



Surviving  
the First Day

STATE OF THE WORLD'S MOTHERS 2013

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## On the cover

Harriet, from Uganda, holds her 6-day-old baby Pius who was not breathing when he was born. Midwives trained by Save the Children helped Pius to breathe using a gentle technique and a simple ventilation device. "Since it was my first child, I was afraid of giving birth and that I would not know how to take care of my baby," said Harriet. "But when my baby was born, after the midwives helped him to breathe and he started nursing, I was very, very happy. I couldn't believe that I was the real mother of this baby and I felt so much happiness."

*Photo by Suzanna Klaucke*

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## Surviving the First Day

The birth of a child should be a time of wonder and celebration. But for millions of mothers and babies in developing countries, it is a dance with death.

In commemoration of Mother's Day, Save the Children is publishing its 14th annual *State of the World's Mothers* report. Every year, nearly 3 million babies die within the first month of life, most from preventable causes. More than a third of these babies die on their first day of life – making the birth day the riskiest day for newborns and mothers almost everywhere. This report shows which countries are doing the best – and which are doing the worst – at preventing these deaths. It also examines the need to strengthen health systems, train and equip more health workers and make proven, underused solutions available to every mother and newborn who needs them. Such efforts could help prevent as many as 3 out of 4 newborn deaths.

The first-ever *Birth Day Risk Index* compares first-day death rates for babies in 186 countries to identify the safest and most dangerous places to be born. The annual *Mothers' Index* uses the latest data on women's health, children's health, educational attainment, economic well-being and female political participation to rank 176 countries and show where mothers and children fare best and where they face the greatest hardships.



## Foreword

Any report on the state of the world's mothers is by definition a report on the state of the world, full stop. Women and girls – in many roles, including their role as mothers – drive improvements in the human condition. When we invest in them, we invest in a powerful source of global development.

One way to invest in women and girls is to invest in the survival and well-being of their children, and the recent story of child survival is terrific nearly any way you look at it.

Globally, since 1970, the number of children dying has declined by more than half, even though the population has almost doubled. If the rate of death had stayed constant, more than 31 million children would have died in 2011. Instead, that number was 6.9 million.

In many individual countries, progress has been even more dramatic. Barely a decade ago, in 1999, 1 in 5 Rwandan children died before turning 5. In 2011, the child mortality rate in Rwanda had fallen to 1 in 20. Other low-income countries, such as Malawi, Bangladesh and Nepal have also made significant progress against enormous odds. It is now possible that all four countries will meet the 2015 United Nations' Millennium Development Goal (MDG 4) of reducing child deaths by two-thirds since 1990.

We can make sure these numbers keep going in the right direction by investing in proven solutions such as vaccines, anti-malarial bed nets, vitamin A supplements and frontline health workers to deliver these lifesaving interventions.

There is one other vital variable that until now has not received the attention it demands. Can we finally save the lives of newborn babies? This year's *State of the World's Mothers* report shows that the answer is yes, if the partners who have done such excellent work on maternal and child health also turn their attention to newborn health, starting with the day of childbirth.

Each year, 3 million newborns die, making up nearly half (43 percent) of the world's under-5 child deaths. And yet almost all newborn deaths originate from preventable and treatable causes: we already have the tools available to save about three-quarters of the newborns who needlessly die each year.

This report reveals that we know how to stop this trend, because we understand the causes and solutions of newborn death like never before. Simple lifesaving treatments like a basic antiseptic for cleansing the umbilical cord can



prevent deadly infections. Antenatal steroids help premature babies breathe. “Kangaroo mother care” keeps them warm, encourages breastfeeding and protects them from infection. These inexpensive interventions haven't taken hold, but a new analysis in this report shows that four basic solutions alone could save more than 1 million newborns annually as soon as they do. Improvements in access to contraceptives, maternal nutrition and breastfeeding practices would save even more.

Saving newborn lives will prevent incalculable suffering. It is also a vital piece of the global development agenda. The long-term economic prospects of poor countries depend on investments in the health, nutrition and education of the people, particularly the women and young children living there. Children surviving and staying healthy means more children in school and able to learn, which in turn means productive adults who can drive sustained economic growth.

