

Africa's newborns— counting them and making them count

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Over a million African babies are estimated to die in the first 4 weeks of life – but most die at home, uncounted, and invisible to national and regional policies and programmes. To reduce these deaths, we need information. Are we making progress towards Millennium Development Goal 4 for child survival? Where, when, and why do these newborn deaths occur? How does newborn health link with the health of mothers and older children?

Global estimates suggest that over two thirds of newborns could be saved through existing maternal and child health programmes. How many babies in Africa could be saved with interventions that are already in policy in most African countries and yet do not currently reach the poor? How could health information be improved and used to count newborns and make them count?



Africa's uncounted newborn deaths

Each year in Africa, around a quarter of a million women die of pregnancy related causes and approximately 1 million babies are stillborn, of whom at least 300,000 die during labour. A further 1.16 million babies die in their first month of life – up to half on the first day – and another 3.3 million children will die before they reach their fifth birthday. Four million low birthweight babies and others with neonatal complications live but may not reach their full potential, and a similar number of African women have non-fatal complications of pregnancy.

For generations in Africa, this litany of loss – lost lives and lost potential for better lives – has been considered the norm. Many of these deaths, especially stillbirths and early neonatal deaths occur at home, unseen and uncounted in official statistics. In many societies, babies are not named until six weeks of life and may not be brought into society until an older age. These traditions mean that when a baby dies, the mourning of mothers and families is often hidden. Thus these traditions contribute to concealing the size of the problem and help to perpetuate a resigned acceptance of birth as a time of death and danger for both mothers and babies.

The lack of public recognition of so many deaths among babies in Africa, and the apparent acceptance of these deaths contrasts with the mountains of reports and paperwork generated by the death of one baby in the industrialised world and the public outcry if substandard care is suspected. Yet a century ago, maternal and neonatal death rates in Europe were similar to those in much of Africa today. In 1905 the neonatal mortality rate (NMR) in England was 41 per 1,000 live births¹ – the average for sub-Saharan Africa today. By 1950 the NMR in England had halved (to 20 per 1,000) despite two world wars and a decade of economic depression. The NMR had halved again by 1980, even before intensive care became available for babies.

How can Africa, with all her challenges, accelerate progress to reduce maternal, neonatal, and under-five mortality rates by at least half in the next decade in order to meet the Millennium Development Goals? An important cornerstone for progress is to make better use of existing data, to improve the data and to connect these data to action. Much information is available, but we do not always use it well, either to improve programmes especially at the district level or to present the case for more investment. The numbers of women and children dying and the steps which could (and should) be taken to prevent these deaths should not just reach technical and policy audiences, they should be available to families and civil society. African newspapers regularly report news about HIV/AIDS and hold governments accountable for progress. Maternal, newborn, and child deaths rarely make the news – they are an uncounted daily loss.

To achieve real progress, we must find ways to empower families and communities so that they can change what is within their power and demand their right to access essential quality healthcare.

Ending the suffering begins with counting each death and making every death count.

Progress builds on counting each birth and making each mother and child count and receive the essential health care that is their right.

Progress towards MDG 4 in Africa – newborn survival is key

The Millennium Development Goals (MDGs) are the most widely ratified health and development targets in history. Nearly every nation has agreed to reach these eight interlinking goals addressing poverty, hunger, education, and health by 2015. Multiple reports have been published, many commitments have been made – but are we making progress? Are fewer mothers and children dying? Is access to essential health care improving for the poor?

The target of the fourth MDG is a two-thirds reduction in under-five mortality between 1990 and 2015. In Africa the average annual decline in under-five mortality between 1960 and 1990 was two percent per year, but progress since 1990 has been much slower at 0.7 percent per year.² (Figure I.1) Understanding why progress has been slow is essential if we are to improve the situation for mothers and newborns in Africa.

While the huge impact of HIV/AIDS and macro-economic factors have often been cited as reasons for slow progress in reducing child mortality in Africa,² another important barrier to progress is the failure to reduce neonatal deaths (deaths in the first four weeks of life). Child survival programmes have primarily focused on important causes of death *after* the first four weeks of life – pneumonia, diarrhoea, malaria, and vaccine preventable conditions. However, in the last few years it has become obvious that deaths during the first weeks of life (neonatal deaths) account for an increasing proportion of under-five deaths. Globally, almost 40 percent of under-five deaths are neonatal.³ Of every four children who die in Africa, one is a newborn. As child health programmes succeed in reducing deaths after the first month and year of life, an increasing proportion of under-five deaths will be neonatal, and action must now be taken to reduce newborn deaths.⁴

Newborn deaths can be reduced by strengthening newborn care within existing child and maternal health programmes (See Section II and III) and by more attention to reaching the unreached. (see Section IV)

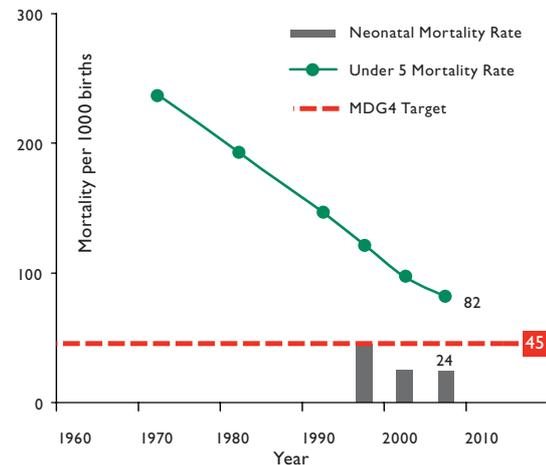
MDG 4 - new hope in Africa?

