mother's chest with a cloth and covered with the mother's clothes. If the mother is not available, the father or any adult can provide skin-to-skin care. Once babies are gaining weight and the parents have learned to provide KMC, they are discharged from the hospital and are seen on a weekly basis during clinic days, specifically to review the progress of the small babies.

Advantages of Kangaroo Mother Care

KMC is safe, cheap and affordable for most mothers. KMC is effective for keeping the baby warm and also enables early breastfeeding, protection from infections, early stimulation, love and bonding of the parents to the newborn baby. There is no special ward required and KMC can be practiced within the existing postnatal ward. KMC can reduce the amount of hospital space required to manage newborns and the average length of stay in the hospital.

Kangaroo Mother Care expansion

Until recently, KMC has not been routinely implemented in Tanzania. After a learning visit to Malawi's KMC sites in 2007, the MOHSW committed to expanding this method of care. MOHSW is working with development partners, such as Save the Children and WHO to raise awareness about KMC, train health professionals, and encourage implementation in hospitals and health centres providing newborn care. KMC has been introduced in the regions of Morogoro, Coast and Lindi, and will eventually be rolled out across the country. Reaching all preterm babies in Tanzania with KMC alone would save at least 5,000 newborn lives per year.*

*Estimates of newborn lives saved have been generated using the most recent mortality and cause of death data from Tanzania and the Lives Saved Tool (LiST) which is based on the lives saved modelling done for the Lancet child and neonatal survival series. A menu of interventions is linked to estimates of the effectiveness of each intervention and lives saved are calculated based on change between current and target coverage which is entered by the user. LiST is prepared by CHERG with the USAID/Health Policy Initiative and funded by the Bill & Melinda Gates Foundation.

Postnatal care

Healthy home behaviours in the postnatal period
The postnatal period is a vulnerable period for both the mother and newborn. It is an important time to establish healthy home behaviours, such as hygienic practices, breastfeeding and recognition of newborn danger signs. A period of seclusion between seven and 40 days is a common practice for mother and baby in Tanzania.[43]

This period of seclusion coincides with the time until the umbilical stump falls off, which is viewed as a particularly vulnerable period that requires parental vigilance at all times.[43] In the six district survey, two-thirds of mothers reported putting substances on the cord stump to speed healing. Coconut and baby oil was commonly used. Mothers also mentioned other substances, such as traditional herbs (*ashes of kasanza, mwidame),* charcoal, warm water, and breast milk.

Exclusive breastfeeding is an important behaviour to initiate within the first hour after birth and maintain until the newborn is six months old. The data show that 41 percent of infants below six months of age are exclusively breastfed, a marked improvement in exclusive breastfeeding from just 24 percent in 1992.[10,12] Seventy percent of infants less than two months old receive breast milk only, compared with just 14 percent of infants who are four to five months of age.

Recognition and care-seeking for danger signs is an important home behaviour that can be supported by the community. IHI found that care-seeking for neonatal illness varied according to the perceived cause of the illness. The report observed a mix of self-medication with both traditional and modern medicines, as well as use of both traditional healers and formal health care providers.[43] The six district survey conducted for this report found similar results with 83 percent of mothers reporting to health facilities, 16 percent pursuing home treatment or observing the child longer before seeking care, and just over one percent consulting traditional healers.

Routine postnatal care
Early postnatal care (PNC) is crucial in order to establish healthy home behaviours and address the large number of newborn deaths that occur in the first week of life. Large scale research is being conducted in Tanzania to determine the optimal postnatal visit protocol. Currently, three or four visits during the postnatal period have been suggested, with an emphasis on the first visit within 24 hours of birth.

Understandably, access to services can present a significant problem. Effective PNC is more likely to take place if a mother gives birth in a health facility, but even then, women and babies do not necessarily receive effective postnatal contact before discharge. While 82 percent of health facilities in Tanzania offer ANC, just 60 percent offer PNC services.[40] Mothers who give birth at home are encouraged to return to a health facility for postnatal care, which is often not feasible due to economic barriers or cultural taboos around leaving the house during the period of postnatal seclusion. In areas where seclusion practices are common, postnatal home visits by a health provider or community health worker linked to a health facility for referral purposes are required.

A large proportion of women whose last live birth occurred outside a health facility did not receive a postnatal visit (83 percent), while just 13 percent were examined within two days of giving birth.[12] Coverage varies greatly by geography. Women in the southern zone were more than three times as likely to receive early PNC compared to those in the central zone. This low PNC coverage lies in stark contrast to immunisation coverage during the same time period. For example, coverage of Bacille Calmette-Guérin vaccine for tuberculosis (BCG) – scheduled to be given at or soon after birth – is 91 percent.
This is a missed opportunity to reach many women and newborns with essential services through routine postnatal follow up.

The six district survey interviewed 157 mothers with babies aged less than six months to assess whether they came back to the health facility for a postnatal visit. **(Table 2.4)** Only six percent of mothers came back to the health facility for a check-up after delivery, and most were those who had undergone a caesarean section. Seventy one percent came after four weeks when they brought their infant for immunisation, but did not come for their own check-up. There are very little data on the content of PNC for the few women and newborns who actually receive it, but the quality of these visits is likely to be low.

Table 2.4: Timing of first postnatal visit

Timing of first postnatal visit	Frequency	Percent
Within one week	9	6%
Between 1-4 weeks	36	23%
After 4 weeks	112	71%
Total	**157**	**100%**

Source: Six district study conducted for this report

What should postnatal care include?

For all mothers –

- Assess and check for bleeding, check temperature
- Support breastfeeding, check breasts to prevent mastitis
- Manage anaemia, promote nutrition, give vitamin A supplementation, and provide insecticide treated bed nets where indicated
- Complete tetanus toxoid immunisation, if required
- Provide counselling and a range of options for family planning
- Refer for complications such as bleeding, infections, or postpartum depression
- Counsel on danger signs and home care

For all newborns –

- Assess for danger signs, measure and record weight, and check temperature and feeding
- Support optimal feeding practices, particularly exclusive breastfeeding
- Promote hygiene and good skin, eye, and cord care
- Ensure warmth by delaying the baby's first bath until after the first 24 hours, practicing skin-to-skin care, and putting a hat on the baby
- Encourage and facilitate birth registration
- Give or refer for routine immunisations
- Counsel on danger signs and home care

For small or vulnerable newborns –

- Identify the small baby and provide at least two or three extra postnatal visits
- Assess for danger signs and manage, or refer as appropriate
- Provide extra support for breastfeeding, including expressing milk and cup feeding, if needed
- Pay extra attention to warmth promotion, such as skin-to-skin care or KMC
- Ensure early identification and rapid referral of babies who are unable to breastfeed or accept expressed breast milk
- Provide extra care for babies whose mothers are HIV-positive, particularly supporting appropriate feeding choice

For mothers and/or babies with complications –

- Identify and manage or refer mothers and babies who demonstrate danger signs

Source: [4]

Extra care and case management for newborns
Availability of newborn services varies greatly across the country. Drug stocks are in short supply. As one survey reported, a group of seven essential oral treatments for child health was found in less than half of all facilities. Pre-referral drugs were similarly absent from the lower level health facilities.[48] There were no neonatal units in any of the district hospitals and health centres visited for the six district study. In the northern zone at Dereda Voluntary Hospital, there was a single room near the labour ward with ten baby cots that was being used as neonatal unit and serving the whole district. In all heath facilities visited, there was neither a health care provider trained in newborn care nor any guidelines for newborn management.

Extra care is also needed for those babies who are HIV exposed. Babies require ARV prophylaxis to prevent infection, while mothers require counselling on infant feeding options including exclusive breastfeeding. Eighty-four percent of facilities offering PMTCT services provided infant ARV prophylaxis and 94 percent provided feeding counselling to mothers.[40] Early and regular postnatal visits can improve adherence to either exclusive breastfeeding or exclusive replacement feeding, as well as proper feeding techniques and growth monitoring.[4] HIV-positive women also require ARV treatment in order to remain healthy themselves. However, this was only offered in 20 percent of PMTCT facilities.[40]

Care for low birth weight babies: Since small babies are particularly susceptible to hypothermia and infection, it is essential that they are kept in warm and hygienic conditions. Just three percent of the facilities surveyed in the 2006 TSPA had a warming station in the labour ward.[40] The six district survey found that Babati, Njombe, and Kinyonga District Hospitals had a small room near the labour ward for preterm neonates, although Babati District Hospital only had one bed and a heater that did not function properly. In Njombe, there were two baby cots and one heater. Other equipment was not found. In Kinyonga, the preterm room had two beds and four tube lights that were used as heat sources. None of the staff managing these rooms were trained in the management of preterm babies and guidelines for management of premature babies were not readily available.

Almost all (92 percent) of facilities allowed the newborn to stay with the mother in the postnatal ward, but there was no separate space for mothers with small babies.[40] It was found that prolonged skin-to-skin contact between the mother and baby, or Kangaroo Mother Care (KMC), was promoted in some facilities but many health staff were not aware of this method. Similarly, 13 percent of interviewed mothers reported knowledge of KMC, although they could not explain the method. Charcoal cookers were used for warmth in Mpara dispensary and Njombe mjini health centre, which is a dangerous practice both due to the lack of temperature control as well as the risk of carbon monoxide poisoning.

Case management of newborn infection: There is little data on case management of illness during the first month of life. However, the TDHS 2004-05 reports that just 52 percent of children less than six months old were taken to a health care provider for a cough accompanied by short, rapid breathing and/or fever. The Integrated Management of Childhood Illness (IMCI) programme, introduced in Tanzania in 1995, is one of the main programmes to improve care provided to sick children. The IMCI algorithm was recently adapted to include neonates in the first week of life.

Michael Bisceglie/Save the Children

Integrated Management of Childhood Illness (IMCI)

In 1996 Tanzania adopted the Integrated Management of Childhood Illness (IMCI) approach for reduction of childhood morbidity and mortality. IMCI was piloted in 1997 in sentinel districts with nation-wide scale up of IMCI starting in 2000. Currently all districts in Tanzania are implementing IMCI at different levels of coverage. IMCI has been found to be an effective delivery strategy for various child survival interventions. Management of diarrhoeal disease has been improved to include low osmolarity oral rehydration solution (ORS) and zinc supplementation. A comprehensive set of training materials exist in both Swahili and English.

Tanzania was a part of a multi–country IMCI evaluation which generated encouraging results, though issues around quality of care and supervision were noted. The evaluation showed that IMCI was associated with 13% lower child mortality in pilot districts after two years. The evaluation also estimated the cost of taking care of one sick child to be US$11.19 in IMCI and US$16.09 in non-IMCI districts. These include infants between two weeks and two months old.[49] At the time of the evaluation, neonatal case management was not included in IMCI. The IMCI clinical guidelines have since been updated to include the newborn, HIV/AIDS and improved nutrition and plans for refresher training are underway, including training district focal persons for IMCI and regional focal persons for coordination of IMCI interventions.

An estimated 15,000 newborn lives could be saved each year if case management of neonatal illness including oral antibiotics reached 90 percent of babies that need it. (See page 28)

Conclusion

Maternal and newborn health services are provided most effectively through a continuum of care, which links health service packages across the lifecycle and the level of care provided. General entry of pregnant women into the formal health system through antenatal care is high. However, the quality of care during this time is below the expected level and many women do not return to a health facility to give birth. Both basic and comprehensive emergency obstetric care is below minimum standards and capacity for neonatal resuscitation is low. While an increase in staff trained in IMCI and KMC shows positive signs of improved care for sick newborns, routine postnatal care is very low. This is especially true in the first week of life, despite the fact that this is an important time to solidify healthy home behaviours, such as breastfeeding, and provide family planning information and counselling on newborn danger signs.

Jonathan Hubschman/Save the Children

CHAPTER 3:
NEWBORNS IN THE CONTEXT OF THE TANZANIAN HEALTH CARE SYSTEM

Structure of the Tanzanian health system relating to newborn health

The national legal and policy environment has a direct impact upon how services are provided to enhance maternal, newborn and child health. Tanzania has a number of important policies and strategies to guide decision-making regarding newborn care, most notably the recently launched Road Map/One Plan for MNCH.[5] However, constraints such as the current human resource crisis and a lack of emphasis on early postnatal care limit the effectiveness of such strategies to strengthen Tanzania's health system in order to cater to its most vulnerable citizens.

The Ministry of Health and Social Welfare (MOHSW) of Tanzania addresses matters related to the health of the population. Its current structure was determined in 1997. The government is the main provider of health services, but parastatal, religious organisations and private-for-profit providers also play a role. The government operates the majority (around 59 percent) of healthcare facilities in the country, but a significant number of health services are offered by non-governmental organisations (NGOs) and faith-based organisations (FBOs). The role of the government is gradually changing to that of policy maker, facilitator, evaluator and regulator of non-governmental services. Local government authorities implement the district level as part of an ongoing decentralisation process.

The MOHSW is led by the Minister of Health, followed by a Deputy Minister of Health, a Permanent Secretary and a Chief Medical Officer. A number of units attach to the organisational chart at different levels. The three main operational departments are: 1) Preventive Health Services Division; 2) Hospital Health Services Division; and, 3) Human Resource Development Division. Newborn health services are located within the Reproductive and Child Health Section, which fall under the Preventive Health Services Division. Hospital, private and NGO actions are coordinated by the Hospital Services Division. A Traditional Medicine Section works with traditional healers, including their registration as health providers.

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The Reproductive and Child Health Section has the responsibility to:

- Formulate policy guidelines and manuals for maternal, child, adolescent and community health services;
- Coordinate, monitor and evaluate maternal, child, adolescent and community-based health care, including the expanded program on immunisation, school health, community-based health care and family planning;
- Serve as a liaison with other ministries and relevant organisations dealing with reproductive health and nutrition;
- Review the list of standard essential equipment and supplies for provision of quality reproductive health care.

Tanzania has become a leader in Africa for newborn health planning at the national level through the installation of a Desk Officer for Newborn Health within the Reproductive and Child Health Section of the Ministry of Health and Social Welfare. This is a government post that has been partially supported by Saving Newborn Lives/Save the Children. The position coordinates newborn health planning and activities and has a particularly important role in the MNCH Road Map/One Plan, adaptation of IMCI to include the newborn component as well as national roll-out of KMC.

The central MOHSW operates in regions and districts through Regional Health Management Teams (RHMT), Council Health Management Teams (CHMT), District Health Boards and Facility Health Boards. The RHMTs are responsible for supporting and supervising health districts. A typical RHMT is comprised of six to seven individuals, including a Regional Medical Officer, a Regional Nursing Officer and a Regional Health Secretariat.

The CHMTs are administrative units that are responsible for public health. They have a decentralised budget and are responsible for paying health workers' salaries at the district level. Each CHMT is required to produce an annual work plan for health. The budget is provided mainly by the Prime Minister's Office Regional Administration and Local Government (PMO-RALG). District-level health staff are responsible both for supportive supervision visits and drug supplies, although these aspects of their work have not been prioritised.[48]

District level responsibilities for MNCH according to the Road Map/One Plan

- Disseminate MNCH Strategic Plan to all stakeholders in the District Council, including NGOs, FBOs and other private sector partners;
- Incorporate MNCH activities into the Comprehensive Council Health Plan (CCHP);
- Coordinate and supervise all MNCH activities planned and implemented by all stakeholders in the district;
- Provide technical support for quality MNCH services;
- Develop capacity for facility and community MNCH interventions;
- Follow-up maternal, perinatal, neonatal and child death reviews at health facilities (dispensaries, health centres, district hospitals, regional hospitals, as well as voluntary agencies and private hospitals) and community levels;
- Work with CHMTs and District Health Boards to ensure adequate resource allocation for implementation and monitoring of the MNCH interventions.