There are clear opportunities to have an immediate impact with smart investments in newborn survival. There is also a powerful rationale for making these investments a priority. As soon as we do, we will start writing the next chapter in the terrific story of child survival – and of global development writ large.

MELINDA GATES

*Co-chair of the Bill & Melinda Gates Foundation*

## Introduction

Every year, our *State of the World's Mothers* report reminds us of the inextricable link between the well-being of mothers and their children. As any mother – myself included – will tell you, our children's health and safety is the most important thing in our lives. And we know that a strong and empowered mother is the best champion a child will ever have. More than 90 years of experience have shown us that when mothers have health care, education and economic opportunities, both they and their children have the best chance to survive and thrive.

But many are not so fortunate. Every year, 287,000 women die during pregnancy or childbirth, and 6.9 million children die before reaching their fifth birthday. Almost all these deaths occur in developing countries where mothers, children and newborns lack access to basic health care. While child mortality rates have declined in recent decades, 19,000 mothers still mourn the loss of a child each and every day – an unthinkable number of heartbreaks. This is especially tragic since most of these deaths could be prevented at a modest cost.

This year's report looks at the critical first day of life, when mothers and their newborns face the greatest threats to survival, and when there is tremendous opportunity to save lives. It highlights approaches that are working to bring essential health care to the hard-to-reach places where most deaths occur. And it shows how millions more lives each year can be saved if we invest in proven solutions and help mothers do what's best for their children. If we don't save lives on this critical first day, we will never truly end preventable child deaths.

Save the Children is working on four fronts as part of our global newborn and child survival campaign:

- First, we are increasing awareness of the challenges and solutions to maternal, newborn and child survival. As part of our campaign, this report calls attention to areas where greater investments are needed and shows that effective strategies are working, even in some of the poorest places on earth.
- Second, we are encouraging action by mobilizing citizens around the world to support programs to reduce maternal, newborn and child mortality, and to advocate for increased leadership, commitment and funding for programs we know work.
- Third, working in partnership with national health ministries and local organizations, we are supporting



efforts to deliver high-quality health services throughout the developing world. By improving pregnancy and delivery care, vaccinating children, treating diarrhea, pneumonia and malaria, as well as improving nutrition, we have saved millions of lives. The tragedy is that so many more could be saved, if only more resources were available to ensure that these lifesaving programs reach all who need them.

- Fourth, we are collaborating with partners on research to determine what tools and approaches work best to save the lives of babies in the first month of life. Our groundbreaking *Saving Newborn Lives* program, launched in 2000 with a grant from the Bill & Melinda Gates Foundation, has helped deliver better care practices and improved health interventions to save newborn lives in 18 countries. The challenge now is to bring these lifesaving services and practices to mothers and newborns everywhere.

This report contains our annual ranking of the best and worst places in the world for mothers – but no matter if they're in the United States or Malawi or India, all mothers are fundamentally the same. Every night, millions of mothers around the world lean over their sleeping newborns and pray that they will be safe, happy and healthy. It's what we all want for our children. And it's certainly not too much to ask.

When a child is placed into his mother's arms for the first time, that woman's life is changed forever. The moment is brief and precious. We must seize the opportunity to invest in this most basic, most enduring partnership – between a mother and her child – if we are to change forever the course of history and reduce newborn deaths. Please read the Take Action section of this report and join me in doing what any mother would do: put the well-being of children first.

CAROLYN MILES  
*President and CEO of Save the Children USA*



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# Executive Summary: Key Findings and Recommendations

More than 1 million babies die on the first day of life – making the birth day the most dangerous day for babies in nearly every country, rich and poor alike. This is one of the major findings of Save the Children’s 14th annual *State of the World’s Mothers* report. The findings indicate, as never before, that helping babies survive the first day – and the first week – of life represents the greatest remaining challenge in reducing child mortality and meeting the ambitious Millennium Development Goal of reducing 1990 child mortality rates by two-thirds by 2015.

The world has made unprecedented progress since 1990 in reducing maternal and child deaths. Working together, governments, communities, nongovernmental organizations and families have reduced the annual number of children under 5 who die each year by over 40 percent – from 12 million to 6.9 million. Progress for mothers has been even greater, with deaths declining almost 50 percent since 1990 – from 543,000 to 287,000 per year.