The slow average decline in the under-five mortality rate (U5MR) across Africa hides important differences between countries. Since the 1990s, some countries, most with high HIV prevalence, have seen increases in U5MR. Such countries include Botswana, Zimbabwe, Swaziland, Kenya, and Côte d'Ivoire. Most African countries, including many of the larger countries, have experienced either static U5MR for the last decade or have made minimal progress. Yet some countries have made excellent and consistent progress in reducing deaths among children under-five. Eritrea is an example of such a country, having achieved an average annual reduction in under-five mortality of 4 percent since 1990 despite having one of the lowest gross national incomes (GNI) per capita in the world and having experienced a war (Figure I.2).

To meet MDG 4, sub-Saharan Africa will need to achieve an annual average reduction in under-five mortality of at least 8 percent per year for the next decade. Four high burden countries with stagnant U5MR in the 1990s – Tanzania, Malawi, and Ethiopia – have reported 25 to 30 percent reductions in U5MR over the past few years based on data from Demographic and Health Surveys (DHS) released in the past year (Figure I.3). These statistics equate to annual reductions of over five percent and suggest that major decreases in child mortality can be achieved.

However, a note of caution is required when interpreting these data: there is uncertainty around the estimates of U5MR, and particularly NMR from DHS. Prospective pregnancy surveillance data indicate that DHS tend to under-report early neonatal deaths.⁵⁶ The data are discussed in more detail in the data notes (page 226).

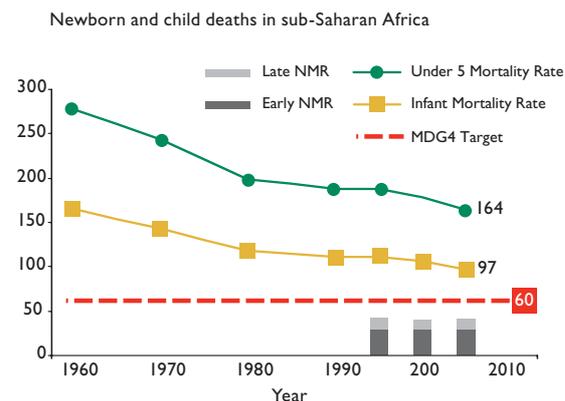
FIGURE I.2 Progress towards MDG 4 in Eritrea



Eritrea has made consistent progress in reducing under-five deaths. Despite a gross national income per capita of only \$180, the pace of decline is among the fastest in any developing country. Reasons for this progress in Eritrea and in 6 other African countries with relatively low NMR will be explored in more detail in Section IV.

See Eritrea country profile (page 189)

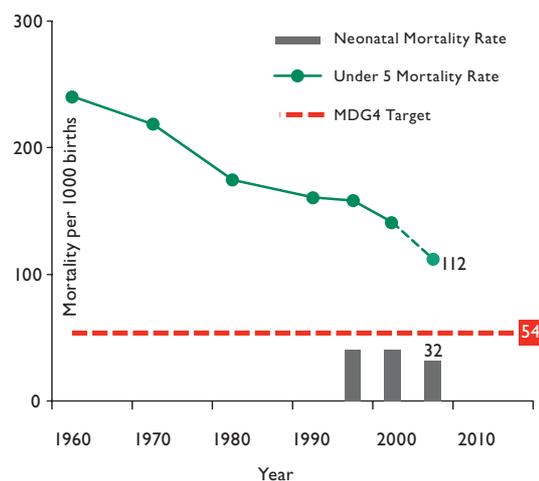
FIGURE I.1 Progress towards MDG 4 to save the lives of children in Africa – more attention is needed to reduce neonatal deaths



- Mortality among children under five years in Africa appears to be decreasing after a decade of little progress
- But there has been little progress in reducing neonatal deaths, and 25 percent of under-five deaths in Africa are now neonatal deaths – 1.16 million a year
- There has been no measurable progress in reducing deaths during the first week of life
- To achieve MDG 4, newborn deaths must be reduced. This requires strengthening of both maternal and child health services and integration with other programmes

MDG 4 progress is detailed in the country profiles for in each of sub-Saharan Africa's 46 countries (page 174). See data notes for more information. The 2005 result includes DHS results from 8 countries which are unadjusted.

FIGURE I.3 Progress towards MDG 4 in Tanzania



Tanzania has just reported a dramatic 32% reduction in under-five mortality since the last DHS 5 years ago. While the reduction in NMR was smaller (20%), this is still substantial and equates to 11,000 fewer babies dying each year (see Tanzania country profile on page 216). This corresponds to annual reduction of 6.4% in U5MR. If this progress could be sustained for the next decade, Tanzania would meet MDG 4.

See Tanzania country profile (page 216)

See data notes for more information on data definitions and limitations. The 2005 result for Tanzania includes DHS results for NMR and U5MR which are unadjusted.

WHERE in Africa do newborns die?

Africa accounts for 11 percent of the world's population but more than 25 percent of the world's newborn deaths. Of the 20 countries in the world with the highest risk of neonatal death, 15 (75 percent) are in Africa.

The highest risk countries

Liberia has the highest risk of newborn death, with 6.6 percent of babies dying in the first month of life. Many of the 10 African countries with the highest risk of newborn death are countries that have experienced war or other disasters. However, the list includes countries such as Mali and Nigeria, which have been politically stable and have relatively high GNI per capita compared to other African countries with much lower NMR.