Source: [5]

Health Facilities

Geographically, health facilities in Tanzania are relatively accessible. About three-quarters of the population live within five kilometres from a first-level facility, and 90 percent are within 10 kilometres.[8] However, there is a significant difference between rural and urban access to facilities, which results in health disparities. One recent IHI study from southern Tanzania found that children living over five kilometres from a health facility had lower vaccine coverage, fewer ITNs, higher rates of anaemia, poorer care-seeking and higher infant mortality than for those living closer to a facility.[48] In 2004, there were a total of 5,379 health facilities in the country, including 219 hospitals, 481 health centres and 4,679 dispensaries. **(Table 3.1)**

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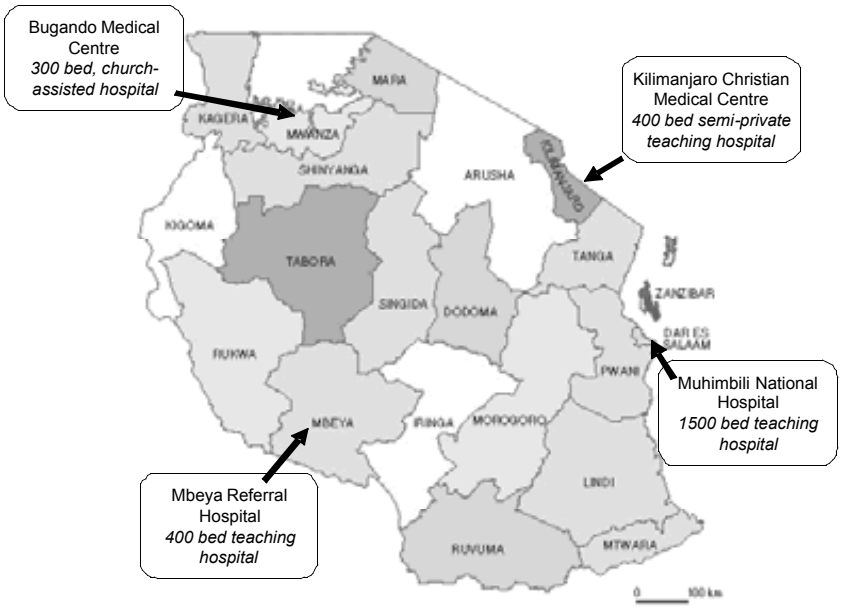
Table 3.1 Distribution of health facilities by region and ownership

Region	HOSPITALS		HEALTH CENTRES		DISPENSARIES		Total
	Govern-ment	Non-gov-ernment	Govern-ment	Non-gov-ernment	Govern-ment	Non-gov-ernment	
Arusha	3	9	16	13	89	107	**237**
Coast	5	2	15	2	128	54	**206**
Dar es salaam	4	23	5	18	71	269	**390**
Dodoma	5	2	18	3	185	55	**268**
Iringa	5	10	19	15	190	92	**331**
Kagera	2	11	17	13	142	113	**298**
Kigoma	3	2	13	5	164	32	**219**
Kilimanjaro	5	13	21	11	149	143	**282**
Lindi	5	4	3	2	135	19	**178**
Manyara	4	2	4	7	75	48	**140**
Mara	3	4	13	7	131	57	**215**
Mbeya	6	10	20	8	227	75	**351**
Morogoro	5	7	21	10	159	90	**292**
Mtwara	4	1	12	2	128	24	**171**
Mwanza	6	7	32	7	243	93	**388**
Rukwa	2	1	20	8	156	28	**215**
Ruvuma	3	5	8	3	127	47	**193**
Shinyanga	5	3	23	3	108	108	**250**
Singida	3	6	11	3	89	46	**158**
Tabora	4	3	12	3	156	51	**229**
Tanga	5	7	18	7	186	45	**268**
Total	**87**	**132**	**331**	**150**	**3038**	**1641**	**5379**

Source: [8]

The Tanzanian Ministry of Health has a pyramidal structure. The nation's four tertiary or consultant facilities provide the highest level of referral health care. They also serve as teaching facilities for medical and paramedical personnel. There are four Neonatal Special Care Units located in the four tertiary care facilities. **(Figure 3.1)**

Figure 3.1: Locations of Neonatal Special Care Units



Regional hospitals provide specialist care in various fields and refer to one of the country's consultant hospitals. Every region is supposed to have one of these hospitals.

The next level is the district hospital, which provides specialised and non-specialised ambulatory and in-patient care, as well as preventive services. All health service levels from the district hospital upwards are mandated to provide comprehensive emergency obstetric care. In some districts, NGOs and FBOs manage these facilities, making them district designated hospitals.

Survey of three district hospitals in Dar es Salaam

A cross-sectional survey was conducted in September 2007 at three municipal hospitals, Amana, Mwananyamala and Temeke in Dar es Salaam.

Approximately 42 babies per day were delivered at Mwananyamala hospital, 45 at Temeke and 66 at Amana. Despite this relatively large number of births, Amana and Mwananyamala hospitals did not have medical personnel trained specifically in newborn care; Temeke hospital had just one nursing officer who was trained in this field. There was only one cot in the labour ward at Amana and Temeke hospitals, and only one cot kept in the postnatal ward at Mwananyamala hospital. These cots were used to keep sick newborns awaiting referral to Muhimbili National Hospital for management.

Any deaths recorded were those that occurred immediately after birth or just after arrival at the health facility while patients awaited transferral to MNH. There was no record of deaths that occurred at peripheral health centres, dispensaries or at home. Cause of death information was incomplete and differed from the national figures.

All three hospitals did have neonatal resuscitation equipment. However, many other supplies, equipment and general infrastructure were lacking. There was no source of heat and no reliable alternative source of electricity at any of the three hospitals. Temeke and Mwananyamala did not have working clocks. Temeke did not have a functioning weighing scale, and Mwananyamala had no hand washing station. Since Mwananyamala had no adrenaline, they had to take it from the pharmacy during emergencies. Only Mwananyamala had guidelines on hand for management of sick neonates.

Health centres are staffed by clinical officers, nurses and midwives, offering in-patient and ambulatory care services to approximately 50,000 people. These services often cover one administrative division. Health centres are equipped with approximately 20 beds and include delivery facilities. Although they can provide intravenous infusion and conduct minor surgical procedures, they do not provide blood transfusion or major surgeries such as caesarean sections. They are therefore classified as providers of basic obstetric services. Only 6 percent of health centres are actually equipped to provide these basic services.[46]

Dispensary services are designed to serve approximately 6,000-10,000 people. Ideally, they have up to five staff: a clinical officer, two MCH aides, an administrator and a janitor. Most dispensaries, however, do not have a full contingent of staff. In some cases, they are staffed by personnel with no clinical training. Remote rural dispensaries are more likely to be understaffed than their counterparts in urban areas. A dispensary usually has a labour room, but just 7 percent of dispensaries were found to have the appropriate infrastructure for delivery.[40] These facilities are often open during the day from Monday through Friday.

The village health service offers the level of care closest to the community. Two village health workers (VHW) are chosen by the village government to function in the village health post, although they often work from their homes. One VHW is tasked with maternal and child health and the other with

environmental sanitation. The national health policy requires that the village government provides some type of compensation (either monetary or in-kind) to the workers. Many previous VHWs are now community IMCI (C-IMCI) resource people.

Human Resources

Like the majority of sub-Saharan African countries, Tanzania suffers from a human resource crisis in the health sector. There is a critical shortage of skilled health providers in Tanzania, despite the existence of five medical schools, with paediatrics as a recognised post-graduate specialty. Seventy-four percent of all health workers are employed by the government.[8] There are no more than five qualified neonatologists in Tanzania. Overall, paediatricians and neonatologists are found only in higher level health facilities. Newborn care is part of the curriculum and responsibility of midwives and physicians, who receive initial training in the theory and practice of newborn care. Closer to the community, MCH aides and community-based workers share responsibilities for the general assessment of well-being of neonates in other settings. Even when healthcare workers are available, however, they are not always present. One recent health facility survey in southern Tanzania reported problems with staff absence; only two-thirds of all employed staff were present on the day of the survey.[48]

Nurses constitute the largest cadre of health professionals in Tanzania. The vast majority of nurses receive basic midwifery training. Prior to the late 1990s, an optional (but almost always accepted) year of midwifery studies followed the completion of nursing studies. Earlier education pathways, which admit students for a two or three-year program of enrolled nursing study (with an optional one-year midwifery) study following primary school (certificate schools) have been phased out in favour of diploma schools. Following completion of the secondary level, diploma schools admit students to a four-year integrated program of registered nursing and midwifery studies. There are more than 40 certificate and diploma schools in Tanzania.

The Muhimbili National Hospital School of Midwifery provides a two-year (four-semester) certificate programme specialising in midwifery. The school admits and graduates approximately 40 students each year. Graduates are licensed by the MOHSW with the same mechanism used for nurses, but with special recognition of their skills. Graduates of the advanced diploma school may wish to receive a baccalaureate degree in nursing (BSN). There are four BSN degree granting programs in Tanzania.

Nurses and nurse midwives receive instruction in basic neonatal life support (suctioning, provision of supplementary oxygen), but do not receive instruction in advanced neonatal resuscitation (e.g. insertion of an endotracheal tube), which is performed only by doctors. In-service training and/or updating skills do not necessarily occur once a diploma has been awarded.

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Newborn health within existing national plans

The current Government of Tanzania has a strong focus on improving public health in Tanzania. Efforts to meet MDG 4 and 5 have political backing at the highest level. Ideally, the government seeks to support the country's existing health programmes, rather than establishing new health care systems and structures. The government's greatest priority is strengthening the primary health care system, from community-based interventions to the first referral level facility at which emergency obstetric care is available. This implies a focus on the district level, where critical planning, budgeting and implementation decisions are made. A number of strategies and national plans reflect an overall emphasis on reaching out to the poorest communities and a commitment to providing equitable access to health care.

National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania (2008-2015)

WHO has called the Road Map "an opportunity [for] all partners and programmes to focus on two major levels of care where the health sector can make a difference, namely: the health service delivery and community levels. The recognition of the inseparable dyad of the mother and newborn allows all partners to focus special attention on the availability of emergency obstetric and neonatal care, skilled attendance during pregnancy and childbirth, and the essential equipment and supplies that will save the lives of women and newborns at all levels."[50] Tanzania's Road Map has exceeded this vision by adding child health to the plan, which guides all stakeholders for maternal, newborn and child health (MNCH). The Road Map is in line with the National Health Policy and existing MNCH guidelines, standards and protocols.

The Road Map/One Plan outlines a clear strategic plan to address MNCH issues along the continuum of care, including the following components:

- Advocacy and resource mobilisation
- Health system strengthening and capacity building
- Community mobilisation and participation
- Fostering partnership and accountability
- Promotion of healthy behaviours

The launch of the Road Map/One Plan took place in April 2008, together with the launch of the *Deliver Now for Women and Children* campaign, which is part of a global effort to accelerate the achievement of the MDGs by promoting high-level political commitment, performance-based financing and improved donor coordination. The interventions and packages included in the Road Map/One Plan implementation framework are currently being costed.

National Strategy for Growth and Reduction of Poverty

The implementation of the National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA) is essential in order to meet Vision 2025, which seeks to lay a solid foundation for a competitive and dynamic economy. The NSGRP prioritises the following:

- Strengthening the routine data collection system to generate and disseminate indicators for measuring health service delivery;
- Improving access to health services through adequate and affordable transport systems;
- Improving quality of care through the fee exemption and waiver system;
- Increasing the number of skilled health care providers;
- Improving governance and accountability mechanisms.

National Health Policy and Health Sector Strategic Plan 2 (HSSP2)

The National Health Policy is the guiding plan that outlines the National Package of Essential Reproductive and Child Health interventions. The newborn care component, however, has not been fully realised. This is partially due to the lack of integration between safe motherhood and child health programs such as IMCI. Efforts are being made to redress this, notably through the new national Road Map.

Teri Pengilley/Save the Children

The HSSP2 grew out of the first major health sector strategic plan, the Health Sector Program of Work (POW) and an agreement with development partners that support to the health sector would take place in the framework of a Sector Wide

Approach (SWAP). The HSSP2 aims to address deficiencies in the health sector and achieving specific goals and targets in health as set out in the MDGs and the NSGRP/MKUKUTA.

Financing for newborn health

According to the International Monetary Fund (IMF), the proportion of central government expenditure allocated to health is 6 percent.[2] Tanzania's total health sector budget 2004 was US $176 million (excluding foreign funds). Substantial donor funding augments the government's allocation. One 2006 analysis places the percentage of official development assistance for maternal and newborn health at US $12.30 per live birth.[51]

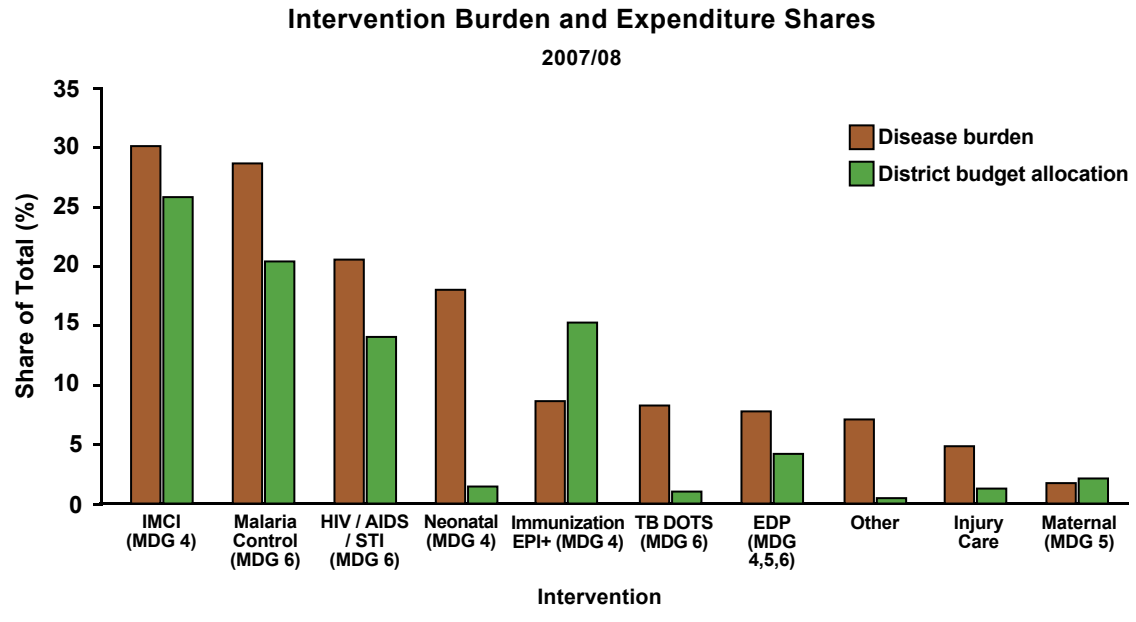
Most large development partners that work in the health sector now channel part or all of their financing through a pooled fund (known as the "basket fund"), which is disbursed as block grants to district councils. It is therefore difficult to allocate specific funding solely for newborn health. Contributions to the Health Basket Fund have played a particularly important role in strengthening council health services.

District planning and financing

District health services are financed through block grants provided by PMO-RALG and by grants financed by the basket funds. CCHPs and budgets are therefore an important source of support for neonatal health services. District health councils are provided with guidelines on how to plan, budget and report on both activities and expenditures. The relationship between national priority programs and district plans has become more important with increasing decentralization and budget authority at the local government level.

The Tanzania Essential Health Interventions Project (TEHIP) has tested innovations in planning, priority setting and resource allocation at the district level and strengthened health system capacity. TEHIP and the MOHSW have created district level profiles for use by the CHMT, which simplify complex information on spending and the local burden of disease. In 2007, the Ministry of Finance incorporated the District Health Expenditure Mapping Tool into its budgeting process, which all districts are now mandated to use. **(Figure 3.2)** Initially, the tool prioritised HIV/AIDS, malaria, maternal health and IMCI, but as more data are made available, newborn health indicators can be incorporated into the planning process.

Figure 3.2: Example of district health burden and expenditure mapping



Source: [52]

Performance-based financing
Performance-based financing offers incentives linked to service delivery in order to improve quality of care. Though first developed in the 1970s, performance-based financing is increasingly being used in development initiatives.[53] It has been very successful in other countries, such as Rwanda, where the approach is now being implemented nationwide. Tanzania has received performance-based payments from the GAVI Alliance for achievements in increasing immunisation rates. A recent review of performance-based financing linked to the district level basket fund has been reviewed and though long-term effects are not yet apparent, this mechanism has lead to increased use of health facilities and improved service quality.