But we have made much less progress for the children who are the most vulnerable of all – newborns. In 2011, 3 million babies died in their first month of life. This is 43 percent of all deaths of children under age 5 worldwide. Three-quarters of those newborns died in the first week of their lives, and one-third did not survive their first day of life.

Why such slow progress in reducing newborn deaths? One reason is that until recently many believed – incorrectly – that little could be done to save newborn lives in the poorest countries. We now know that newborn deaths are not inevitable and that low-income countries can make significant progress in reducing newborn mortality. We have identified the three major causes of these deaths – complications during birth, prematurity and infections – and we have developed a set of interventions that can prevent or treat each of these causes.

These proven interventions – coupled with stronger health systems and sufficient health care workers who are trained, deployed and supported to tackle the key causes of child mortality – have the potential to reduce newborn deaths by as much as 75 percent. This would save more than 2 million newborn lives each year. Ending preventable deaths within a generation will require an increased focus on the steps needed to reduce newborn mortality. What is lacking is the political will and funding to deliver these solutions to all the mothers and babies who need them.

This year’s *State of the World’s Mothers* report shows which countries are succeeding – and which are failing – in saving the lives of mothers and their newborn babies. It examines the ways investments in health care, nutrition and education can make a difference for newborns, mothers, communities and society as a whole. It also points to proven, low-cost solutions that could save millions of lives if used by all mothers and newborns.

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## MOTHERS AND NEWBORNS: VITAL STATISTICS

Every year, 40 million women give birth at home without the help of a skilled birth attendant.

Every day, 800 women die during pregnancy or childbirth and 8,000 newborn babies die during their first month of life.

Newborn deaths account for 43 percent of all deaths among children under age 5.

3 million newborn babies die every year – mostly due to easily preventable or treatable causes such as infections, complications at birth and complications of prematurity.

60 percent of infant deaths occur in the first month of life. Among those, nearly three-fourths (2 million per year) die in their first week. And more than a third (1 million per year) die on their day of birth.

Nearly all newborn and maternal deaths (98 and 99 percent, respectively) occur in developing countries where pregnant women and newborn babies lack access to basic health care services – before, during and after delivery.

## Key Findings

1) **The first day of life is the most dangerous day for mothers and babies.** Worldwide, the day a child is born is by far the most dangerous day in a child's life. Save the Children's first-ever *Birth Day Risk Index* compares first-day death rates for 186 countries and finds that in most countries, children are at greatest risk on the day they are born. Babies in Somalia have the highest risk of dying on their birth day. First-day death rates are almost as high in Democratic Republic of the Congo, Mali, and Sierra Leone. Mothers in these four countries are also at high risk on this day. Mothers in Somalia and Sierra Leone face the second and third highest lifetime risk of maternal death in the world, respectively. (To read more, turn to pages 27-35.)

2) **The first day is also a day of unequalled opportunity to save lives and set the stage for a healthy future.** Most newborn and maternal deaths could be prevented by ensuring that mothers and newborns have access to low-cost, lifesaving interventions through improved and expanded health care systems. Ensuring access to well-trained and equipped health care workers during childbirth is part of the solution. According to the United Nations, four products could greatly assist health workers in saving many newborn lives. An original analysis by Save the Children estimates that within the first month of life, more than 1 million babies could be saved each year with universal access to these products, which cost between 13 cents and \$6 each and are ready for rapid scale-up now. The products are:

- steroid injections for women in preterm labor (to reduce deaths due to premature babies' breathing problems);
- resuscitation devices (to save babies who do not breathe at birth);
- chlorhexidine cord cleansing (to prevent umbilical cord infections); and
- injectable antibiotics (to treat newborn sepsis and pneumonia).

Other low-cost interventions such as kangaroo mother care and early and exclusive breastfeeding would save many more babies. Such interventions, as part of strengthened health care systems, not only can dramatically reduce maternal and newborn deaths, but also can prevent a lifetime of negative health consequences such as long-term disabilities, intellectual impairment and increased vulnerability to illness. Poor health is not only costly for individuals and their families, it can also impede a nation's efforts toward economic growth. (To read more, turn to pages 37-49.)