Paradoxically, countries with higher NMR have more deaths that result from easily preventable causes (see *WHY do African newborns die?* page 15). Thus these countries have the greatest opportunity to save the most lives – at the lowest cost and in the shortest time.

The lowest risk countries

Some African countries have NMRs similar to those of industrialised countries, though the three countries with lowest NMR are all island states with small populations and relatively high GNI (US\$1,770 to US\$8,090). The GNI per capita for these countries is higher than the average in Africa, but this income is still below that of some African countries with high NMRs. Section IV will discuss this further. Even South Africa, with a relatively high GNI per capita, has double the risk of newborn death compared to the three lowest risk nations, largely because of ongoing social inequity within the country. Some of the countries with moderately low NMR and very low GNI have made remarkable progress, although we again stress caution in interpreting DHS data on NMR.

The countries with the most newborn deaths

The number of deaths per country is determined by the number of births and the risk of newborn death.

Countries with large populations tend to have more births and so are likely to have large numbers of newborn deaths. Several of the biggest countries are also in the list of ten countries with the highest NMR – notably Nigeria, Mali, and Angola. In Nigeria alone, over a quarter of a million babies die every year.

- Five countries account for almost 600,000 deaths, over half the total newborn deaths in Africa
- Ten countries account for over 790,000 deaths, two thirds of the total
- Fifteen countries account for over 910,000 deaths, over three quarters of the total

Due to their large population sizes, these same countries also have high numbers of maternal and post neonatal child deaths (Table I.3).

Within countries, where do babies die?

More than half of African babies who die do so at home. In some countries, such as Ethiopia, as few as five percent die in hospital. In Northern Ghana, only 13 percent of neonatal deaths are in hospital.⁷ Babies born to families living in rural areas are at greater risk of death than babies born to families living in urban areas.³ For 22 countries in Africa with DHS published during the last five years, the NMR was, on average, 42 percent higher among rural families. A growing issue in Africa is the urban poor. However, data from Africa on neonatal outcomes for the peri-urban poor are harder to find than data from Asia, where increased NMRs among peri-urban poor are well documented.

Newborn deaths and poverty

Poverty and the ill health and deaths of newborns are intimately linked. Mothers and newborns in poor families are at increased risk of illness and face more challenges in accessing timely, high quality care compared to wealthier families. The newborn health gap between rich and poor countries is unacceptably high, ranging from a NMR of 9 in Seychelles (GNI of US\$8,090) to 66 in Liberia (GNI of US\$110).⁶

TABLE I.1 The 10 African countries where newborns have the highest risk of dying

Rank (out of 46 countries)	Country	Neonatal mortality rate (per 1,000 Live births)
46	Liberia	66
45	Côte d'Ivoire	65
44	Mali†*	57
43	Sierra Leone	56
42	Angola	54
41	Somalia	49
40	Guinea-Bissau	48
39	Central African Republic	48
38	Nigeria†	48
37	Democratic Rep. of Congo	47

TABLE I.2 The 11 African countries where newborns have the lowest risk of dying

Rank (out of 46 countries)	Country	Neonatal mortality rate (per 1,000 Live births)
1	Seychelles	9
2	Cape Verde	10
3	Mauritius	12
4	South Africa	21
5	Eritrea†	24
6	Namibia	25
7	Malawi†	27
8	Cameroon†	29
9	Comoros	29
10=	Gabon, Burkina Faso†	31

See data notes on page 226 for sources and data limitations
 † DHS result which is unadjusted

TABLE I.3 African countries with the most newborn deaths also have many maternal deaths

Country	Ranking for number of newborn deaths	Number of newborn deaths	Ranking for number of maternal deaths	Number of maternal deaths
Nigeria*	1	255,500	1	42,600
DR Congo	2	130,900	2	27,600
Ethiopia	3	119,500	3	26,000
Tanzania	4	44,900	8	8,100
Uganda	5	44,500	6	12,400
Kenya	6	43,600	4	13,200
Côte d'Ivoire	7	42,800	16	4,600
Angola*	8	40,100	5	12,700
Mali*	9	36,900	9	7,800
Niger	10	31,700	7	11,700
Ghana	11	29,200	24	3,700
Mozambique	12	28,500	10	7,700
South Africa	13	23,000	27	2,500
Madagascar	14	22,500	21	3,900
Burkina Faso	15	18,600	11	6,000
Total for 15 countries		912,200		190,500
Total for Africa		1,155,800		247,300

* Also in the 10 African countries with the highest NMR

Source: See data notes on page 226 for sources and data limitations. Includes some DHS results for NMR and MMR which are not adjusted

There is also an unacceptably large gap between rich and poor within nations. A new analysis of 13 African DHS datasets with a relative index of economic status indicates that families in the poorest quintile experience, on average, 68 percent higher neonatal mortality than the richest quintile. Among countries with these recent asset index data, the largest disparity is seen in Nigeria, with an NMR of 23 among the richest quintile compared to 59 in the poorest quintile, representing a gap of 156 percent. If all of Nigeria experienced an NMR of 23 per 1,000 live births, 133,000 fewer babies would die each year. More systematic policy and support for health services that benefit the poor is required. Governments should be held accountable for reducing and eliminating inequities in health outcomes.