Role of development partners and civil society

Development partners, international organisations, NGOs, FBOs, and professional associations all have an important role in newborn health. For most international organisations, the scope of work is identified in consultation with the government of Tanzania. Newborn care is covered indirectly through IMCI and reproductive and child health programs, as well as within the basket fund. However, there is often no specific allocation for newborn health.

Professional associations: Tanzania's health professionals are represented by a wide range of associations, including the Association of Gynaecologists and Obstetricians of Tanzania (AGOTA), Paediatric Association of Tanzania (PAT), Tanzania Midwives Association (TAMA), Tanzania Registered Nurses Association (TARENA), Medical Women Association of Tanzania (MEWATA), Medical Association of Tanzania (MAT), and Clinical Officers Association of Tanzania (COATA).

Health Professionals' Commitment to MNCH

In November 2007, representatives of health care professionals associations (HCPA) from five African countries met in Malawi to discuss their role in helping attain MDGs 4 and 5. Tanzania's action plan clearly outlined priority areas and focus, as well as feasible actions to maximise HCPAs' contributions to the development and implementation of MNCH programs and policies, with the following commitments:

Strengthen associations:

- Convene sensitisation meetings among secretariats of the HCPAs in order to orient them on the need for partnership to accelerate the reduction of MNC deaths
- Inform the MOHSW about the importance of partnership among HCPAs in accelerating achievement of MDGs 4 and 5
- Build capacity in advocacy and lobbying skills among secretariat members of HCPAs
- Organise a training workshop on advocacy skills in collaboration with Partnership for Maternal, Newborn and Child Health (PMNCH) and international organisations

Strengthen community involvement and participation:

- Perform an audit toward quality improvement of MNCH on selected districts with high mortality
- Organise sensitisation meetings with the local government leaders and community leaders, religious leaders, traditional birth attendants and NGOs operating in the community
- Encourage local government to bring together ALL reproductive health stakeholders operating in their locations

Strengthen quality of maternal, newborn and child care:

- Get involved in developing and updating training manuals for in-service training for various cadres
- Educate other health care providers on customer service
- Train more health care providers in all cadres
- Advocate for improving remuneration, especially to health professionals in remote facilities to increase equitable service provision

Source: [54]

Jonathan Hubschman/Save the Children

Bilateral partners: The governments of Denmark, Germany, Ireland, Sweden and the United Kingdom are among the contributors to the health sector basket fund, which finances health activities at the district level. The United States Agency for International Development (USAID) supports procurement of contraceptives, social marketing, capacity building and quality improvement. The governments of Germany and the United Kingdom support reproductive health in areas of adolescent reproductive health, capacity building in the prevention of sexually transmitted infections, safe motherhood and family planning. In 2007, Canada launched the Catalytic Initiative for newborn and child health.

United Nations partners: Since January 2007, Tanzania has been piloting a 'One UN' reform initiative, which prioritises collaboration and coordination among the 17 UN agencies present in Tanzania. It also focuses on external collaboration with government, civil society, private sector and development partners.[55] MNCH comprises one of the initiative's strategic objectives and activities are guided by the MOHSW.

Conclusion

Tanzania's policy environment is favourable to make great gains for newborn health. There is a strong commitment from the highest level of government for MNCH, and there is increasing collaboration among development partners, both internally and with each other. The Road Map/One Plan provides a solid framework to strengthen MNCH services and the health system overall. The decentralised system in Tanzania enables decisions to be made closer to the communities where care is provided. However, district and community stakeholders must be sensitised to newborn health issues in order for them to become a greater priority at this level. There are a number of creative solutions to address the ongoing human resource crisis, but these must be implemented and supported at district level in order to succeed.

Tammy Schroeder

CHAPTER 4:
STRENGTHS, CHALLENGES AND OPPORTUNITIES FOR NEWBORN HEALTH

Strengths of existing structures for newborn care in Tanzania

In recent years, Tanzanian stakeholders at all levels have increasingly focused on newborn health and MNCH and their integration along a continuum of care. The current political and health environment is positive in many respects. However, there are a number of gaps in scientific knowledge, health policy, and within existing programs for newborn health. This chapter examines these strengths and challenges and presents some solutions for addressing major gaps.

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Areas of strength for newborn health care provision in Tanzania

- There is strong political commitment, evidenced by the creation of the national Road Map/One Plan; ongoing costing and time mapping of the plan
- Development partners are optimistic about the progress for MNCH over the past five years
- The importance of newborn health has been established with a national neonatal programme officer within RCHS
- Care during the first week of life has been incorporated into IMCI
- Quality care for low birth weight babies is being improved through KMC pilot sites
- Key infrastructure is available, with potential for improvement
- There is increasing district-level management and planning capacity
- There is high coverage of key outreach interventions, such as antenatal care and vaccinations, which point to multiple interactions with the formal health system
- Gaps, particularly at the household and community level, have been identified and solutions are being sought

Gaps and missed opportunities for newborn health

While there are a number of strengths to build upon, key gaps remain. These include larger health systems and human resources issues, as well as important missed opportunities along the continuum of care. The following table identifies the major challenges, underlying causes, and strategies identified for addressing these gaps.

Gap	Underlying causes	Strategies
Health System and Human Resources		
Lack of health care providers trained in newborn care and midwifery	o Inadequate number of trained health care providers o Low payment o Lack of incentives to work in rural settings	o Train and enrol qualified health workers o Increase health worker salaries and non-financial incentives o Consider hardship allowances for rural postings
Lack of neonatal units in District hospitals	o Newborn care not a priority o Lack of space o Lack of funding for essential equipment o Lack of maintenance for existing equipment	o Prioritise newborn care in annual district health plan o Link district hospitals with and without neonatal units so that the hospitals with neonatal units can consult on how to set up the unit
Lack of reliable referral system between facilities	o Lack of ambulances o Lack of fuel o Distance between facilities	o MOHSW to review referral system in every district and make recommendations for improvement o DMO to ensure constant supply of fuel for vehicles o MOHSW to support remote health facilities to perform all eight functions of EmOC
Poor care-seeking and follow-up between households and health facilities	o Lack of communication between community and whealth facilities o Perceived poor quality of services o Cultural beliefs around postnatal seclusion	o Strengthen C-IMCI to initiate, reinforce and sustain healthy household practices o Further empower VHW as a liaison between the formal health sector and the community o Train CHW cadre on routine home visits and referral; provide supportive supervision
Monitoring & Evaluation		
Poor recording and collection of newborn data, including variation in quality and methodology between DMO data and other data collection efforts (e.g. THDS, DSS, facility data)	o Poor recording system o Lack of trained personnel in HMIS o HMIS books lack sections for important entries o Most deaths occurring at home go unrecorded	o Frequently review and audit HMIS quality o Train health care providers in HMIS, and in filling out neonatal death certificates o MOHSW to conduct large scale verbal autopsy at community level o Provide training and allowances to village/ street leaders for proper recording of birth and death occurring at home
Data are not widely disseminated or used for decision-making	o Lack of trained personnel o Lack of knowledge on how to use data for quality improvement	o Computerise health data at district level o Proper supervision, review, cleaning and evaluation of newborn data o Train on data analysis/computer literacy
Lack of perinatal mortality reviews	o Lack of policy o Lack of trained medical personnel o Fear of blame when assigning factors associated with cause of death	o Institutionalise perinatal mortality audits o Encourage health professionals to institute audit at their facilities in a "bottom-up" process for ownership and insurance of a no-fault system o MOHSW to support and reward facilities that regularly audit perinatal deaths
Antenatal Care		
Women do not attend antenatal care early enough or frequently enough during pregnancy	o Lack of demand due to knowledge, cultural beliefs, perceived quality of service o Lack of money for indirect costs, e.g. transport	o MOHSW to promote BCC campaign to encourage women to attend ANC early and at least four times during pregnancy o Improve quality of care provided at clinics o Financial subsidies for women
Lack of provision of health education to pregnant women during ANC visit	o Lack of guidelines/syllabus and teaching materials such as visual aids o Lack of trained personnel	o MOHSW to provide guidelines for staff and counselling information for patients o Train on counselling skills and use of job aids
Low percentage of women attending ANC received PMTCT / few health centres and dispensaries provide PMTCT services	o Lack of health personnel training on PMTCT o Lack support and equipment from DMO o Stigma and lack of confidentiality	o Pre-service and in-service training of health personnel on PMTCT package o Provide PMTCT guidelines to every health facility o Undertake regular quality monitoring o Outreach to prospective patients to mitigate stigma issues
Low coverage on use of SP as IPTp and use of ITNs	o Late ANC attendance o Shortage of "Hati Punguzo" vouchers in rural health facilities	o Conduct public health education to the community on importance of pregnant women to use SP as IPTp and ITN for malaria prevention o Review voucher scheme and assess shortages

Gap	Underlying causes	Strategies
Childbirth Care		
Delay in seeking care during labour	o Economic barriers o Lack of maternity waiting homes	o Community transport scheme for women during labour o Every district hospital to appropriate a maternity home for pregnant women referred from distant villages
Lack of proper use of partograph	o Lack of trained personnel in midwifery o Poor intrapartum supervision	o In-service training of health care providers in EmOC Supervision for proper use of partograph during labour
Lack of clean delivery	o Lack of materials like sterile gloves, antiseptic, delivery kit o Lack of trained health care personnel	o Adequate supply of delivery materials and equipment o In-service training for medical personnel in EmOC o Ensure guidelines are available and being followed
Home delivery	o Distance to facility o Poverty o Lack of demand due to lack of knowledge, cultural beliefs, perceived quality of service	o Public health education to the community and health care providers on importance of hospital deliveries o Improve quality of services at health facilities including allowing a birth companion o Train TBAs to accompany pregnant mothers to deliver at hospitals and not at home
Postnatal Care		
Lack of essential equipment and drugs for newborn care, especially resuscitation	o Lack of health care personnel trained in newborn care and resuscitation o Poor procurement procedures	o Review and disseminate newborn resuscitation guidelines o Review and strengthen pre-service and in-service training in asphyxia management and resuscitation, especially in safe motherhood training programmes o Integrate newborn resuscitation into EmOC monitoring o Implement and monitor essential supplies list for newborns
Poor quality of care for low birth weight babies	o Poor knowledge and lack of guidelines for newborn thermal care o Lack of standards for premature care	o Increase the priority of newborn care in every hospital o Provide guidelines for thermal care of newborns o Establish Kangaroo Mother Care in every facility
Inadequate pre-discharge care for babies born in the health facility	o Lack of health care personnel o Lack of guidelines for assessing newborns	o Provide staff with guidelines and checklist for assessing and discharging mothers and newborns
Routine postnatal care visits not taking place	o Lack of staff to provide preventive care and counselling o Lack of policy o Cultural beliefs in postnatal seclusion period	o Provide training for health staff on routine postnatal care and counselling o Encourage families and communities to support women to seek care if their newborn exhibits danger signs o Implement policy clearly emphasising early postnatal care visits o Provide home visits for those unable or unwilling to leave the home during the postnatal period
Lack of care-seeking and treatment for newborn infection	o Health professionals not trained in case management of newborn illness o Lack of knowledge o Cultural beliefs	o Increase speed of roll-out of refresher training for new IMCI o Use community channels to advocate for proper cord care practices o Counsel pregnant women on proper infection prevention practices during ANC visits and routine postnatal care contacts
Poor breastfeeding practices (e.g. prelacteal and mixed feeding, late initiation)	o Mothers' lack of knowledge o Poor counselling skills among health care providers	o MOHSW to use simple messages through mass media and public education on importance of early and exclusive breastfeeding o Strengthen in-service training on breastfeeding counselling o Every district hospital to practice all ten strategies of baby friendly hospital initiative (BFHI)

Priority recommendations for improving newborn health

Actions for improving care at the health facility level

Monitoring and evaluation for quality improvement

- Ensure that every birth and every death is well recorded
- Conduct weekly perinatal clinical meetings to discuss stillbirths and neonatal deaths and how they might have been avoided

Improve infrastructure and supplies

- Ensure that every district hospital has a neonatal unit
- Ensure that every health facility has at least a corner with all the necessary equipment, such as a weighing scale, suction machine, oxygen cylinder, ambu-bag, cannulae, adrenaline, 10 percent dextrose, a station for hand washing and guidelines for the management of neonates
- Ensure that all facilities have access to clean water and soap

Recruit and retain quality staff

- Implement an assessment and feedback mechanism to address staff stress and burn-out
- Increase efforts to fill vacant posts and increase capacity of existing health care workers
- Conduct orientation seminars and refresher trainings for incoming staff who will work with newborns, whether in labour or paediatric wards
- Ensure that all birth attendants are trained in resuscitation
- Provide in-service training to improve staff counselling skills

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Improve guidelines and service delivery

- Offer incentives to encourage earlier antenatal care attendance, including voucher schemes and flexible clinic hours
- Establish procedures to identify, refer or manage preterm and low birth weight babies, including designated beds for KMC
- Improve availability of guidelines for assessment and management of sick newborns
- Empower staff to provide caring service and sensitivity toward patients' needs, including sensitivity toward cultural preferences, privacy and kind treatment when seeking care

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Integrate services

- Link emergency obstetric care services with newborn care, especially resuscitation
- Ensure transport mechanisms are in place to facilitate referral
- Integrate aspects of newborn care training into existing training programmes, such as IMCI and Life Saving Skills (LSS), and increase the number of MNCH experts linked to Zonal Training Centres (ZTC)

Actions for improving care at the family and community level

- Strengthen C-IMCI to initiate, reinforce and sustain healthy household practices
- Engage in community level birth preparedness, which involves planning for delivery at a health facility
- Employ strategies for reducing the economic burden on women and their families, e.g. remove the expectation of the family to purchase birth supplies
- Conduct community sensitisation efforts in key newborn health packages, such as KMC and IMCI

- Enlist behaviour change communication strategies to reinforce recognition of danger signs and to identify harmful traditional practices
- Conduct verbal autopsy to establish the cause and context of neonatal deaths that occur in the community
- Strengthen the VHWs by ensuring appropriate remuneration and working conditions

Conclusion

Three main causes of neonatal death in Tanzania – infections, complications of preterm birth, and birth asphyxia – account for 85 percent of all deaths. There are many existing knowledge gaps regarding newborn survival. For example, little is known about neonatal morbidity and long term neonatal outcomes for those babies who survive the first month of life, but may exhibit ongoing consequences of illness and disability.

Neonatal mortality is closely linked to poverty. On average, newborn deaths in Tanzania are 67 percent higher in the poorest families compared to wealthiest. The majority of deaths occur in rural areas, and are more likely to occur at home. Advances in newborn and child survival have come more slowly in developing countries and to the poorest people within developed countries. A critical knowledge gap lies in understanding how to deliver services at the community level and effectively link homes and health facilities.

Tanzania has strong leaders at the national level who have prioritised newborn health. Decentralisation and a focus on district level management will ensure that public health interventions are linked to those who need them. With the introduction of the Road Map/One Plan, districts have an opportunity to better integrate newborn health packages into their budgets and planning.

Good health depends on more than just the health sector. Intersectoral solutions are of the utmost importance, including transport, safe water and better sanitation. Education, especially for girls and mothers, will also save lives. Raising incomes will help, but little will be achieved unless a greater effort is made to ensure that services reach those who need them most.

Maternal, newborn and child health are intimately connected. Solutions for their survival must therefore be linked. Maternal health, poor quality of antenatal care and poor immediate newborn care are the primary causes of increased neonatal deaths, but also contribute to increased incidences of morbidity in childhood.

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Existing solutions could save many newborn lives and improve the health of both mothers and older children. These include focused antenatal care, which entails birth preparedness, TT immunisation, IPTp and PMTCT for those who need it. Women should be encouraged to give birth in a facility with a skilled attendant, but they should also have access to a clean delivery and infection management at home if a facility delivery is not feasible. Complications of childbirth could be reduced by appropriate training and stronger referral support systems. Routine postnatal care remains a significant gap in Tanzania and must be supported by evidence on appropriate models of care, strong policies and guidelines, and effective supervision. Counselling and behaviour change communication will improve the health of mothers, newborns and children, by encouraging care-seeking for danger signs, hygienic practices, adequate nutrition during pregnancy and early and exclusive breastfeeding. It will also create greater demand for family planning.