3) **Mothers and babies in sub-Saharan Africa face the greatest risks.** Maternal, child and newborn death rates have declined across the developing world since 1990, but progress has been slowest in sub-Saharan Africa. Save the Children's annual *Mothers' Index* assesses the well-being of mothers and children in 176 countries. The bottom 10 countries on the *Mothers' Index* are all in sub-Saharan Africa. Not surprisingly, many of these same countries also have very high rates of first-day death, and sub-Saharan Africa also occupies the 10 worst spots on the *Birth Day Risk Index*. Seven countries – Central African Republic, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Mali, Sierra Leone and Somalia – score in the bottom 10 on both indices. While mothers and babies struggle for survival in much of sub-Saharan Africa, a number of countries have demonstrated that progress is possible despite great challenges. For example,







Sierra Leone

Malawi has reduced its newborn mortality rate by 44 percent since 1990. And Mali, Tanzania and Uganda have made important policy changes to improve their readiness to expand newborn health programs. *(To read more, turn to pages 27-35 and 65-74.)*

**4) In South Asia, mothers and babies die in great numbers.** An estimated 423,000 babies die each year in South Asia on the day they are born, more than in any other region. South Asia accounts for 24 percent of the world's population and 40 percent of the world's first-day deaths. In India – where economic growth has been impressive but the benefits have been shared unequally – 309,000 babies die each year on the day they are born (29 percent of the global total). Bangladesh and Pakistan also have very large numbers of first-day deaths (28,000 and 60,000 per year, respectively.) Mothers in South Asia also die in large numbers. Each year, 83,000 women in South Asia die during pregnancy or childbirth. India has more maternal deaths than any other country in the world (56,000 per year). Pakistan also has a large number of maternal deaths (12,000). *(To read more, turn to pages 27-35 and 65-74.)*

**5) Babies born to mothers living in the greatest poverty face the greatest challenges to survival.** At the heart of the newborn survival problem is the widening gap between the health of the world's rich and poor. Virtually all (98 percent) newborn deaths occur in developing countries, and within many of these countries, babies born to the poorest families have a much higher risk of death compared to babies from the richest families. A new analysis of 50 developing countries found babies born to mothers in the poorest fifth of the population were on average 40 percent more likely to die compared to those in the richest fifth. Disparities within countries like Bolivia, Cambodia, India,

Morocco, Mozambique and the Philippines are especially dramatic. Many newborn lives could be saved by ensuring services reach the poorest families in developing countries. For example: If all newborns in India experienced the same survival rates as newborns from the richest Indian families, nearly 360,000 more babies would survive each year. Closing the equity gaps in Pakistan and Democratic Republic of the Congo would similarly save the lives of 48,000 and 45,000 newborns each year, respectively. *(To read more, turn to pages 15-21.)*

**6) Funding for newborn survival programs does not match the need.** The majority of health funding in most developing countries is from domestic resources. Many developing nations recognize their primary role in providing for the health of mothers and newborns and the importance of eliminating financial barriers that limit access to care. Within this context, development assistance can play an important role in helping to improve newborn health. While global support for maternal, newborn and child health has been rising since 2000, it remains very low and does not match the need given the 3 million newborn deaths and 2.6 million stillbirths that occur worldwide every year. More specifically, donor funding for newborn care is extremely small compared to the burden, apart from a few leading donors. *(To read more, turn to pages 51-53.)*

**7) In the industrialized world, the United States has by far the most first-day deaths.** Only 1 percent of the world's newborn deaths occur in industrialized countries, but the newborn period is still the riskiest time, no matter where a baby is born, with the first day being the riskiest time of all in most, if not all, countries. The United States has the highest first-day death rate in the industrialized world. An estimated 11,300 newborn babies die each year in the United