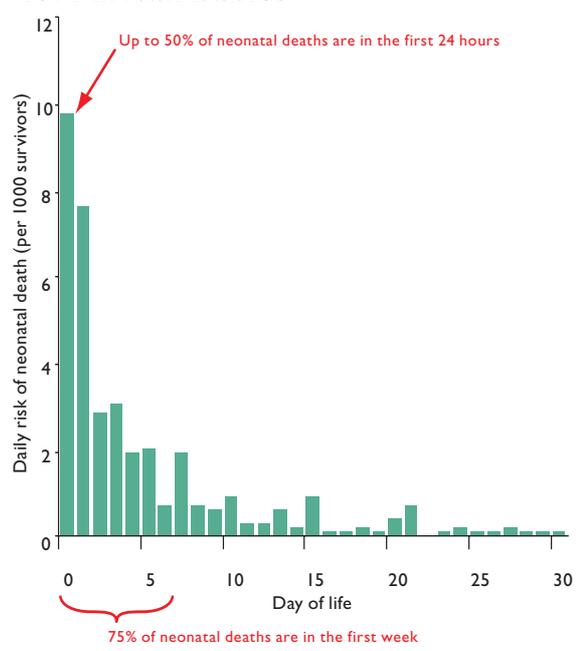
WHEN do African newborns die?

The birth of a baby should be a time of celebration. Yet during the entire human life span, the day of birth is the day of greatest risk of death (see Figure I.4). The risk of dying during the first day of life for a baby in Africa is close to 10 per 1,000 live births, or one percent. Each year, approximately 300,000 African babies die on the day of their birth, mostly for lack of adequate maternal and neonatal care. In fact, these numbers probably underestimate the true number of babies dying in the first 24 hours, due to inconsistencies in recording the 24 hour period after birth. Sensitivity analysis suggests that between 290,000 and 470,000 babies in Africa die on the first day of life.

Birth and the first day of life is the time of greatest risk for both the mother and the baby:

- Mothers – approximately 50 percent of maternal deaths take place within one day of childbirth⁸
- Stillbirths – approximately 30 percent of stillbirths in Africa occur during labour^{6,9,10}
- Newborns – between 30 and 50 percent of newborn deaths are on the first day of life.³

FIGURE I.4 The first day and first week of life are the greatest risk of death for African babies



Source: New analysis of the daily risk of death in Africa during the first month of life based on analysis of 19 DHS datasets (2000 to 2004) with 5,476 newborn deaths.

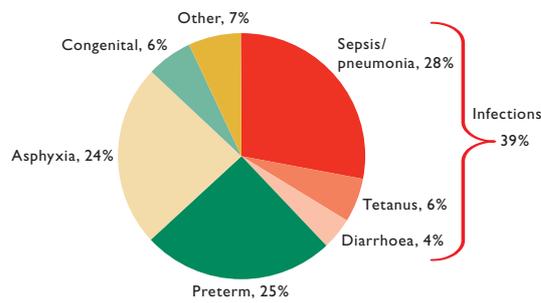
Yet birth and the first few days of life is the very point along the continuum of care when coverage of interventions is lowest. Section II in this publication examines the continuum of care and gives the regional average for coverage of packages along the continuum. The 46 country profiles demonstrate that this drop in coverage is seen in virtually all African countries.

WHY do African newborns die?

Direct causes of newborn deaths

What are the causes that kill so many babies in Africa each year? Most newborn deaths in Africa and Asia are

FIGURE I.5 I.16 million newborn deaths in Africa – Why?



Almost all newborn deaths are due to preventable conditions. Infections are the biggest cause of death and most feasible to prevent/treat

Source: Based on vital registration for one country and updated modeling for 45 African countries using 2004 birth cohort, deaths and other predictor variables. For more details see data notes on page 226 and for more details of estimation model see references^{11,13}

due to conditions that are rarely seen in industrialised countries, and if they are seen, would usually not cause death. Figure I.5 shows the top three causes of newborn deaths: infections, birth asphyxia, and complications of preterm birth which together account for 88% of newborn deaths in Africa. The pie chart is based on methods developed by the Neonatal Group¹¹ of the Child Health Epidemiology Reference Group for 192 countries¹² and used in the *World Health Report 2005*.¹³ These estimates have been updated for this report based on the most recent data; more details are given in the data notes on page 226. While these estimates have limitations, using facility-based data which do not cover all deaths may be even more misleading. Usually hospital data will show a very high percentage of deaths due to asphyxia since complicated births are more likely to come to hospital. Even in countries with a relatively large tetanus problem, however, few if any babies with tetanus will be treated in hospital, and many babies with neonatal sepsis will not be brought for care. The country profiles provide country specific estimates for cause of neonatal deaths.

Small babies – big risk of death

In sub-Saharan Africa, 14 percent of babies are born with low birthweight (LBW), or a weight at birth of less than 2,500 grams. Babies are born small for two main reasons, and the causes and risks are very different.

- **Poor growth in utero** – babies are born after the full number of weeks of gestation (term births) but are smaller than expected (small for gestational age). This may be due to a number of causes, including small maternal size, obstetric causes (such as twins or multiple pregnancy, hypertension in pregnancy), infections (notably malaria, HIV and STIs) or poor maternal nutrition or overwork. It is rare for babies who are full term to die directly because of being small – probably less than one percent of newborn deaths.¹¹ These babies are at an increased risk of infections, low blood sugar

(hypoglycaemia), and low body temperature (hypothermia) and have approximately twice the risk of death compared to normal sized babies. However, most will survive. Longer term problems with growth and development are possible.