Over 140 newborns die each day in Tanzania, most from preventable and treatable causes. Tanzania's future depends on the ability of these newborns to survive and thrive. This situation analysis sheds light on the current state of care and the opportunities to save lives. While better data, policy change and revised guidelines will make a difference, it is the people who truly save lives. Will you use this information to become a champion of the country's most vulnerable and precious citizens?

CHAPTER 5:
DATA FOR ACTION

Data can be powerful if used in the proper context and presented in a way that makes sense to the audience. The following zonal profiles can be used to strengthen policy, assess programmes, and rationally allocate resources and mobilise additional commitment.

Profile Notes and Sources

Births and deaths: Total population and annual births, 2002.[56] The national estimate maternal mortality ratio, (2004)[12] is used in each zonal profile. Neonatal and under-five mortality rate, 2004.[12]

Rate of progress: Neonatal and under-five mortality rates, 1992-2004.[9-12] MDG 4 target reflects a two-thirds reduction from the 1990 under-five mortality rate.[57]

Causes of neonatal death: The national population-based estimate is used in each zonal profile, modeled for the year 2006.[14]

Coverage along the continuum of care: Antenatal care (at least one visit from a skilled provider), skilled attendant at childbirth, postnatal care within two days, exclusive breastfeeding among infants less than six months, and measles vaccination, 2004.[12]

Health systems, policy and finance: Met need or demand satisfied for contraception, caesarean section, low birth weight prevalence (less than 2,500g or mother's estimation of newborn as small or very small), children with a birth certificate, care-seeking for acute respiratory infection, median duration of breastfeeding, knowledge of PMTCT (modes of transmission and prevention), 2004.[12] HIV prevalence, women aged 15-49, 2003.[36] Number of hospitals and health centres, number of nursing officers per 1,000 population, annual health budget allocation, 2006.[8] Number of EmOC facilities per 500,000 population (benchmark is 4 basic and 1 comprehensive EmOC facility per 500,000 population), percentage of facilities offering neonatal resuscitation, percentage of facilities offering postnatal care services, percentage of facilities with first line and pre-referral drugs to treat childhood illness (first-line drugs include ORS, at least one antimalarial, and at least one oral antibiotic; pre-referral drugs include: at least one first-line injectable antibiotic, at least one second-line injectable antibiotic, and intravenous solution with perfusion set), facilities charging user fees for child health services, 2006.[40]

Missed opportunities:
Antenatal care: At least one visit from a skilled provider, four or more visits, two or more doses of tetanus toxoid during pregnancy, informed of pregnancy complications, blood sample taken, intermittent preventive treatment for malaria (SP/Fansidar received during an antenatal visit), 2004.[12] Skilled attendant at childbirth, 2004.[12] Met need for emergency obstetric care (national estimate used in each zonal profile), 2005.[46]
Any breastfeeding, breastfeeding within one hour of birth and exclusive breastfeeding among infants less than 6 months, 2004.[12] Measles vaccination and all vaccinations (BCG, measles, and three doses each of DPT-HB and polio vaccine), 2004.[12]

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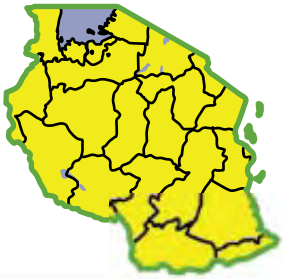
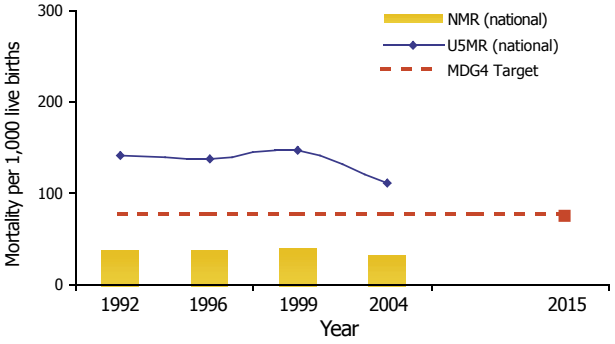
TANZANIA



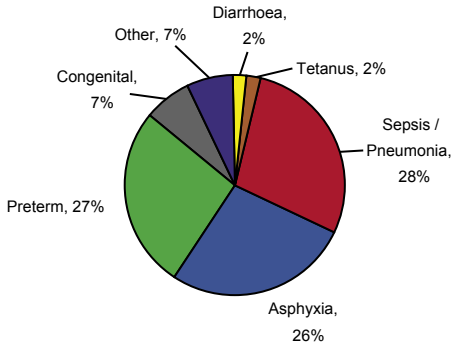
BIRTHS AND DEATHS

Total population (2002)	34,443,000
Annual births (2002)	1,589,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	9,000
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	32
Annual neonatal deaths	51,000
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	112
Annual under 5 deaths	179,000
Neonatal mortality % of under 5 mortality	29%

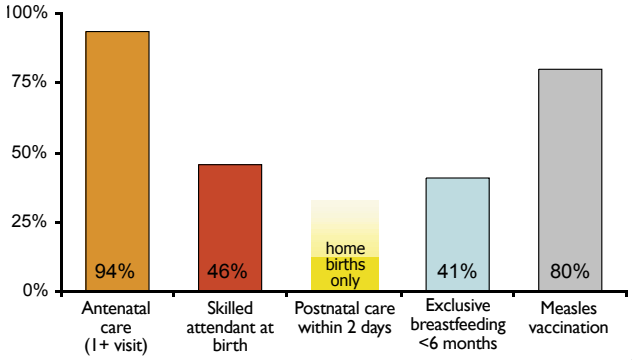
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH



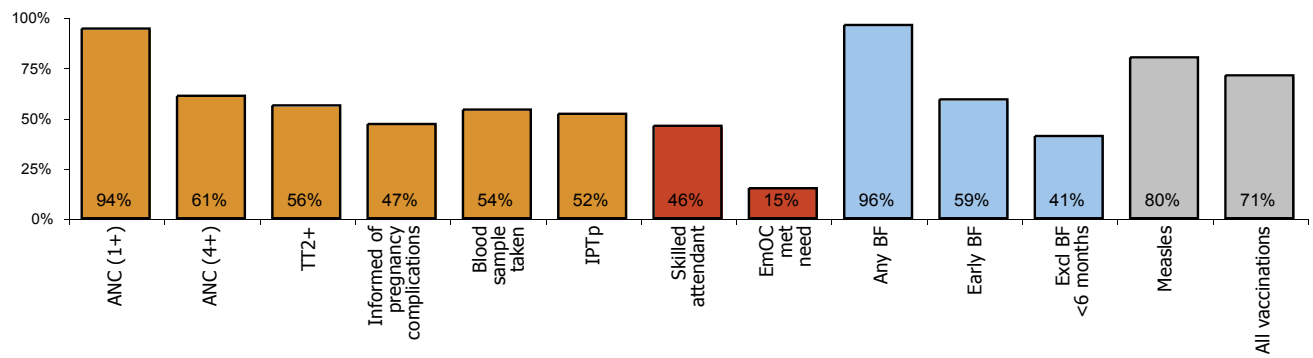
COVERAGE ALONG THE CONTINUUM OF CARE



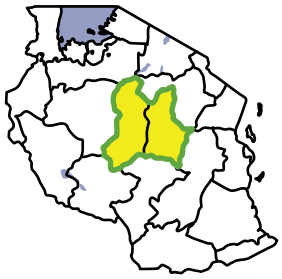
HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	59	Number of hospitals; health centres	219; 481
HIV prevalence, women 15-49 (%)	7	Nursing officers per 1,000 population	5
Knowledge of PMTCT (%)	29	EmOC facilities per 500,000 pop: basic; comprehensive	0.55; 0,55
Caesarean section (%)	3	Health facilities offering newborn respiratory support (%)	16
Low birth weight prevalence (%)	9	Health facilities offering PNC services (%)	64
Median duration exclusive breastfeeding (months)	3	Facilities with first-line drugs for child illness (%)	77
Care seeking for acute respiratory infection (%)	57	Facilities with pre-referral drugs for child illness (%)	45
Children with a birth certificate (%)	7	Annual health budget (TSH thousands)	453,000,000
Health facilities charging user fees for child services (%)	33	Per capita annual allocation (TSH thousands)	13.152

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



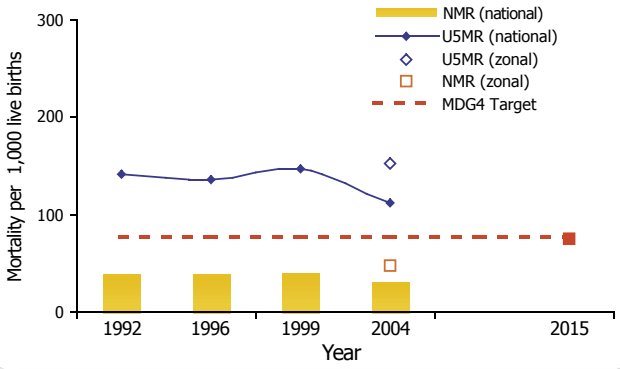
CENTRAL ZONE - DODOMA, SINGIDA



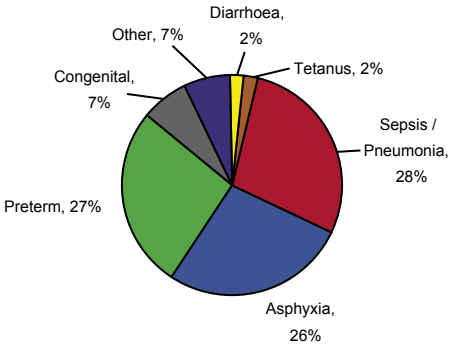
BIRTHS AND DEATHS

Total population (2002)	2,790,000
Annual births (2002)	129,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	700
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	38
Annual neonatal deaths	4,900
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	130
Annual under 5 deaths	16,800
Neonatal mortality % of under 5 mortality	29%

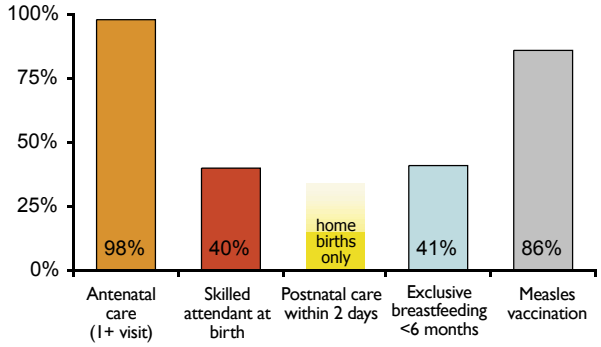
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



COVERAGE ALONG THE CONTINUUM OF CARE

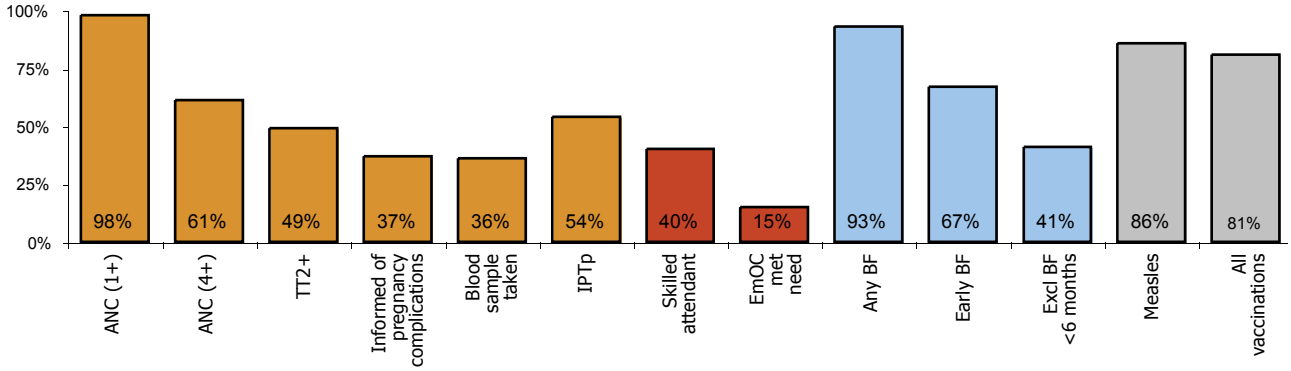


HEALTH SYSTEMS, POLICY AND FINANCE

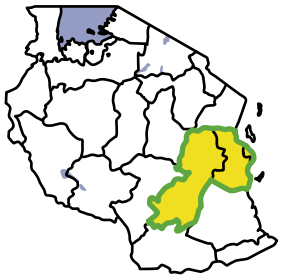
Met need for contraception (%)	46
HIV prevalence, women 15-49 (%)	4
Knowledge of PMTCT (%)	17
Caesarean section (%)	2
Low birth weight prevalence (%)	9
Median duration exclusive breastfeeding (months)	2
Care seeking for acute respiratory infection (%)	64
Children with a birth certificate (%)	7
Health facilities charging user fees for child services (%)	9

Number of hospitals; health centres	16; 35
Nursing officers per 1,000 population	8
EmOC facilities per 500,000 pop: basic; comprehensive	0.3; 0.15
Health facilities offering newborn respiratory support (%)	8
Health facilities offering PNC services (%)	78
Facilities with first-line drugs for child illness (%)	94
Facilities with pre-referral drugs for child illness (%)	21
Annual health budget (TSH thousands)	1,500,000
Per capita annual allocation (TSH thousands)	0.538

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



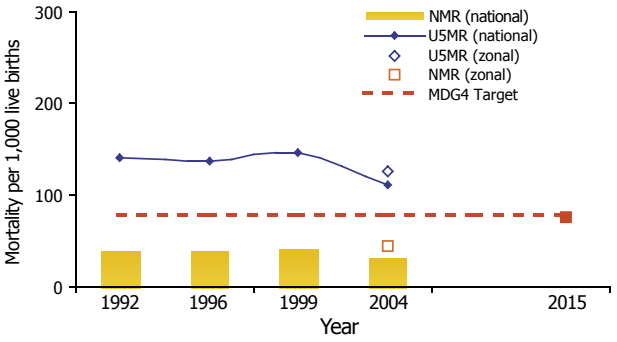
EASTERN ZONE – DAR ES SALAAM, MOROGORO, PWANI



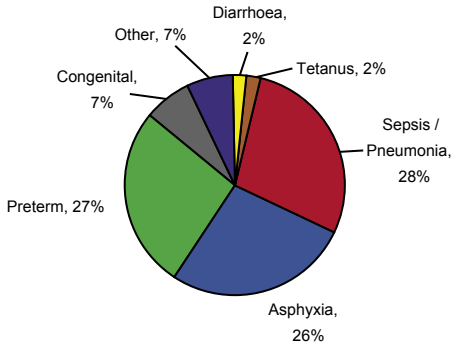
BIRTHS AND DEATHS

Total population (2002)	5,196,000
Annual births (2002)	240,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	1,400
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	44
Annual neonatal deaths	10,600
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	126
Annual under 5 deaths	30,200
Neonatal mortality % of under 5 mortality	35%

RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



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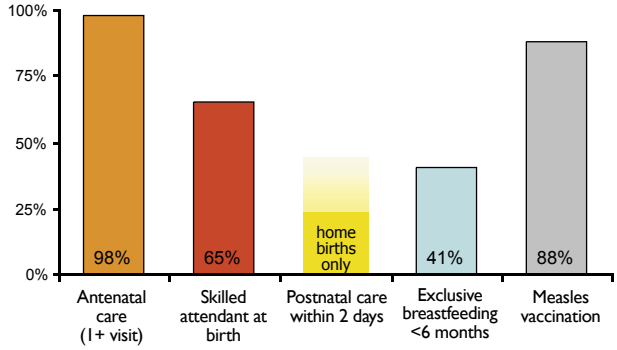
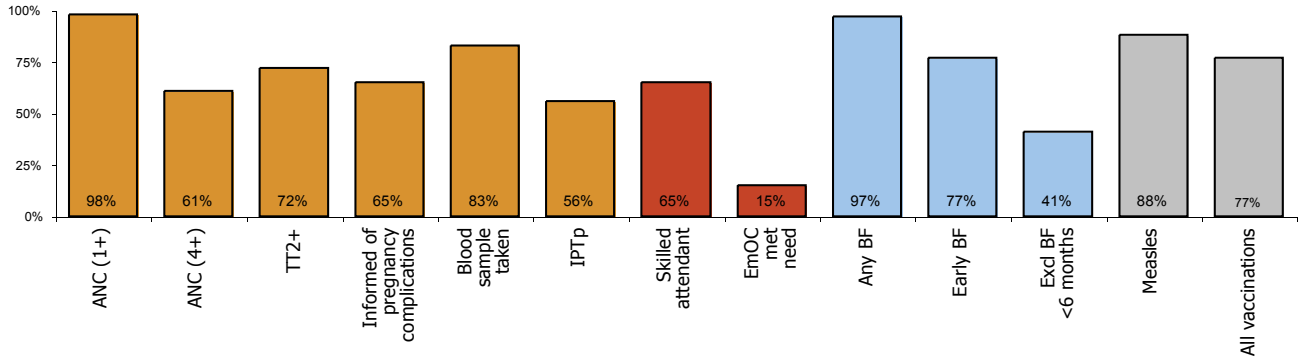