Ethiopia

States on the day they are born. This is 50 percent more first-day deaths than all other industrialized countries combined. When first-day deaths in the United States are compared to those in the 27 countries making up the European Union, the findings show that European Union countries, taken together, have 1 million more births each year (4.3 million vs. 5.3 million, respectively), but only about half as many first-day deaths as the United States (11,300 in the U.S. vs. 5,800 in EU member countries). In Australia, Austria, Canada, Switzerland and the United States, 60 percent or more of babies who die in their first month die on their first day. Current data do not allow for analysis of first-day death rates among disadvantaged groups in wealthy countries, but newborn and infant mortality are often higher among the poor and racial/ethnic minorities, and populations with high newborn mortality rates also tend to have high first-day death rates. Poor and minority groups also suffer higher burdens of prematurity and low birthweight, which likely lead to first-day deaths in the U.S. and elsewhere. *(To read more, turn to pages 55-57.)*

### 2013 MOTHERS' INDEX RANKINGS

Top 10		Bottom 10	
RANK	COUNTRY	RANK	COUNTRY
1	Finland	167	Côte d'Ivoire
2	Sweden	168	Chad
3	Norway	169	Nigeria
4	Iceland	170	Gambia
5	Netherlands	171	Central African Republic
6	Denmark	172	Niger
7	Spain	173	Mali
8	Belgium	174	Sierra Leone
9	Germany	175	Somalia
10	Australia	176	DR Congo

Save the Children's 14th annual *Mothers' Index* assesses the well-being of mothers and children in 176 countries – more countries than in any previous year. Finland, Sweden and Norway top the rankings this year. The top 10 countries, in general, attain very high scores for mothers' and children's health, educational, economic and political status. Democratic Republic of the Congo ranks last among the countries surveyed. The 10 bottom-ranked countries – all from sub-Saharan Africa – are a reverse image of the top 10, performing poorly on all indicators. The United States places 30th this year. Conditions for mothers and their children in the bottom countries are grim. On average, 1 woman in 30 dies from pregnancy-related causes and 1 child in 7 dies before his or her fifth birthday. These statistics go far beyond mere numbers. The human despair, lost opportunities and impaired economic growth represented in these numbers demand mothers, families and communities everywhere be given the basic tools they need to break the cycle of poverty and improve the quality of life for themselves, their children, and for generations to come.

See the Appendix for the Complete Mothers' Index, Country Rankings and an explanation of the methodology.



Finland

**“I feel secure, as I receive the support I need,” said Karin Sivelä two days after giving birth to her daughter at Porvoo Hospital.**

## Recommendations



Pakistan

1) **Address the underlying causes of newborn mortality, especially gender inequality.** When mothers are strong and stable – physically, financially and socially – their children are more likely to survive and thrive. Educated girls tend to marry later and begin childbearing later in life, when their bodies are more fully developed. They are also more likely to make healthy choices for themselves and their babies. Well-nourished girls also grow up to be healthier mothers who are less at risk for many health problems, including preterm birth. And family planning saves the lives of mothers and babies by enabling women to avoid pregnancy when they are too young or too old, and to space their births at healthy intervals. Men must also be engaged as stakeholders in maternal and child health so that they support family choices that will lead to healthier mothers and babies. *(To read more, turn to pages 37-38.)*

2) **Invest in health workers – especially those working on the front lines – to reach the most vulnerable mothers and babies.** The world faces a shortage of 5 million health workers of all types and there is an acute shortage of frontline health workers, including 350,000 with midwifery skills. New frontline health workers need to be recruited and trained, and those who are already practicing need opportunities to update and improve their skills. These health workers must be part of functioning health systems, and deployed to serve communities where they are most needed. Midwives and birth attendants need training, supplies and appropriate facilities to prevent and respond to birth complications. It is essential that routine obstetric care includes proven solutions such as giving corticosteroids to mothers in preterm labor, which can help infants' lungs develop so that they can breathe when they are born. Birth attendants also need training to help newborn babies survive the “golden minute” – that first moment after birth when, if a baby is not breathing spontaneously, a simple intervention can save her life. *(To read more, turn to pages 38-48.)*

3) **Invest in low-cost, low-tech solutions which health workers can use to save lives during pregnancy, at birth and immediately after birth.** Most newborn deaths could be prevented by ensuring access to lifesaving products and approaches, including: treatment of infections in pregnant women; access to low-tech equipment that can help babies breathe; clean cord care using chlorhexidine; prompt treatment of newborn infections; and basic education for mothers about the importance of proper hygiene, warmth and breastfeeding for newborns. Increasing the use of these services and these practices can prevent up to 3 out of 4 newborn deaths. *(To read more, turn to pages 38-48.)*