- **Preterm or born too early** – babies born before the normal 37 weeks of gestation. In addition to the 24 per cent of neonatal deaths in Africa which are directly due to specific complications of preterm birth (breathing difficulties, intracranial bleeds, jaundice) (Figure I.5), many deaths due to other causes, occur among preterm babies. Preterm babies have a risk of death that is around 13 times higher than full term babies.¹⁴
- Some babies are **both preterm and have poor growth in utero** – this applies to many twins or other multiple births. Malaria during pregnancy can increase risk of preterm birth, growth restriction, or both. Babies who are preterm and growth restricted have an even higher risk of death.¹⁴

The limited data available suggest that most LBW babies in Africa are preterm.¹¹ This differs markedly from the situation in South Asia, where the LBW rate is almost twice that of Africa's but the majority of LBW babies are term babies who are small for gestational age. Babies in Africa are at high risk of being born preterm – the regional estimate for preterm birth is around 12 percent, which is almost double the frequency of preterm birth in European countries¹ and probably related to infections, particularly sexually transmitted infections (STIs), malaria, and HIV/AIDS. Indeed, new information suggests that co-infection during pregnancy with HIV and malaria is more than “double trouble” – the two infections act synergistically with serious consequences for maternal and newborn health, especially increasing the LBW rate.¹⁵

Most newborn babies who die are LBW – between 60 and 90 percent of newborn deaths globally.³ Hence paying increased attention to prevention of LBW, especially preterm birth, and to identifying small babies and providing extra support for feeding, warmth and care has great potential to reduce NMR. Most preterm babies are born between 33 and 37 weeks of gestation. They should survive as long as careful attention is given to feeding, warmth, and early treatment of problems, including breathing problems, infections, and jaundice – all feasible in low resource settings without high tech care. Babies less than 33 weeks gestation or approximately 1,500 grams are more likely to need advanced care, especially for breathing problems and feeding. If possible, these very small babies should be looked after in a referral hospital. This will be discussed more in several chapters of Section III.

Are baby girls or boys more likely to die?

Controlling for other factors, baby girls have a lower mortality rate than baby boys.¹⁶ In societies where care is equal for boys and girls, the ratio of neonatal mortality

for boys to girls is usually at least 1.2 or higher.¹⁶ Analysis of DHS data for African countries does not show a loss of this in-built survival advantage for girl babies, although DHS may not be sensitive enough to detect this difference. A number of studies from South Asia have reported reduced care seeking for girls, and even female infanticide.¹⁷ A recent population-based study from Ghana did report a significant number of infanticides, accounting for 4.9 percent of the 1,118 neonatal deaths between 1995 and 2002. The authors of this report, however, do not report the gender of these babies.¹⁸

Mothers and babies are especially vulnerable during childbirth

If girls and women are unhealthy or have complications during pregnancy or childbirth, they suffer and their babies do, too.

Complications *during childbirth* have the highest risk of a stillbirth or newborn death, with a median adjusted odds ratio of 10.3. Obstructed labour carries a very high risk of intrapartum and neonatal death – an adjusted odds ratio of 6.7 to 84.³ In other words a woman with obstructed labour has a 7 to 85 times higher risk of her baby dying compared to a woman who has a normal birth. Intrapartum complications also put the woman at increased risk of death and obstetric fistula. (See Section III chapter 3)

Complications *during the antenatal period* cause a median increased risk of 4.5 for stillbirth or neonatal death, with eclampsia posing the biggest risk.³ (see Section III chapter 2)

Pre-pregnancy factors carry a lower increased risk (median of 1.5).³ However, conditions such as adolescent pregnancy (young maternal age) are very common and affect many women. Thus they are important to address from a public health perspective, even if these conditions are of low positive predictive value for risk screening. (See Section III chapter 1)

In addition, the death of a mother puts the baby at major risk of death – one study in the Gambia found that for 9 mothers who died in childbirth, all of the babies died by one year of age, most in the first days and weeks of life.¹⁹

WHAT are the solutions for the most common causes of newborn death?

High newborn death rates, high potential for rapid progress in saving lives

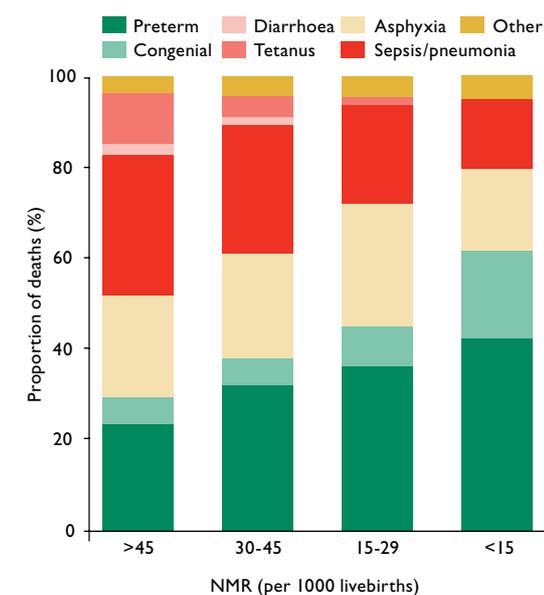
The three major causes of neonatal death are the same for all high mortality settings. However, the relative proportions of these three causes vary between and even within countries (Figure I.6). In settings with very high NMR (greater than 45 neonatal deaths per 1,000 live births), around half of the newborn deaths are due to infections, including tetanus. These deaths are the most feasible to prevent. Thus, the higher the NMR, the more deaths are easily preventable. In high mortality settings,

rapid reductions of NMR are possible with public health measures such as tetanus toxoid vaccination for pregnant women, clean childbirth practices, improved hygiene and cord care, and early and exclusive breastfeeding. Adding antibiotic treatment of newborn infections further increases the number of lives saved. Ideas for prioritising investments for neonatal health in various settings based on NMR levels are given in Section IV. (See Section IV Table IV.1 on page 162.)