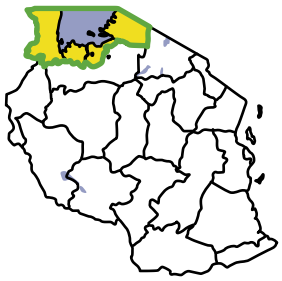
HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	72	Number of hospitals; health centres	46; 71
HIV prevalence, women 15-49 (%)	11	Nursing officers per 1,000 population	9
Knowledge of PMTCT (%)	52	EmOC facilities per 500,000 pop: basic; comprehensive	2.1; 2.1
Caesarean section (%)	7	Health facilities offering newborn respiratory support (%)	25
Low birth weight prevalence (%)	9	Health facilities offering PNC services (%)	53
Median duration exclusive breastfeeding (months)	-	Facilities with first-line drugs for child illness (%)	81
Care seeking for acute respiratory infection (%)	68	Facilities with pre-referral drugs for child illness (%)	62
Children with a birth certificate (%)	14	Annual health budget (TSH thousands)	2,800,000
Health facilities charging user fees for child services (%)	55	Per capita annual allocation (TSH thousands)	0.539

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



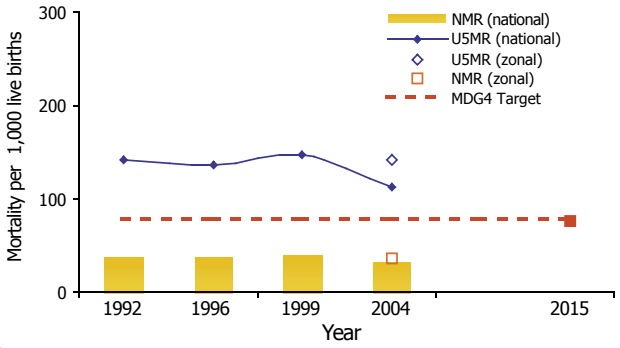
LAKE ZONE - KAGERA, MARA, MWANZA



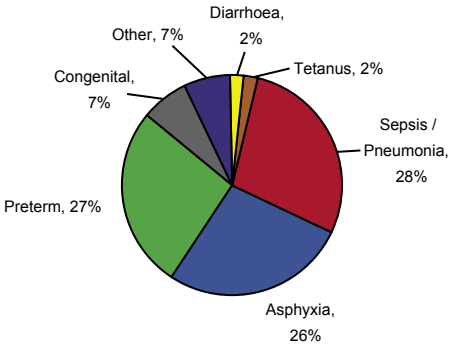
BIRTHS AND DEATHS

Total population (2002)	6,315,000
Annual births (2002)	291,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	1,700
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	36
Annual neonatal deaths	10,500
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	142
Annual under 5 deaths	41,300
Neonatal mortality % of under 5 mortality	25%

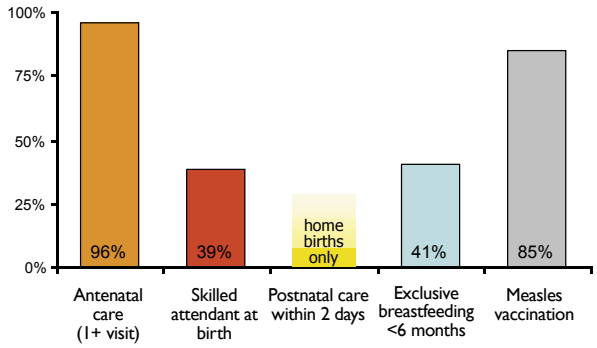
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



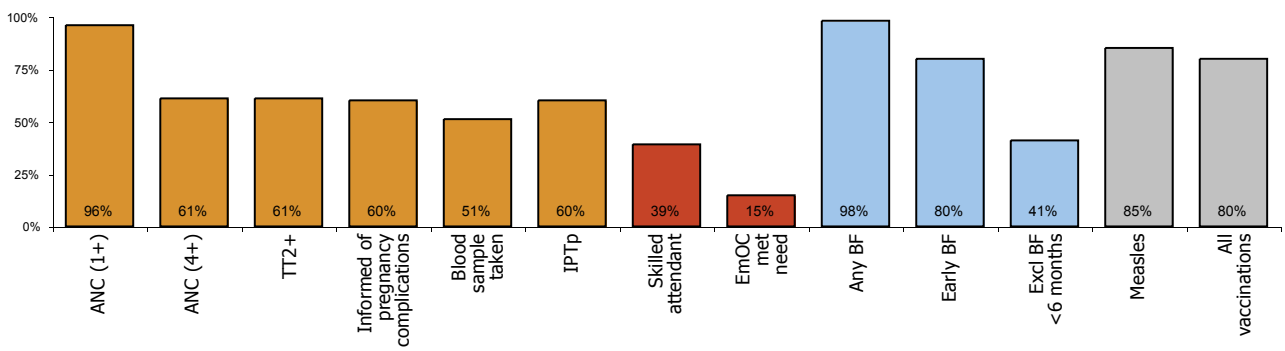
COVERAGE ALONG THE CONTINUUM OF CARE



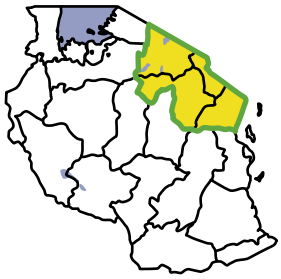
HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	35	Number of hospitals; health centres	33; 89
HIV prevalence, women 15-49 (%)	5	Nursing officers per 1,000 population	6
Knowledge of PMTCT (%)	24	EmOC facilities per 500,000 pop: basic; comprehensive	0.1; 0.1
Caesarean section (%)	4	Health facilities offering newborn respiratory support (%)	15
Low birth weight prevalence (%)	9	Health facilities offering PNC services (%)	70
Median duration exclusive breastfeeding (months)	3	Facilities with first-line drugs for child illness (%)	57
Care seeking for acute respiratory infection (%)	51	Facilities with pre-referral drugs for child illness (%)	57
Children with a birth certificate (%)	4	Annual health budget (TSH thousands)	3,550,000
Health facilities charging user fees for child services (%)	27	Per capita annual allocation (TSH thousands)	0.562

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



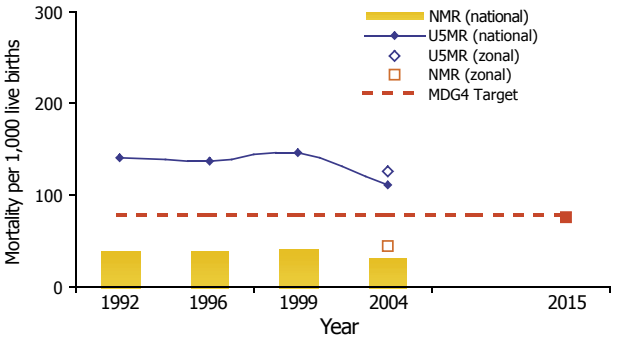
NORTHERN ZONE – ARUSHA, KILIMANJARO, MANYARA, TANGA



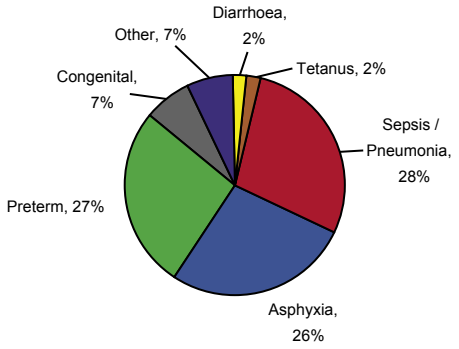
BIRTHS AND DEATHS

Total population (2002)	5,357,000
Annual births (2002)	247,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	1,400
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	26
Annual neonatal deaths	6,400
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	105
Annual under 5 deaths	26,000
Neonatal mortality % of under 5 mortality	25%

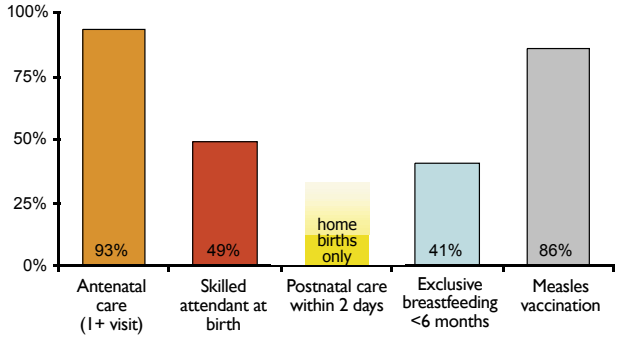
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



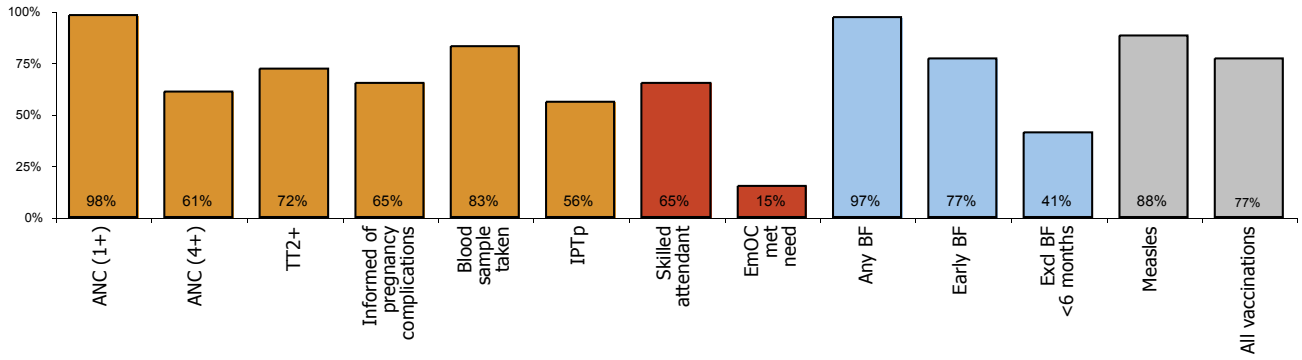
COVERAGE ALONG THE CONTINUUM OF CARE



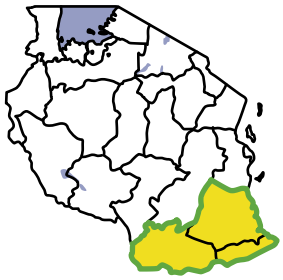
HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	69	Number of hospitals; health centres	48; 97
HIV prevalence, women 15-49 (%)	6	Nursing officers per 1,000 population	3
Knowledge of PMTCT (%)	31	EmOC facilities per 500,000 pop: basic; comprehensive	1.3; 1.3
Caesarean section (%)	4	Health facilities offering newborn respiratory support (%)	18
Low birth weight prevalence (%)	9	Health facilities offering PNC services (%)	57
Median duration exclusive breastfeeding (months)	1	Facilities with first-line drugs for child illness (%)	81
Care seeking for acute respiratory infection (%)	70	Facilities with pre-referral drugs for child illness (%)	49
Children with a birth certificate (%)	8	Annual health budget (TSH thousands)	3,000,000
Health facilities charging user fees for child services (%)	42	Per capita annual allocation (TSH thousands)	0.560

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



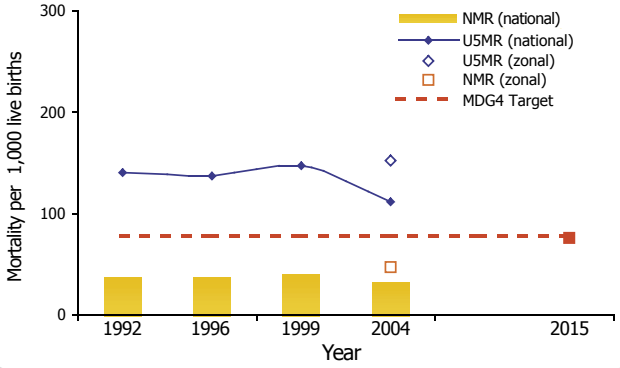
SOUTHERN ZONE - LINDI, MTWARA, RUVUMA



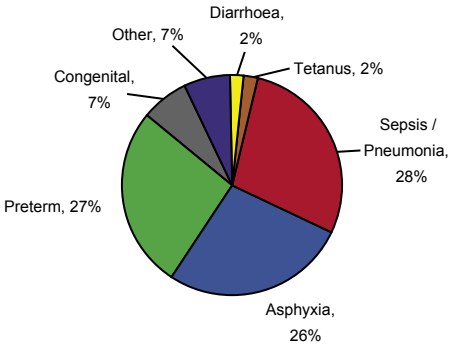
BIRTHS AND DEATHS

Total population (2002)	3,037,000
Annual births (2002)	140,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	800
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	47
Annual neonatal deaths	6,600
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	153
Annual under 5 deaths	21,400
Neonatal mortality % of under 5 mortality	31%

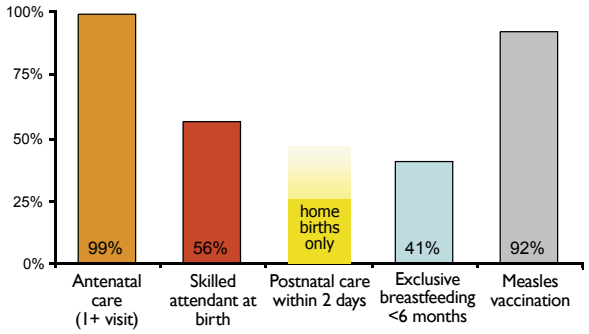
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



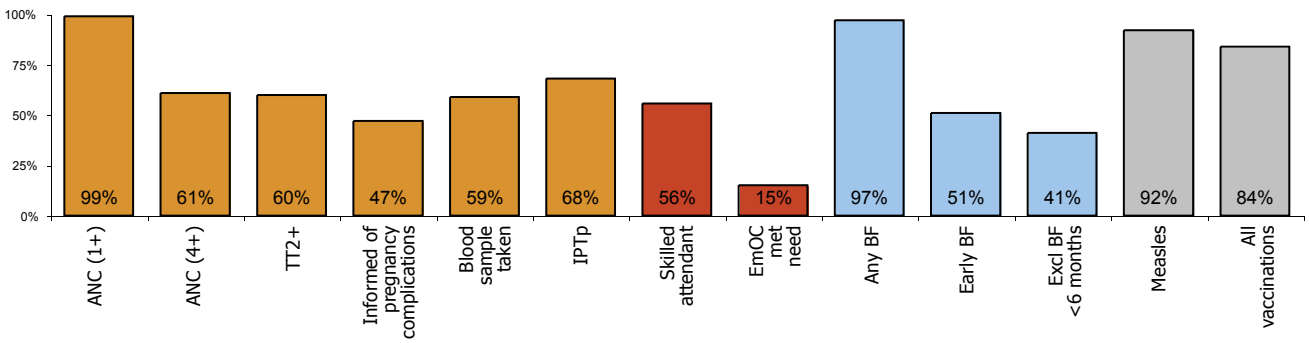
COVERAGE ALONG THE CONTINUUM OF CARE



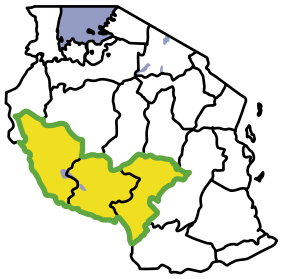
HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	64	Number of hospitals; health centres	22; 40
HIV prevalence, women 15-49 (%)	6	Nursing officers per 1,000 population	5
Knowledge of PMTCT (%)	24	EmOC facilities per 500,000 pop: basic; comprehensive	0.7; 0.7
Caesarean section (%)	4	Health facilities offering newborn respiratory support (%)	14
Low birth weight prevalence (%)	13	Health facilities offering PNC services (%)	80
Median duration exclusive breastfeeding (months)	-	Facilities with first-line drugs for child illness (%)	76
Care seeking for acute respiratory infection (%)	64	Facilities with pre-referral drugs for child illness (%)	35
Children with a birth certificate (%)	14	Annual health budget (TSH thousands)	1,750,000
Health facilities charging user fees for child services (%)	22	Per capita annual allocation (TSH thousands)	0.576