4) **Strengthen health systems and address demand-related barriers to access and use of health services.** Investing in skilled birth attendants and other frontline health workers is a critical piece of a broader movement to ensure Universal Health Coverage so that everyone – starting with the most vulnerable – receives essential, high-quality care without financial hardship. Developing nations need support in building strong, fully functioning health systems and removing financial and other barriers that prevent mothers and newborns from getting the care they need. The success of Universal Health Coverage should be judged by its success in delivering health outcomes, including reducing newborn, maternal and child mortality. Thousands die every day in developing countries because health systems are grossly underfunded and lack the staff, equipment and supplies needed to save lives. The world needs to understand and address the social, cultural and financial barriers that prevent families from receiving

quality health care. More funding is needed for better facilities, for logistic systems that reliably provide drugs and commodities, to ensure that services are accessible to the most vulnerable, and for national and local monitoring that includes indicators of the coverage and effectiveness of basic components of newborn care, so countries and stakeholders can tell if progress is being made. *(To read more, turn to pages 46-49.)*

**5) Increase commitments and funding to save the lives of mothers and newborns.** In order to meet internationally agreed-upon development goals to reduce child and maternal deaths, lifesaving services must be increased for women and newborns. In most countries the majority of health financing comes from domestic sources. In many cases, countries need to increase their public investment in health – especially investments in maternal, newborn and child health – and take steps to ensure that direct payments for health care are not a barrier to survival. Developing countries should develop their own funded road maps to identify and implement solutions that work best within their existing health systems to end preventable maternal and newborn deaths. A range of stakeholders, including donor countries, developing countries, international agencies, nongovernmental organizations (NGOs) and the private sector all have separate roles to play in helping improve and expand effective health care coverage so even the poorest mothers and their newborns have access to quality care. NGOs, in particular, can help monitor progress and make sure stakeholders are held accountable. *(To read more, turn to pages 59-63.)*



Uganda



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# Two Decades of Progress, But Change Has Been Too Slow and Uneven

Every year since 1990, the number of children under age 5 dying around the world has fallen. Five million fewer children died in 2011 than in 1990. The world is nearing a tipping point, where we see the real possibility of ending preventable child deaths in our lifetime.

This dramatic progress has been encouraging, and it shows that when families, communities, governments and NGOs work together, millions of lives can be saved and improved. But while more children are surviving to age 5, progress has been slower for survival during the first month of life – the newborn period. Some 43 percent of under-5 deaths now occur among newborns, and this percentage is rising. In all regions but Africa, that proportion is roughly 50 percent or more. If the world is to achieve the goal of eradicating preventable child deaths, we must focus more on the challenge of newborn survival.

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## MILLENNIUM DEVELOPMENT GOALS

The Millennium Development Goals (MDGs) are eight globally agreed upon targets to reduce extreme poverty and promote human rights underpinned by measurable timebound targets. The target for MDG 4 is to reduce the world's under-5 mortality rate by two-thirds between 1990 and 2015. The target for MDG 5 is to reduce the maternal mortality ratio by three-quarters over the same period.

Many MDG targets have already been reached ahead of the 2015 deadline: extreme poverty has been reduced by half; the proportion of people who lack dependable access to improved sources of drinking water has been halved; conditions for more than 200 million people living in slums have been improved – double the target – and primary school enrollment of girls now equals that of boys.<sup>1</sup> These results represent tremendous progress, but much remains to be done.

Substantial progress has been made in reducing child mortality (down 41 percent from 1990 to 2011), but these gains are still insufficient to achieve the targeted two-thirds reduction. Similarly, maternal mortality has been cut nearly in half since 1990, but this falls short of the targeted three-quarters reduction.<sup>2</sup> Seventy-five priority countries have been identified which together account for more than 95 percent of maternal, newborn and child deaths each year. These are known as the “Countdown” countries. With the 2015 deadline fast approaching, only 28 of these countries are on track to achieve the child survival goal<sup>3</sup> and far fewer – only 9 (of the 74 countries with available data) – are on track to achieve the maternal survival goal.<sup>4</sup>

While it will be a challenge to meet MDGs 4 and 5, as well as other remaining goals, success is still possible – but only if governments do not waiver from their commitments made over a decade ago.