Neonatal sepsis/pneumonia – 325,000 deaths a year in sub-Saharan Africa

The single most common killer of newborns is neonatal infection, particularly sepsis (blood infection), pneumonia, and meningitis (infection of the lining of the brain). These deaths could be prevented and treated through existing programmes (Table I.4). Prevention is mainly dependent on maternal health programmes such as antenatal care (ANC), childbirth care and hygiene, postnatal care (PNC), and early and exclusive breastfeeding. Treatment is possible through existing child health programmes, particularly Integrated Management of Childhood Illness (IMCI) and referral care in hospitals. The scaling up of IMCI in Africa has likely contributed to some reduction of deaths from infection in the late neonatal period.¹⁸ Adding new algorithms for care of babies in the first week of life to IMCI provides a further opportunity to reduce NMR and U5MR (See Section III chapter 5).

FIGURE I.6 Where newborn mortality rates are highest, more deaths are due to infections and tetanus and are more easily preventable



Source: Reference³. Based on cause specific mortality data and estimates for 192 countries.

Tetanus – Although tetanus is responsible for only 6 percent of newborn deaths in Africa, it is unacceptable that in the twenty-first century neonatal tetanus still accounts for some 70,000 deaths in Africa. Tetanus has ceased to be a major killer of babies in the industrialised world, even before the tetanus toxoid vaccine was developed. Unhygienic practices such as putting harmful substances on the cord contribute to this burden. Even so, tetanus mortality is decreasing, and in the last five years, a number of countries in Africa have been certified as having eliminated tetanus – the most recent being Togo in January 2006.²⁰ However, Africa still has many countries on the high burden list. (See Section III chapter 9)

Birth asphyxia – 280,000 deaths a year in sub-Saharan Africa
Babies born in sub-Saharan Africa have a very high risk of birth asphyxia and of intrapartum stillbirth.²¹ The best intervention is prevention through improved antenatal care and, particularly, skilled attendance and emergency obstetric care. Once obstructed labour or haemorrhage have resulted in severe intrapartum injury, the baby may be stillborn or have a high chance (around 30 to 50 percent) of dying on the first day of life.²¹ The only published study from Africa of long-term follow-up of severely asphyxiated babies is a hospital-based cohort study in South Africa, so data are lacking on long term outcomes.²² Primary prevention through emergency obstetric care is the most cost-effective solution.^{23:24}

Preterm birth complications – 290,000 deaths a year in sub-Saharan Africa

At least half of newborn deaths in Africa are in preterm babies. The direct cause of death is only attributed as preterm, however, if the death is in a severely preterm baby or results from complications specific to preterm birth. For example, if a moderately preterm baby has an infection and dies, the death is most appropriately attributed to infection – thus, many babies recorded as dying from infection are also preterm. Although severely preterm babies require intensive care to survive, most preterm babies who die are moderately preterm, and the majority could be saved by providing extra attention to the same care that all babies need: warmth, feeding, hygiene, and early identification of illness (Table I.4). Kangaroo mother care (KMC), involves caring for small, particularly preterm babies by having them strapped skin-to-skin to the mother's front. KMC is simple, effective, and empowers mothers and can be introduced in most facilities in Africa where care for small babies is provided. In addition, extra care of small babies at home care with skin-to-skin care and more support for breastfeeding has potential, though this has not yet been systematically studied in Africa. Preventing certain causes of preterm birth is also an effective strategy. This is feasible through control of malaria in pregnancy and identification and treatment of sexually transmitted infections (STIs), since HIV/AIDS and malaria in pregnancy interact and greatly increase the risk of preterm birth. (See Section III chapters 2,7,8)

HOW many babies dying from infections, birth asphyxia and preterm birth could be saved?

Given that most newborn deaths in Africa are due to causes that have solutions, how many lives would be saved if these solutions reached every mother and every baby? What is the investment required to accomplish this reduction in mortality? Table I.5 shows estimates of the costs and number of lives that could be saved according to the three major causes of newborn death.

Every year up to 1.16 million African newborns die, though 800,000 of these deaths could have been averted if established interventions that are already part of policy in most of Africa were actually available and used by 90 percent of mothers and babies.

The cost is very affordable at an estimated additional US\$1.39 cents per capita to provide 90 percent of mothers and babies in Africa with the essential MNCH packages detailed in this book. The inputs and methods for this updated analysis for 46 African countries are detailed in the data notes on page 226.

TABLE I.4 Solutions and lives saved according to

Cause of newborn death	Deaths in Africa	Typical timing of death
Neonatal sepsis and pneumonia	325,000	Sepsis peaks in first week. Pneumonia incidence gradually towards end of first month
Neonatal tetanus	70,000	Peaks during days 4-9 of life
Diarrhoea	46,000	Increasing risk from the end of the first month of life
Birth asphyxia	280,000	First day of life
Complications of preterm birth	290,000	First week of life for many direct complications of preterm birth (in the absence of intensive care) but ongoing increased risk especially for sepsis and pneumonia
Congenital abnormalities	70,000	First week of life for severe abnormalities
Other causes (e.g. jaundice)	80,000	First week of life
Total	1,160,000	

TABLE I.5 Estimates of the newborn deaths by major cause of death which could be prevented if essential MNCH packages were provided to 90 percent of women and newborns

		CAUSES OF DEATH			All neonatal deaths in Africa
		All infections (sepsis, pneumonia, tetanus, diarrhoea)	Preterm birth complications	Birth asphyxia	
LIVES SAVED	Upper				
	Lower	195,000 - 330,000	110,000 - 205,000	110,000 - 200,000	430,000 - 800,000
	Range (percent reduction from current deaths)	49 - 84%	37 - 71%	39 - 71%	37 - 67%

Source: New analysis for 46 countries in Africa using input data for 2004 and applying published methods.^{24,25} See data notes for more details, page 226. Note that the total lives saved include all causes of death, so the total given is more than the sum of lives saved from the three main causes.