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



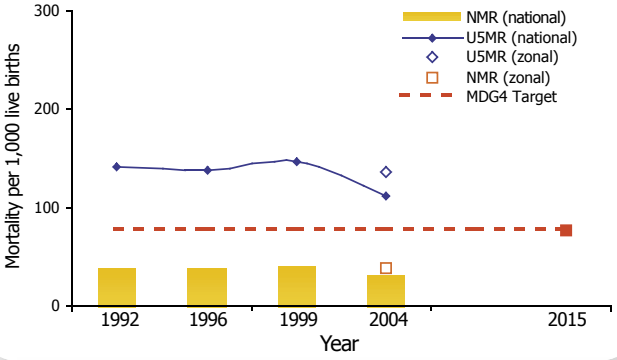
SOUTHERN HIGHLANDS ZONE – IRINGA, MBEYA, RUKWA



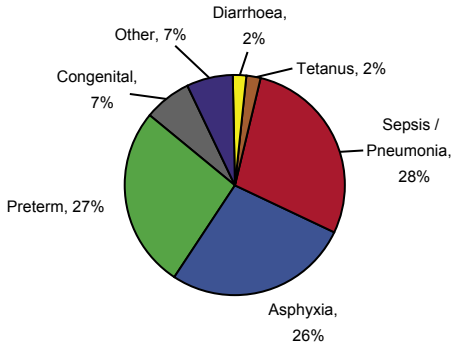
BIRTHS AND DEATHS

Total population (2002)	4,707,000
Annual births (2002)	217,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	1,300
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	38
Annual neonatal deaths	8,200
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	136
Annual under 5 deaths	29,500
Neonatal mortality % of under 5 mortality	28%

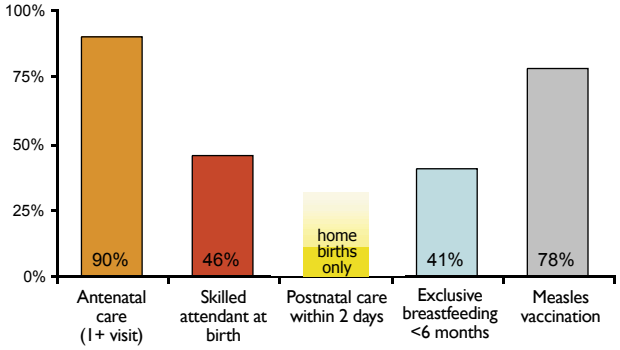
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



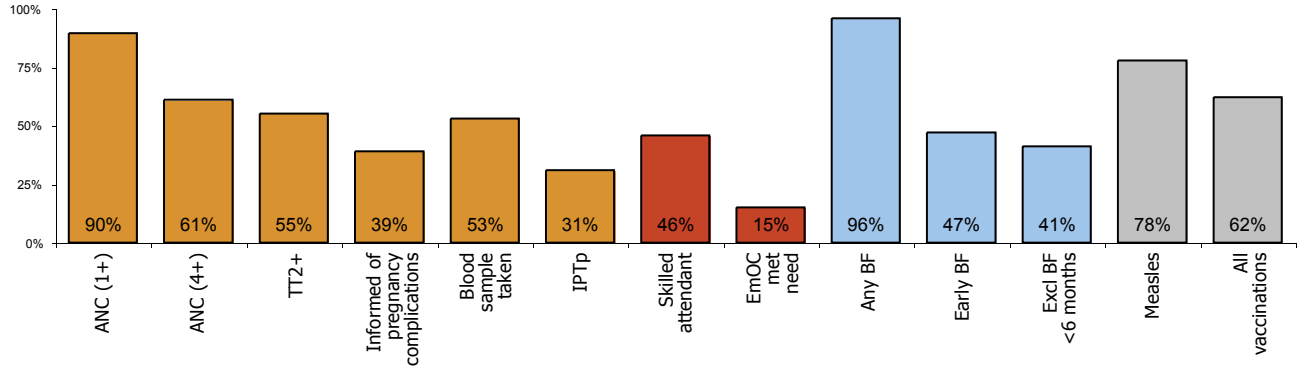
COVERAGE ALONG THE CONTINUUM OF CARE



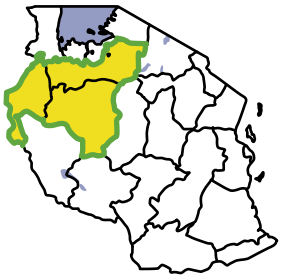
HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	73	Number of hospitals; health centres	34; 90
HIV prevalence, women 15-49 (%)	12	Nursing officers per 1,000 population	6
Knowledge of PMTCT (%)	23	EmOC facilities per 500,000 pop: basic; comprehensive	0.4; 0.15
Caesarean section (%)	2	Health facilities offering newborn respiratory support (%)	17
Low birth weight prevalence (%)	6	Health facilities offering PNC services (%)	71
Median duration exclusive breastfeeding (months)	2	Facilities with first-line drugs for child illness (%)	81
Care seeking for acute respiratory infection (%)	53	Facilities with pre-referral drugs for child illness (%)	32
Children with a birth certificate (%)	3	Annual health budget (TSH thousands)	2,650,000
Health facilities charging user fees for child services (%)	37	Per capita annual allocation (TSH thousands)	0.563

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



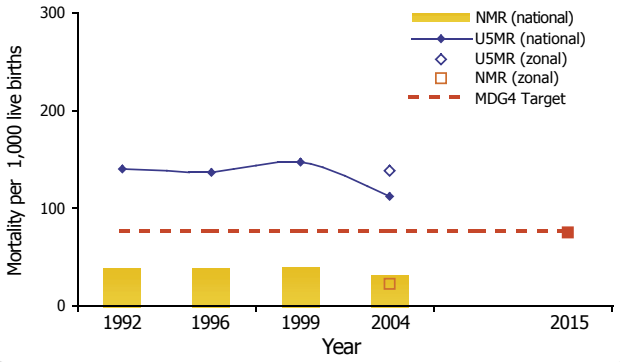
WESTERN ZONE - KIGOMA, SHINYANGA, TABORA



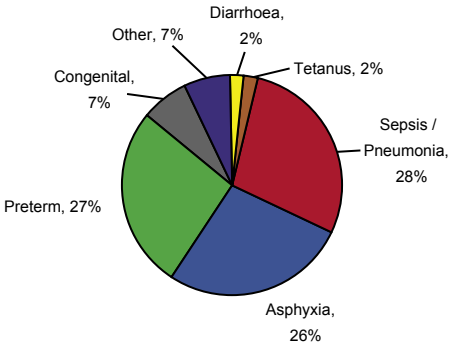
BIRTHS AND DEATHS

Total population (2002)	6,194,000
Annual births (2002)	286,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	1,700
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	23
Annual neonatal deaths	6600
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	138
Annual under 5 deaths	39800
Neonatal mortality % of under 5 mortality	17%

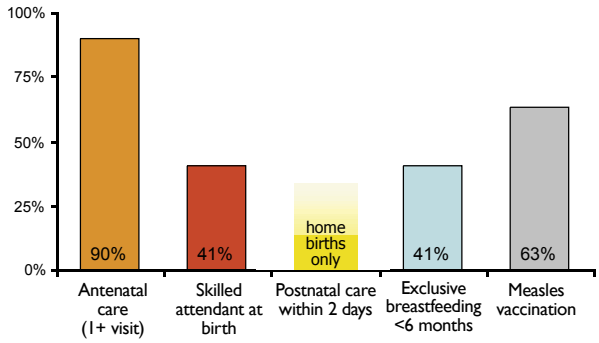
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



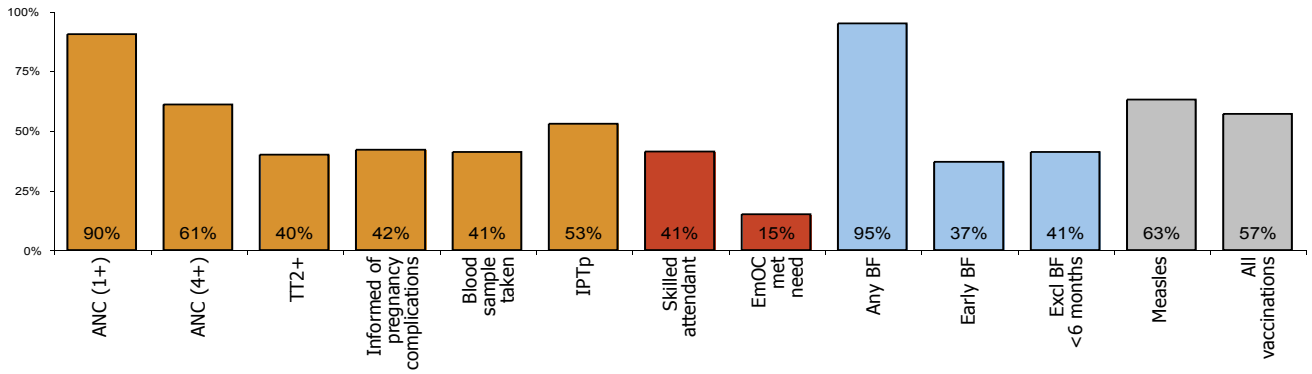
COVERAGE ALONG THE CONTINUUM OF CARE



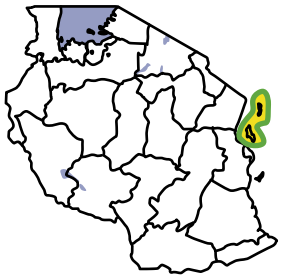
HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	33	Number of hospitals; health centres	20; 59
HIV prevalence, women 15-49 (%)	7	Nursing officers per 1,000 population	5
Knowledge of PMTCT (%)	22	EmOC facilities per 500,000 pop: basic; comprehensive	0.05; 0.05
Caesarean section (%)	2	Health facilities offering newborn respiratory support (%)	15
Low birth weight prevalence (%)	10	Health facilities offering PNC services (%)	55
Median duration exclusive breastfeeding (months)	2	Facilities with first-line drugs for child illness (%)	79
Care seeking for acute respiratory infection (%)	46	Facilities with pre-referral drugs for child illness (%)	44
Children with a birth certificate (%)	2	Annual health budget (TSH thousands)	3,250,000
Health facilities charging user fees for child services (%)	19	Per capita annual allocation (TSH thousands)	0.576

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



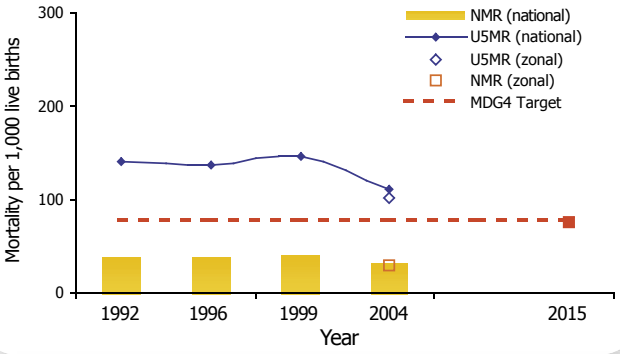
ZANZIBAR – PEMBA NORTH, PEMBA SOUTH, TOWN WEST, ZANZIBAR NORTH, ZANZIBAR SOUTH



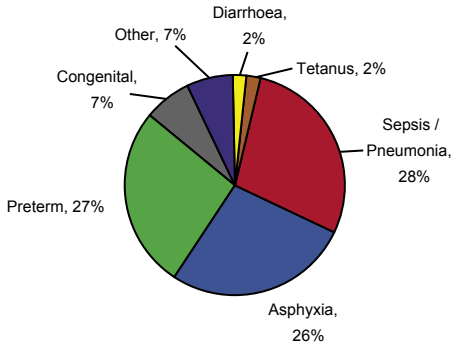
BIRTHS AND DEATHS

Total population (2002)	1,004,000
Annual births (2002)	46,000
MOTHERS	
Maternal mortality ratio per 100,000 live births (national, 2004)	578
Annual maternal deaths	300
NEWBORNS	
Neonatal mortality rate per 1,000 live births (2004)	29
Annual neonatal deaths	1,300
CHILDREN	
Under 5 mortality rate per 1,000 live births (2004)	101
Annual under 5 deaths	4,600
Neonatal mortality % of under 5 mortality	29%

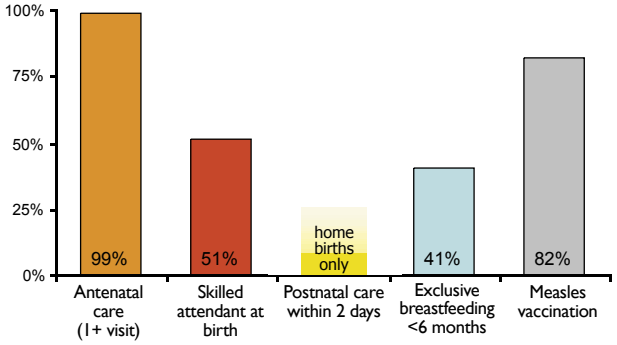
RATE OF PROGRESS TO MDG 4



CAUSES OF NEONATAL DEATH (national)



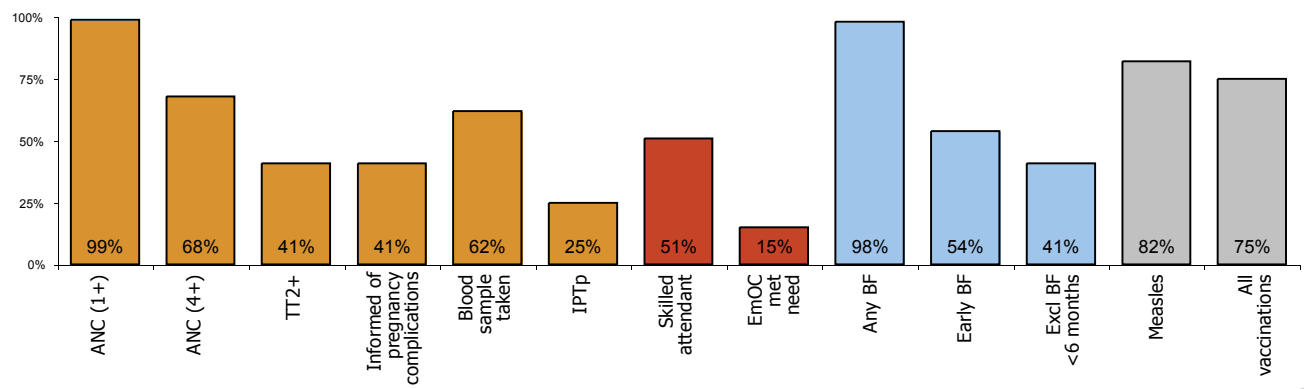
COVERAGE ALONG THE CONTINUUM OF CARE



HEALTH SYSTEMS, POLICY AND FINANCE

Met need for contraception (%)	34	Number of hospitals; health centres	-
HIV prevalence, women 15-49 (%)	32	Nursing officers per 1,000 population	-
Knowledge of PMTCT (%)	-	EmOC facilities per 500,000 pop: basic; comprehensive	1.3; 0.4
Caesarean section (%)	2	Health facilities offering newborn respiratory support (%)	38
Low birth weight prevalence (%)	14	Health facilities offering PNC services (%)	56
Median duration exclusive breastfeeding (months)	-	Facilities with first-line drugs for child illness (%)	58
Care seeking for acute respiratory infection (%)	66	Facilities with pre-referral drugs for child illness (%)	33
Children with a birth certificate (%)	63	Annual health budget (TSH thousands)	-
Health facilities charging user fees for child services (%)	32	Per capita annual allocation (TSH thousands)	-

MISSED OPPORTUNITIES IN KEY MATERNAL, NEWBORN AND CHILD HEALTH PACKAGES



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APPENDIX 1: SIX DISTRICT SURVEY REPORT

This report includes information collected from six districts representing six zones of Tanzania. Ethical clearance for this study was sought from the District Medical Office (DMO), hospitals and various departments in the district hospitals. Informed consent was also requested and received from the mothers before interviews took place.