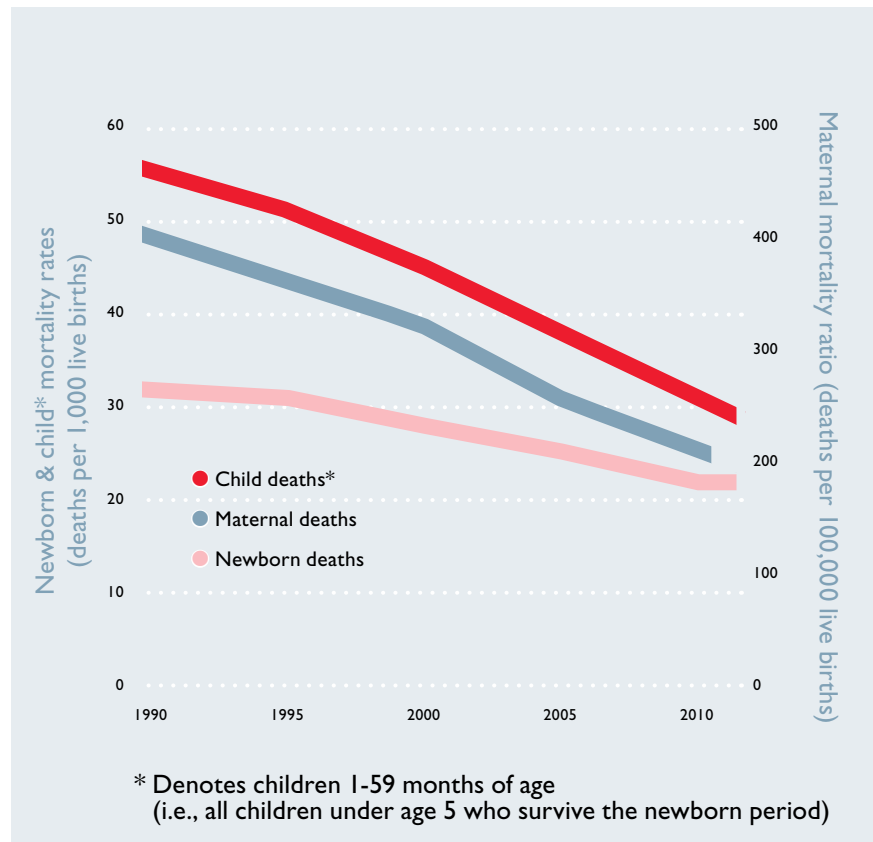


Sierra Leone

## MAJOR GAINS FOR MOTHERS AND OLDER CHILDREN, BUT SLOWER PROGRESS FOR NEWBORNS

Rates of child and maternal mortality are declining faster than ever before. Since 1990, maternal deaths and child deaths after the first month of life have been cut almost in half (both by 47 percent). But newborn mortality has only dropped 32 percent. All regions of the world are experiencing slower declines in newborn mortality than in older child mortality. Because of this slower decline, newborn deaths now account for a higher proportion of under-5 deaths: 43 percent in 2011, up from 36 percent in 1990.

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Data sources: UNICEF Global Databases; Data compiled for *A Decade of Change for Newborn Survival, Policy and Programmes (2000-2010): A Multi-Country Evaluation of Progress Towards Scale. Health Policy and Planning*, and UNICEF, *Levels and Trends in Child Mortality: 2012 Report*.