Beyond survival – delivering health for the next generation

Given the large numbers of newborn deaths and the commitment to the MDGs, the global focus is on survival, but newborn deaths are only the tip of an unmeasured iceberg (Figure I.7). There is little attention or information on the burden of newborn illnesses, or on long term disability arising from complications occurring

during birth and the neonatal period, especially in developing countries. In addition, there are missed opportunities to initiate or improve healthy behaviours, especially in the crucial period during and immediately following childbirth. The health and development outcomes that have long term consequences for individuals, communities, and national productivity and well being include:

the most common causes of newborn deaths

Prevention solutions	Treatment solutions	Lives that could be saved at 90% coverage	Feasibility
Treating infections in the mother Clean childbirth practices and hygienic care of the baby, especially cord care	Antibiotic therapy Supportive care	49-88 percent	Highly feasible through antenatal (ANC) care, skilled attendance, Postnatal care (PNC), Integrated management of Childhood Illness (IMC), and existing hospital care of babies and children
Tetanus toxoid immunisation of pregnant women Clean childbirth practices and cord hygiene	Antibiotics Anti-tetanus globulin Supportive care (Very high risk of death)	73-88 percent	Highly feasible through (ANC) and additional outreach campaigns
Breastfeeding Hygiene	Oral rehydration therapy Supportive care, including IV fluids, if needed		Highly feasible through IMCI and family and community based promotion including community IMCI
Antenatal care, especially to identify/manage hypertension in pregnancy and pre eclampsia; Skilled attendance particularly use of partograph Emergency obstetric care for complications particularly management of obstructed labour and haemorrhage	Resuscitation at birth Supportive care (If severe damage, have about 30% chance of dying and high risk of disability)	39-71 percent	Feasible with more commitment to scaling up skilled attendance and Emergency Obstetric Care (EmOC)
Antenatal care, especially treating infections and iron/folic acid supplements Prevention of malaria in pregnancy (IPTp, ITN) Steroid injection for mothers in preterm labour	Resuscitation at birth Improved feeding practices Kangaroo Mother Care Early identification and treatment of complications, especially infections	37-71 percent	Prevention feasible in ANC, especially using intermittent preventive treatment of malaria in pregnancy (IPTp) and Insecticide Treated Bednets (ITN). Treatment feasible through existing facility care, especially extra support for feeding, Kangaroo Mother Care, and improved coverage and quality of PNC
Pre-conceptual folic acid to prevent neural tube defects (spina bifida)	Supportive care (Depending on the type of abnormality, may have low survival rate and long term complications)	1-9 percent	Curative care for congenital abnormalities is often complex and may involve surgery. Peri-conceptual folic acid may not be cost effective in high mortality/low resource settings unless new delivery channels (e.g. food supplementation) become lower cost
	Phototherapy for jaundiced babies Supportive care		Achievable in existing facility care
		37-67 percent	

The numbers of deaths from each cause is based on updated estimates by country using published methods and updated for this publication for 46 African countries²⁵. The lives saved are from a new analysis using *The Lancet* newborn survival series model²⁴ with all the essential MNCH packages at 90 percent coverage. See data notes on page 226 for more detail.

- Major illnesses for babies who may recover or may have ongoing consequences of the illness
- Disability related to complications of childbirth or in the neonatal period. Survivors of neonatal encephalopathy or brain injury related to birth asphyxia, for example, may have severe handicaps similar to that of a major stroke. One follow up study of survivors of neonatal tetanus found that major disability was common.²⁷ In addition, recent analysis of datasets from a number of countries shows a strong link between LBW and chronic disease in adulthood.²⁸
- Unhealthy behaviours could be remedied by appropriate contacts in this crucial time, particularly lack of early and exclusive breastfeeding.²⁹ Missed opportunities exist for improving practices and care seeking, such as for the prevention of mother-to-child transmission (PMTCT) of HIV and immunisation promotion.

There may be many effects of poor health in utero, at birth and in early life²⁸ that are not fully understood, or counted in a cost-benefit analysis. It is clear, however, that