ZONE	DISTRICT	FACILITIES VISITED		
Central zone	Manyoni	Manyoni district hospital	Itigi health centre	Kintinku health centre
Lake zone	Kahama	Kahama district hospital	Lowa health centre	Igalilimi health centre
Northern zone	Babati	Babati district hospital	Dareda volunteer hospital	Magugu health centre
Southern zone	Kilwa	Kinyonga Kilwa district hospital	Masoko health centre	Mpara dispensary
Southern highlands	Njombe	Kibena Njombe district hospital	Njombe mjini health centre	Uwemba health centre
Western zone	Nkasi	Nkasi designated district hospital	St Joseph Chala health centre	Kirando health centre

Antenatal Care

Of the 157 mothers interviewed, 40 (26 percent) attended ANC before four months gestation. Eighty-four (54 percent) attended at four-six months and 33 (21 percent) attended only at six months or later. Just less than half of all women (48 percent) attended four or more visits.

Many health care providers at the district hospitals and health centres' Reproductive and Child Health (RCH) clinics were not trained in midwifery skills. For example, at Kinyonga, Nkasi and Manyoni district hospitals and all health centres, mothers were attended by primary health nurses and auxiliary nurses. Blood pressure monitoring, syphilis testing and urinalysis for asymptomatic bacteriuria were not routinely conducted at all of these facilities' RCH clincs.

TT2+ coverage was generally high; 79 percent in Babati district, 93 percent in Manyoni district, 93 percent in Kahama district, 91 percent in Nkasi district, 68 percent in Kilwa district. Kilwa district reported to have one case of neonatal tetanus, while other districts reported to have no cases of neonatal tetanus. This discrepancy may be due to misdiagnoses or mothers not bringing babies with tetanus to the health facility.

The percentage of pregnant women receiving two doses of SP for IPTp ranged from 72 percent at Babati district, 20 percent at Kahama district, 81 percent at Manyoni district, 67 percent at Njombe district and 91 percent at Kilwa district. Eighty-two percent of pregnant women responded that they sleep under ITN and approximately two-thirds of pregnant women attending ANC were given 'Hati Punguzo' vouchers for ITN. However, these data were not available for all sites.

PMTCT

Of the 11,757 pregnant women who attended ANC in Babati district, 821 (7 percent) were screened for HIV/AIDS. Twenty-two (3 percent) mothers tested HIV-positive. Of all 22 mothers, no one was counselled on breastfeeding, no one was given NVP at the onset of labour, and only one baby reportedly received NVP soon after delivery.

Of the 9,491 pregnant women who attended ANC in Manyoni district, 781 (9 percent) mothers were counselled on PMTCT, of whom 664 were tested. Fifty-three women (8 percent) tested positive, of whom 32 (60 percent) received NVP during

delivery. Twenty-nine of their newborns received NVP after delivery. No one reported to have been counselled on breastfeeding options.

In Nkasi district, 13,286 pregnant women attended ANC, and 1,202 (9 percent) were screened for HIV/AIDS in 2006. Fifty-six (5 percent) tested positive, while 1,146 (93 percent) tested negative.

In Njombe district, 16,670 pregnant women attended ANC, of whom 2,524 (15 percent) were screened for HIV/AIDS. Two hundred and seventy-three (11 percent) mothers tested HIV positive. Of all 273 mothers, 141 (52 percent) were counselled on breastfeeding, 140 (51 percent) selected exclusive breastfeeding, and 1 selected replacement feeding. One hundred and forty-one (52 percent) were given NVP at the onset of labour and their babies were given NVP soon after delivery.

In Kilwa district, of the 178 (4 percent) women who tested HIV positive during ANC, 56 (32 percent) were positive at the onset of labour and were given NVP. All except one newborn were given NVP. Data on feeding options were not recorded.

In Kahama district, 30,477 pregnant women attended ANC, of whom 23,037 women received counselling and HIV testing. Two hundred and eighteen (1 percent) tested HIV-positive, of whom 105 (48 percent) received NVP during their ANC visit and delivery. Among these births, 46 babies were delivered at a hospital and were given NVP after delivery. These 46 mothers were counselled on feeding options, with 39 mothers opting for exclusive breastfeeding and 7 mothers choosing replacement feeding.

Intrapartum care

Our interview of 157 mothers of under-6 month old infants revealed that 131 (83.4 percent) mothers prepared for the birth prior to delivery. The majority of mothers reported having to buy gloves, nylon sheets, razor blades and cotton wool to be accepted in the health facilities for delivery. They also reported having to buy blankets, new clothes and dishes for their babies. Others reported having kept money for emergencies.

Proper intrapartum management is an important intervention to prevent stillbirths and early neonatal deaths. This survey revealed that partographs were frequently misused in all health facilities. Clean delivery practices were not always followed, with the exception of Dareda Voluntary Hospital. All district hospitals had the necessary capacity to perform caesarean sections.

Space for newborn care

The six district survey revealed that none of the district hospitals visited had neonatal units. However, in the northern zone at Dereda Voluntary Hospital, there was a single room near the labour ward with ten baby cots, which was used as a neonatal unit. In all heath facilities visited, there was neither a heath care provider trained in newborn care nor were there guidelines for newborn management.

With the exception of Dareda Voluntary Hospital and Njombe District Hospital, there were no heaters in the places where neonates were kept and various methods were used to keep newborns warm. For example, neonates were covered with heavy clothes. Kangaroo Mother Care was practiced in Manyoni district hospital, Itigi health centre, Kintinku heath centre, Lowa health centre, Igalilimi health centre and Njombe district hospital. Charcoal cookers were used as heaters in Mpara dispensary and Njombe mjini health centre.

Only Babati, Njombe, and Kinyonga District Hospitals had a special room for premature neonates. In Babati District Hospital, there was one bed and a heater, which according to staff, malfunctioned on a regular basis. In Njombe District, there were two baby cots and one heater. In Kinyonga District Hospital, the room for small babies had two beds and four tube lights, which were used as a source of heat. None of these sites had medical personnel to supervise these rooms and who were trained to manage premature babies. There were also no guidelines present for the management of premature babies. In most facilities, there was no special care for preterm babies; they were either referred or kept in the postnatal wards.

Equipment and supplies for newborn care

With the exception of Dareda Voluntary Hospital, none of the health facilities had all of the essential equipment necessary for newborn care in the labour or postnatal wards. Only two district hospitals

(Kahama and Njombe) and Dareda Voluntary Hospital had an oxygen concentrator for newborn resuscitation.

Other equipment for resuscitation, such as a suction machine, ambu-bag and cannulae, were present in all district hospitals. Drugs for resuscitation, such as adrenaline, were present in the majority of health facilities but were often not used due to a lack of trained health care personnel.

Practices related to newborn health

Of the 157 mothers interviewed for this survey, 41 percent initiated breastfeeding within the first hour of life, 50 percent within the first 24 hours of life, and 8 percent after the first day of life. Twenty-four (15.3 percent) mothers reported giving pre-lacteal feeds to their newborns. The most common pre-lacteal feed was plain water, which the mothers reportedly used to soothe the throat, clean the stomach, and quench thirst due to delayed breast milk secretion. It was also found that 82 mothers (65 percent) gave water to their infants within one month of age. Furthermore, of the 134 mothers who were interviewed, 100 (75 percent) introduced foods to their babies other than breast milk before the babies were two months old.

Ninety-nine (63 percent) used thread to tie the cord after delivery, 15 (10 percent) used a piece of "kanga," 28 (18 percent) used special hospital clips, and 15 (10 percent) tied the cord with other materials like hospital plaster. One hundred and one mothers (64 percent) reported having placed substances on the cord with the intention of speeding the healing process. Fifty-one percent of these mothers used coconut and baby oil. Eight mothers (four from Babati, one from Kahama and three from Nkasi) reported using breastmilk. Eleven mothers from Nkasi reported having used traditional herbs known as *"ashes of kasanza,"* three mothers from Babati reported having used traditional herbs known as *mwidame* mixed with charcoal. Nine mothers from Njombe reported having used traditional herbs, which they could not name. Two mothers from Kahama reported having used *minyaa* and *matik*, while six mothers (five from Kahama and one from Nkasi) reported having used warm water, and one mother from Babati reported using soot.

Facility management and administration

The main sources of health care funding within the districts included the basket fund, block grants, the council fund, and cost sharing. However, there was no specific budget allocation for neonatal care. Some facilities like Babati and Kahama District Hospitals reported that neonatal care was not a top priority.

Neonatal death and data recording system

Neonatal death, perinatal death and maternal death are primary health indicators. It is therefore important for all health facilities to have quality, updated records. The facilities must also conduct reviews of death that occur in the facility in order to improve primary health care.

The following data were collected from the DMO:

Indicator	Babati	Kahama	Manyoni	Kilwa	Njombe	Nkasi
Live births	7107	23474	5735	4124	14315	9835
Neonatal death	70	30	71	44	98	6
Maternal death (100,000)	193	394	261	422	118	122
Fresh stillbirth	43	165	45	49	94	22
Macerated stillbirth	94	243	26	96	135	42

The following were causes of neonatal death reported from the DMO's office.

	DISTRICT						Total	%
CAUSE	**Babati**	**Kahama**	**Manyoni**	**Kilwa**	**Njombe**	**Nkasi**		
Prematurity	23	6	6	7	14	0	56	20%
Birth asphyxia	6	17	18	20	8	3	72	26%
Infections	1	1	2	5	0	1	10	4%
Congenital anomalies	3	0	3	0	4	0	10	4%
LBW	0	5	3	0	0	1	9	3%
Birth trauma	0	0	0	0	2	1	3	1%
Local herbs	0	0	0	0	9	0	9	3%
Other/ unknown*	37	1	1	12	61	0	112	40%
TOTAL	**70**	**30**	**33**	**44**	**98**	**6**	**281**	**100%**

*The cause of 112 (40 percent) neonatal deaths was not established.

APPENDIX 2:
HOUSEHOLD INTERVIEW QUESTIONNAIRE

UTAFITI KUHUSU HALI YA AFYA YA VICHANGA
(watoto chini ya mwezi mmoja) TANZANIA
DODOSO LA KISWAHILI

1. Namba ya dodoso
2. Tarehe
3. Umri wa Mama
4. Umezaa mara ngapi
    a. Mara moja
    b. Mara 2-4
    c. Mara 5 au zaidi
5. Hali ya ndoa kwa sasa
    a. Sijaolewa
    b. Naishi kinyumba
    c. Nimeolewa
    d. Nimetalikiwa
    e. Mjane
6. Unafanya kazi gani?
    a. Mama wa nyumbani
    b. Mkulima
    c. Mfanyabiashara ndogo ndogo
    d. Nimeajiriwa
    e. Sijaajiriwa
    f. Nyinginezo (Taja)
    7. Kiwango cha elimu
    a. Sikusoma kabisa
    b. Sikumaliza elimu ya msingi
    c. Nimemaliza elimu ya msingi
    d. Nilisoma sekondari
    e. Nilisoma elimu ya juu
    f. Nyingine (Taja)
8. Ni watoto wangapi wenye umri chini ya miaka mitano unaowahudumia? Watoto
9. Mototo wako mchanga ana umri gani
10. Je, huwa unagunduaje kuwa mwanao ni mgonjwa? (***Usimsomee***)
    a. Anakohoa,
    b. Anahoma,
    c. Anaharisha
    d. Kulia sana
    e. Ana degedege
    f. Anashindwa kunyonya
    g. Anavimba miguu
    h. Anapungua uzito
    i. Anapumua kwa tabu
    j. Anakuwa na rangi ya manjano

11. Je, ni dalili zipi za magonjwa zinazoweza kuhatarisha maisha ya mwanao? *(Usimsomee)*
    a. Kupumua kwa tabu.
    b. Kushindwa kunyonya
    c. Mtoto kubadilika na kuwa wa bluu
    d. Kupoteza faahamu
    e. Mtoto kulegea
    f. Macho kutumbukia
    g. Degedege
    h. Nyinginezo (Taja)
12. Kwa maoni yako, unafikiri magonjwa ya watoto husababishwa na nini? *(Msomee majibu)*
    a. Hali mbaya ya hewa.....(N/H)
    b. Vijidudu vinavyosababisha magonjwa.....(N/H)
    c. Uchawi.....(N/H)
    d. Mazingira machafu.....(N/H)
    e. Kukosekana kwa maji.....(N/H)
    f. Kutoka kwa Mungu.....(N/H)
    g. Hutokea tu.....(N/H)
    h. Maoni mengine (Taja).....(N/H)
13. Je, huwa unafanya nini baada ya kujua kuwa mtoto ni mgonjwa?*(usimsomee majibu*)
    a. Ninamtibu nyumbani (nenda swali number 14)
    b. Nampeleka kituo cha afya
    c. Namsubiri baba yake
    d. Naangalia kwanza hali yake
    e. Nampeleka kwa mganga wa kienyeji
14. Je, ni dalili zipi zinazoweza kukupelekea kumtafutia matibabu mtoto wako nje ya nyumba yako?
    a. Homa kali
    b. Kuharisha sana
    c. Kupumua kwa tabu
    d. Kushindwa kusema, kula au kunyonya
    e. Kubadilika na kuwa wa bluu.
    f. Kupoteza fahamu
    g. Kulia sana
    h. Kulegea sana
    i. Macho kutumbukia
    j. Nyingine (Taja)
15. Niwakati gani utasitisha kumpa dawa mtoto? *(usimsomee)*
    a. Anapopata nafuu
    b. Anapomaliza dozi
    c. Hali inapokuwa mbaya
    d. Baada ya kushauriwa na daktari
    e. Nyingine (Taja)
16. Huwa unafanya nini nyumbani katika kumsaidia mtoto anopokua mgonjwa?
    a. Huwa namlisha
    b. Humpa maji
    c. Humpa dawa za ugonjwa husik
    d. Humnyonyesha mara nyingi zaidi
    e. Jambo jingine (Taja)
17. Je ulitumia chandarua wakati wa mimba yako ya mwisho.....(N/H)
18. Chandarua chako kilikuwa na dawa ya mmbu.....(N/H)
19. Uliugua malaria wakati wa mamba yako ya mwisho.....(N/H)
20. Ulitumia dawa gani
21. Ulienda kiliniki ya wajawazito wakati wa mimba yako ya mwisho.....(N/H)

22. Ulianza kiliniki ukiwa na mimba ya miezi mingapi?
    a. Kabla ya miezi (4)
    b. Kati ya miezi 4 na 6
    c. Baada ya miezi sita (6
23. Je ulihudhuria kliniki ya kina mama wajawazito mara ngapi?
    a. Chini ya mara nne(4)
    b. Mara nne(4)
    c. Zaidi ya mara nne(4)
24. Taja huduma ambazo wajawazito wanapata wanapoenda kliniki *(usimsomee)*
    a. Vidonge vya kinga ya malaria
    b. Vidonge vya kuongeza damu
    c. Upimaji wa wingi wa damu
    d. Upimaji wa mkojo
    e. Ushauri nasaha na huduma ya kupima VVU
    f. Uchunguzi wa afya ya mwili
    g. Ushauri kuhusu mimba na kujifungua
    h. Huduma ya uzazi wa mpango
    i. Chanjo ya pepo punda
    j. Ushauri kuhusu chakula bora/lishe
    k. Dawa za kuzuia minyoo
25. Je ulipewa dawa ya kuzuia malaria wakati wa ujauzito?.....(N/H)
26. Ulifanya maandalizi ya kujifungua mtoto wako mchanga?.....(N/H)
27. Ulifanya maandalizi gani? *(Usimsomee)*
    a. Kufua nguo zake za zamani/ kununua mpya
    b. Kununua vifaa vya kujifungulia
    c. Pesa
    d. Vinginevyo (taja)
28. Baada ya kujifungua mtoto wako mchanga ulianza kumnyonyesha baada ya muda gani? (masaa)
    a. Ndani ya saa moja
    b. Ndani ya saa 24
    c. Baada ya saa 24
29. Baada ya kumzaa mtoto kabla ya kuanza kumnyonyesha ulimpa nini?
30. Ulianza kumpa maji akiwa na umri gani?
31. Ulimpa maziwa yako peke yake mpaka alipokuwa na umri gani?

a. 0 – miezi miwili
    b. Miezi 3 – miezi 4
    c. Miezi 5 - miezi 6
    d. Zaidi ya mieza 6
    e. Bado ninaendelea kumpa maziwa yangu peke yake
32. Ulikuwa unafanya nini kuzuia mtoto asipate baridi mara baada ya kumzaa?
    a. Namfinika na mashuka/ blanket
    b. Nilikuwa namuweka kifuani
    c. Nawasha jiko la mkaa/ kuni
    d. Mengineyo(taja)
    33. baada ya kumzaa mtoto kitovu kilifungwa na nini?
    a. Kipande cha kanga
    b. Uzi
    c. Kibanio maalum kutoka hospitalini
    d. Mengineyo (taja)
    34. uliweka kitu gani ili kitovu kipone haraka?
35. Unafanya nini kumkinga mtoto wako asiugue mara kwa mara
36. Ulirudi baada ya muda gani kuangaliwa afya yako baada ya kujifungua? (*usimsomee , jaribu kwanza ajibu mwenyewe)*
    a. Chini ya siku saba
    b. Wiki moja hadi wiki tatu
    c. Wiki nne au zaidi zaidi.

APPENDIX 3: SURVEY AT THREE DISTRICT HOSPITALS IN DAR ES SALAAM

This survey was conducted in September 2007 at three municipal hospitals: Amana, Mwananyamala and Temeke in Dar es Salaam. The survey was conducted with two specific objectives:

1. To draw upon and synthesize the available newborn data from various sources
2. To reveal gaps in the existing health system, particularly around evidenced-based, high impact newborn health interventions

Background

Dar es Salaam is situated next to the Indian Ocean to the east, and surrounded by coastal regions to the north, west and south. The city experiences an equatorial climate. There are two main rainy seasons, including a short rainy season from October to December, and a long rainy season between March and May. Dar es Salaam has a total land area of 1,393 square kilometres and a population of 2.5 million, according to a 2002 census. Currently, the city holds an estimated three million people; the population is growing at a rate of 4.3 percent. The city is divided into three municipalities, including Ilala (210 square km), Temeke (652 square km) and Kinondoni (531 square km).

The city has 23 hospitals, of which four are owned by the government. One hospital is operated by voluntary agents, one is owned by a parastatal agent, and 17 are under private ownership. There are 25 health centres (5 government, 3 parastatal, and 17 private) and 473 dispensaries (67 government, 49 voluntary, 10 parastatal and 347 private). There are two levels of health service delivery. The first line of service is delivered at dispensaries and health centres, while the second line is delivered by municipal hospitals. Tanzania's national hospital, Muhimbili National Hospital, is located in Dar es Salaam and used as the tertiary level of health service delivery.

Data collection

Two methods were used to collect data. One method involved reviewing existing data that pertained to newborn and maternal health for the year 2005. Structured questionnaires were also administered to key informants. Interviews were conducted within hospitals, labour wards, RCH departments and within places where newborns were kept. Data were analysed with a data master sheet and Epi-info 2005 software.

Study limitations

- Some information was not recorded routinely.
- Poor facility records meant some information was missing. All efforts were made to retrieve the missing information from original sources.
- Difficulties collecting data due to poor storage at health facilities.
- Some health care personnel were recently transferred to the unit and could not provide detailed information.

Ethical clearance

Ethical clearance was sought from the DMO, hospitals, and the heads of various departments.

Annual statistics for three district hospitals: 2006

	AMANA	TEMEKE	MWANAN-YAMALA	TOTAL
Births (per year)	23824	16236	15147	55207
Neonatal deaths	26	47	219	292
Maternal deaths	18	46	46	110
Macerated stillbirths	391	291	312	994
Fresh stillbirths	94	242	235	571
Women of child bearing age	-	7102	8746	
Women attending ANC	925	857	1047	2829
Women who received TT vaccination	-	11406	-	
Mothers who delivered at hospital	23824	16026	14851	54701
Mothers who delivered at home	-	210	296	
Neonatal tetanus cases	0	0	0	0
HIV+ pregnant women	384	196	461	1041
Women receiving NVP/AZT services	384	196	461	1041
Exposed babies receiving NVP	384	196	461	1041
Pregnant women receiving SP as IPTp	-	373	-	
Neonates receiving BCG and OPV0	16604	25365	8166	50135
"Hati Punguzo" vouchers issued	85	1036	101	1222

Characteristics of neonates admitted

	AMANA	TEMEKE	MWANAN-YAMALA	TOTAL
Total number of newborns present on the ward at the time of survey	3	1	6	10
Total newborn orphans (mother died in childbirth)	0	0	1	1
Total abandoned newborns in 2006	0	2	3	5
Total number of neonates referred	768	350	400	1518
Total number of cases where feedback was provided from these referrals	0	0	0	0

Observation of the place where newborns are kept

	AMANA	TEMEKE	MWANAN-YAMALA
Near the labour ward	Yes	Yes	No
Neonatal unit	No	No	No
Room only for premature babies	No	No	No
Resuscitation equipment	Yes	Yes	Yes
Maternity home	No	No	No
Controlled access	Yes	No	No
Controlled environment	Yes	No	Yes
Source of heat (heater)	No	No	No
Electricity supply in the neonatal unit	Yes	Yes	Yes
Alternative source of electricity	No	Yes	No

Assessment of equipment and supplies in the place where newborns are kept

	AMANA	TEMEKE	MWANAN-YAMALA
Working weighing scale	Yes	No (yes-labour ward)	Yes
Working watch or clock	No	Yes	No (yes-labour ward)
Cups and spoons for breastfeeding	No	No	No
Station for hand washing	Yes	Yes	No (yes-labour ward)
Heating station	No	No	No
Guidelines for management of newborn	No	No	Yes (no-labour ward)
Disposal container for sharps only	Yes	Yes	Yes
Working oxygen cylinder	Yes	Yes	Yes
Adrenaline	Yes	Yes	No (yes-labour ward)
Cannula	Yes	Yes	Yes
Ambu bag	Yes	Yes	Yes
10 percent dextrose	Yes	Yes	Yes
Working suction machine	Yes	Yes	Yes
Reliable transport for referral	Yes	Yes	Yes
Total number of oxygen outlets(working)	1	2	1
Total cots/beds in the unit (working)	1	1	1
Total number of heat sources (working)	1	0	0
Total number of suction machines (working)	1	1	1

DISCUSSION

The neonatal mortality rate in these hospitals was approximately 5 per 1,000 live births. This figure is extremely low compared to the national mortality rate of 32, probably due to the following reasons:

- There were no neonatal units and there were no admissions in the ward, hence deaths recorded were only those that occurred immediately after birth.
- Babies with complications and therefore a higher risk of death were immediately referred to MNH.
- There was no follow-up on referrals, nor was there follow up following discharge from the hospital. Some deaths will have therefore occurred at health centres, hospitals and homes, which were not captured by hospital records.

Despite the large number of deliveries that occur every day (42 babies at Mwananyamala, 45 babies at Temeke and 66 babies at Amana), both Amana Hospital and Mwananyamala Hospital lacked trained medical personnel for newborn care. There was only one trained nursing officer at Temeke hospital.

There was no designated neonatal unit in any of the three district hospitals. There was only one cot in the labour ward at Amana and Temeke hospitals, and one cot kept in the postnatal ward at Mwananyamala hospital. These cots were used to keep sick newborns awaiting referral to Muhimbili National Hospital for management. Others were to be discharged to their mothers. Each hospital had only one baby cot. There was no separate room for premature babies and only Temeke had a source of heat. All three hospitals had resuscitation equipment, but Temeke had no weighing scale. Mwananyamala had no hand washing station, and Temeke and Mwananyamala had no working clocks. None of the hospitals had cups and/or spoons for expressed breastfeeding. Only Mwananyamala had guidelines for neonatal management.

APPENDIX 4:
HEALTH FACILITY DATA COLLECTION TOOL

Name of interviewer

1. Questionnaire number
2. Name of region
3. Name of district
4. Name of health facility
5. Date of interview
6. Type of health facility
   a) Hospital
   b) Health centre
   c) Dispensary
7. Owner of the health facility
   a) Government
   b) Private
8. Number of births per year in (2006)
9. Neonatal deaths per year (2006)
10. Maternal deaths per year
11. Macerated stillbirths in 2006
12. Fresh stillbirths in 2006
13. Number of women of child bearing age in the place
14. Total number of women who attended ANC the year 2006
15. Number of child bearing age women who received TT vaccination in 2006
16. Number of mothers who delivered at hospital in 2006
17. Number of mothers who delivered at home in year 2006 .
18. Number of neonatal tetanus in (2006)
19. Total number of pregnant women with HIV during delivery in 2006
20. Number of HIV positive mothers intending to breastfeed in 2006
21. Number of HIV positive mothers intending to replacement feed in 2006
22. Number of women with HIV status not tested during ANC IN 2006
23. Total number of women received NVP/ AZT services in 2006
24. Total number of exposed babies received NVP in 2006
25. Total number of pregnant women received SP as IPT
26. Number of neonates receiving BCG and OPV0 in 2006
27. Total number of "Hati punguzo" vouchers issued in the year 2006
28. What are the sources of fund in the district / facility?
29. What percentage is allocated for
    a) Paediatric care
    b) Maternal care
30. What percentage is allocated for the neonatal care
31. Is there a neonatal unit?
    a) Yes
    b) No
32. If not, where are newborns kept?
    a) Labour ward
    b) Special place for newborn
    c) Kept with their mothers in wards
    d) Post natal ward

33. Visit the neonatal unit or any other place where newborn are kept and access the following:

			Codes
1	Is it near the labour ward	1.Yes 2.No	
2	Was it purposely built for neonates	1.Yes 2.No	
3	Is there a room for premature babies only	1.Yes 2.No	
4	Is there resuscitation equipment	1.Yes 2.No	
5	Is there a maternity home	1.Yes 2.No	
6	Is there controlled access	1.Yes 2.No	
7	Is there a controlled environment	1.Yes 2.No	
8	Is there a source of heat (heater)	1.Yes 2.No	
9	Is there an electricity supply in the neonatal unit	1.Yes 2.No	
10	Is there an alternative source of electricity	1.Yes 2.No	

34. Discuss with the head of the health facility or most senior health worker available about the following (a heath worker who deals with newborns)

Type	Number of health workers present in the health facility	Present on the neonatal unit		Those with special training on newborns	
	Total	Total	Present on the day of survey	Total	Present on the day of survey
1.Medical Officer					
2.Assistant MO					
3.Clinical Officer					
4.Clinical Assistant					
5.MC HA					
6.Nurse Midwife					
7.Others					
Total					

35. Ask a health worker to show you around the neonatal unit or any other place where newborns are kept. Observe, and take photographs of some important issues on the following:

	Is the following equipment present:		Total number (working)
1	Working weighing scale for newborns only	1.Yes 2.No	
2	Working watch or clock	1.Yes 2.No	
3	Cups and spoons for EBF	1.Yes 2.No	
4	Station for hand washing	1.Yes 2.No	
5	Guidelines for management of newborn	1.Yes 2.No	
6	Disposal container for sharps only	1.Yes 2.No	
7	Working oxygen cylinder	1.Yes 2.No	
8	Adrenaline	1.Yes 2.No	
9	Cannula	1.Yes 2.No	
10	Ambu bag	1.Yes 2.No	
11	10 percent dextrose	1.Yes 2.No	
12	Working suction machine	1.Yes 2.No	
13	Reliable transport for referral	1.Yes 2.No	

36. Characteristics of neonates in the neonatal unit/ place for newborn:

		Total number
1	Total neonates admitted in 2006	
2	Average number of neonates admitted per day	
3	Total newborns present in the ward at the time of the survey	
4	Total newborn orphans (mother died in childbirth) in 2006	
5	Total abandoned newborns in 2006	
6	Total number of neonates who were referred in 2006	
7	Total number of cases where feedback was received from these referrals	

37. Access the labour ward for the following equipment:

	Do you have the following equipment:		Total number (working)
1	Working weighing scale for newborn	1.Yes 2.No	
2	Working watch or clock	1.Yes 2.No	
3	Heating station	1.Yes 2.No	
4	Station for hand washing	1.Yes 2.No	
5	Guidelines for resuscitation of newborn	1.Yes 2.No	
6	Disposal container for sharp objects only	1.Yes 2.No	
7	Working Oxygen cylinder	1.Yes 2.No	
8	Adrenaline	1.Yes 2.No	
9	Cannula	1.Yes 2.No	
10	Ambu bag	1.Yes 2.No	
11	Working suction machine	1.Yes 2.No	
12	Reliable transport for referral	1.Yes 2.No	

38. Characteristics of total deliveries conducted in 2006 (fill in the table)

Delivery			
	Male	**Female**	**Total**
1. Normal deliveries			
2. Congenital malformations			
3. Premature deliveries			
4. LBW			
5. Caesarean sections			
Total			

39. Characteristics of total neonatal deaths occurring in 2006 (fill in the table)

Condition at delivery	Neonatal death		
	Male	Female	Total
1. Normal			
2. Congenital malformations			
3. Premature			
4. LBW			
5. Caesarean section			
Total			

40. Top five causes of neonatal deaths in 2006. (fill in the table)

	Cause of death			
		Male	Female	Total
1.				
2.				
3.				
4.				
5.				
Total				

41. Number of neonates who died in less than 24 hours .....
42. What is/are the source(s) of heat in the place where newborn are kept? .....
.....
43. Reasons for referrals in your facility:.....
.....
44. Are there days in a month when there are no essential drugs in the neonatal unit? (a) Yes (b) No
45. If yes, approximately how many days in a month? .....
46. In your opinion, what are the main reasons for neonatal deaths?
    a) Health facility .....
    b) Community .....
47. What can be done to reduce neonatal deaths?
    a) Hospital level .....
    .....
    b) Community level .....
    .....
    c) Government/ ministry of health level .....
    .....
48. What is your plan? .....
.....
.....
.....
.....

Key messages from the *Situation Analysis of Newborn Health in Tanzania*

1. Tanzania can meet Millennium Development Goal 4 if more is done to save newborn lives: Tanzania is one of the few countries in sub-Saharan Africa that has seen substantial progress in reducing under-five mortality in the past five years but there has been no measureable change in national neonatal mortality. Continued action is needed for child survival but additional attention to reducing the country's 51,000 newborn deaths per year is crucial to reaching MDG 4 for child survival.

2. Thousands of Tanzanian newborns could be saved each year: 85 percent of newborn deaths in Tanzania are due to infections including tetanus, preterm birth complications and birth asphyxia. Due to progress in scaling up immunisation, Tanzania is close to the goal of tetanus elimination. Severe infections can be managed through Integrated Management of Childhood Illness at primary and facility level. Almost half of preterm deaths can be prevented with simple Kangaroo Mother Care. Birth asphyxia can be addressed by scaling up skilled attendance and obstetric care and ensuring that health workers can resuscitate newborns. Reaching all mothers and babies with routine postnatal care especially in the first two days is a crucial gap for Tanzania.

3. The policies are in place, the cost is affordable and action is needed now: Tanzania's decentralised health system ensures that public health interventions are linked to those who need them but more effort is needed to integrate newborn health packages into district level budgets and planning. Newborn lives will be saved by implementing appropriate policies, improving staffing levels and supervision in health facilities, ensuring crucial drugs and equipment are available and providing an enabling environment for community-level care.

140 newborns die each day in Tanzania, most from preventable and treatable causes. Tanzania's future depends on the ability of these newborns to survive and thrive. This situation analysis sheds light on the current state of care and the opportunities to save lives. While better data, policy change and revised guidelines will make a difference, it takes people to act to save newborn lives. Will you use this information to become a champion of the country's most vulnerable and precious citizens?

United Republic of Tanzania

For more information contact:
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