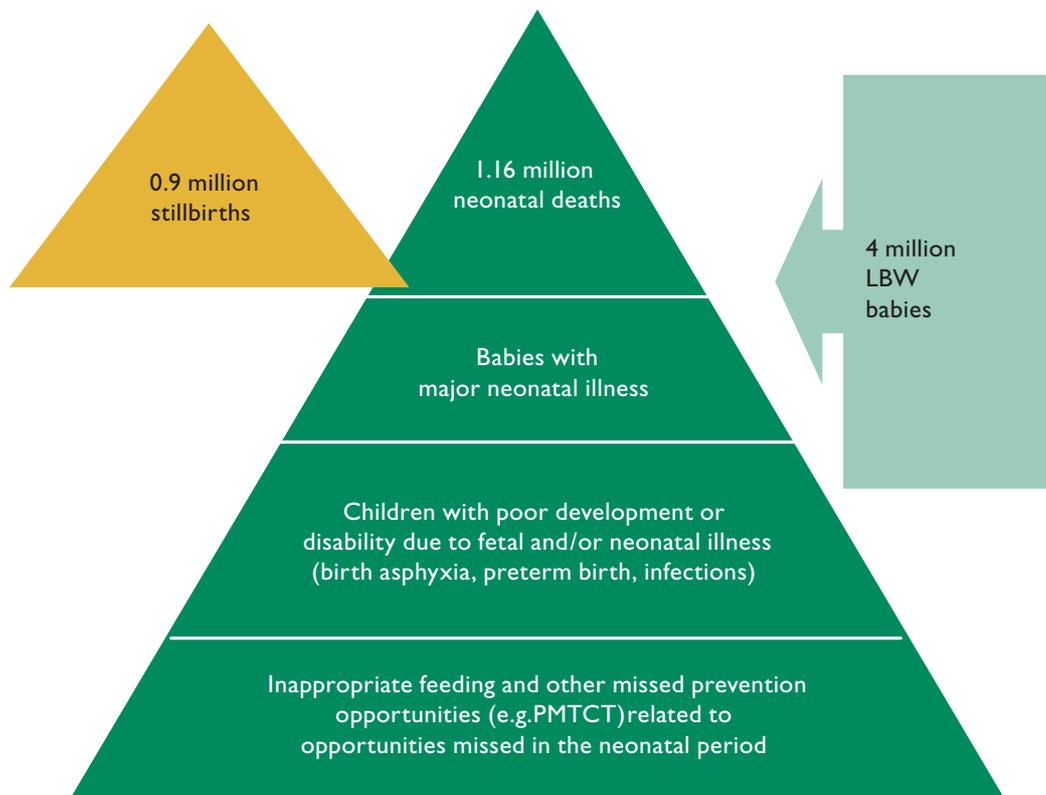
interventions during this important time period affect multiple outcomes for the mother and baby as well as having long term individual and societal potential.

Newborns are Africa's future

The next decade offers an opportunity for Africa to make progress after a decade or more of stagnation in maternal and child health. Newborn health is a key link in the MNCH continuum of care. Up to 800,000 newborn lives could be saved every year at a cost of only US\$1.39 per capita.

Africa has been in the world's spotlight with Live 8, the Make Poverty History campaign, the Group of 8 (G8) countries' focus on Africa, and visits by film stars and media personalities over the last year. But does this media attention translate to lasting action? Lasting change and lower rates of deaths for African mothers, newborns, and children will only happen when babies count for African governments and people.

FIGURE 1.7 Newborn health in Africa: the unseen burden of illness, disability, and lost economic potential



Make every newborn count – Information for action

Better use of existing information for action

- Add neonatal mortality rate (NMR) to the Millennium Development Goal (MDG) 4 monitoring at global and national level. Under five mortality rate (U5MR) and infant mortality rate (IMR) tend to run in parallel and have similar causes, but neonatal mortality rate (NMR) differs more from U5MR than does IMR and has different programmatic implications.
- Include the assessment of national NMR in the UNICEF/World Bank/WHO child mortality coordination group who review data for IMR and U5MR for each country each year and improve the transparency of the process.
- Publish national NMR data in important annual reports such as State of the World's Children, World Health Report and national reports. Data availability is similar to that for IMR. The current cycle of new NMR estimates every 10 years is too long and adds to invisibility.
- Consider including national stillbirth rate estimates in annual reports – current estimates are no less reliable than some other estimates which are included and stillbirths remain invisible in policy and programmes.
- Disseminate national health data with key audiences and strategies in mind; facilitate convincing policy dialogue with high level leaders in order to increase investment for maternal, newborn and child health (MNCH). (See country profiles beginning on page 174 for a one-page summary of data for action regarding national MDG 4 trends, coverage of essential packages, and financing.)
- Increase the availability of existing data at district level and capacity to use data to shape programmes at district level.

Improve future information for action

- Increase comparability and synthesis of available data sources (Demographic and Health Surveys, Multiple Indicator Cluster Surveys, and sample registration areas and health management information systems.
- Increase the reliability of survey and verbal autopsy tools for newborn deaths and causes of death.
- Increase the frequency of information for action related to coverage of MNCH essential interventions – having a DHS every 5 years is not frequent enough to guide programmatic scaling up.
- Strengthen the collection and use of data for action for MNCH at district level.
- Include better indicators for postnatal care in routine data collection and monitoring.

Counting in policy and programmes

- Include and strengthen newborn aspects in national mortality reduction goals, policies, health sector reform and strategic plans.
- Review and strengthen existing clinical guidelines, supervision tools and essential drug and equipment logistics.

- Ensure that MNCH is a cornerstone of district health systems, and the relevant data are collected and used at all levels including district level.
- Use both facility and community data regarding maternal, newborn, and child deaths for audit and quality improvement.

Accountability in society

- Engage civil society in tracking maternal, newborn, and child deaths.
- Make relevant data available and user friendly for the general public and media, for example district league tables as published annually in Uganda.
- Include Maternal Mortality Ratio (MMR) and U5MR and NMR key indicators in social development programmes as well as health sector reform and support programmes.

Counting investment

- Attempts to track investments in newborn care separately from maternal and child care are neither practical nor useful. More effort should be invested in tracking MNCH investment in order to hold partners and governments accountable³⁰ and also to track out-of-pocket spending by families and the effectiveness of pro-poor health financing.



More information

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- *The Lancet* child survival series
- *The Lancet* maternal survival series
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