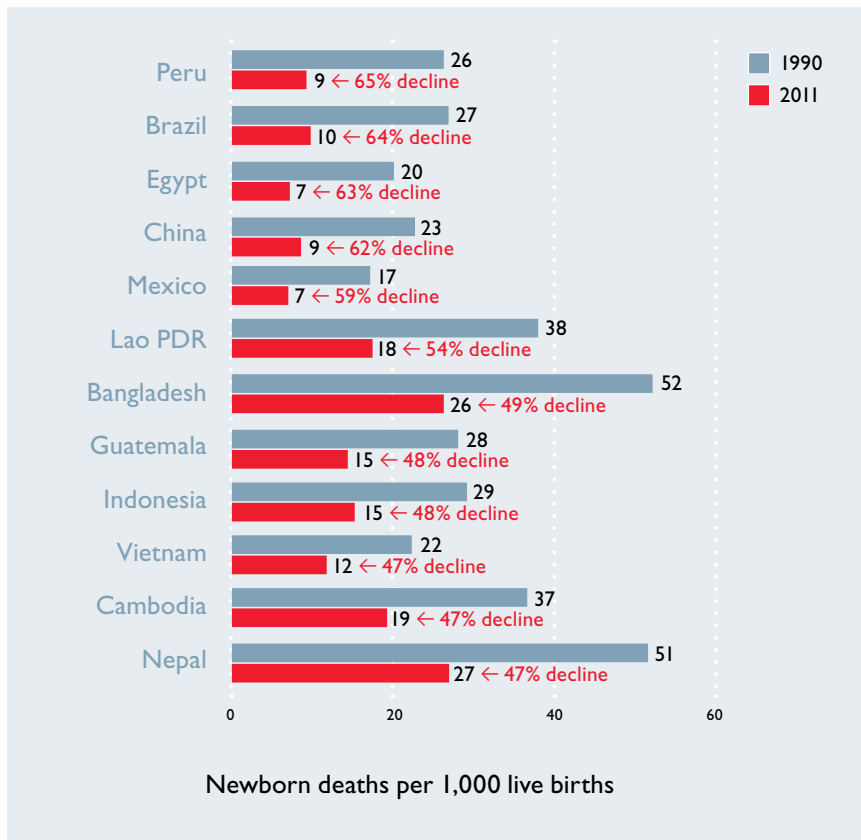
The good news is that we have proven solutions to this problem. Many developing countries have made remarkable progress in reducing newborn mortality. Their experiences show the way forward. Bangladesh, Cambodia and Nepal – to name a few – have demonstrated that effective solutions to this challenge exist and are affordable, even in the poorest countries.

How have developing countries saved newborn lives? They have focused on high-impact interventions and made sure these interventions reach many mothers and babies. With help from the international community, they have trained and deployed more health workers, removed financial and other barriers to care, strengthened their health systems and increased equity. These investments pay off not only in lives saved, but also in better long-term health and economic potential.<sup>5</sup> In addition, many of the same interventions that save newborns also save mothers and prevent stillbirths, providing a triple return on investment.

Compared to 10 years ago, many governments of low-income countries are now playing a much stronger role in promoting lifesaving approaches on a country-wide basis. For example: Malawi is championing the use of breastfeeding at birth and skin-to-skin care for warmth as effective practices every mother can and should undertake after the birth of her child. Nepal and Nigeria are using an inexpensive gel called chlorhexidine to prevent infections of babies' umbilical cords. Uganda is pioneering greater use of antenatal steroids to reduce deaths among premature babies. And Ethiopia has announced a country-wide program that will involve thousands of health care workers in the fight against newborn infections.



## 12 DEVELOPING COUNTRIES MAKING THE GREATEST STRIDES TO SAVE NEWBORN LIVES



These 12 countries have cut their newborn mortality rates significantly since 1990. Bolstered by this progress in saving newborn lives, all are on track to achieve MDG 4.

Note: Analysis was limited to the 75 priority (i.e., “Countdown”) countries for maternal and child survival.

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Data sources: Data compiled for *A Decade of Change for Newborn Survival, Policy and Programmes (2000-2010): A Multi-Country Evaluation of Progress Towards Scale*; WHO and UNICEF. *Countdown to 2015 – Building a future for Women and Children: The 2012 Report*.

## Growing Gaps Between Rich and Poor

Within countries, often the more prosperous segments of society have seen the greatest reductions in preventable newborn deaths. Not surprisingly, the better-off families everywhere tend to have better nutrition, better sanitation and better access to lifesaving health care. The babies who are still dying tend to be from families with the lowest incomes in the most remote areas. They live in communities where there are few health clinics and few health personnel, or where such services do exist but are out of reach due to financial barriers and pervasive poverty. They often belong to ethnic or religious minority groups that have faced generations of neglect and discrimination.

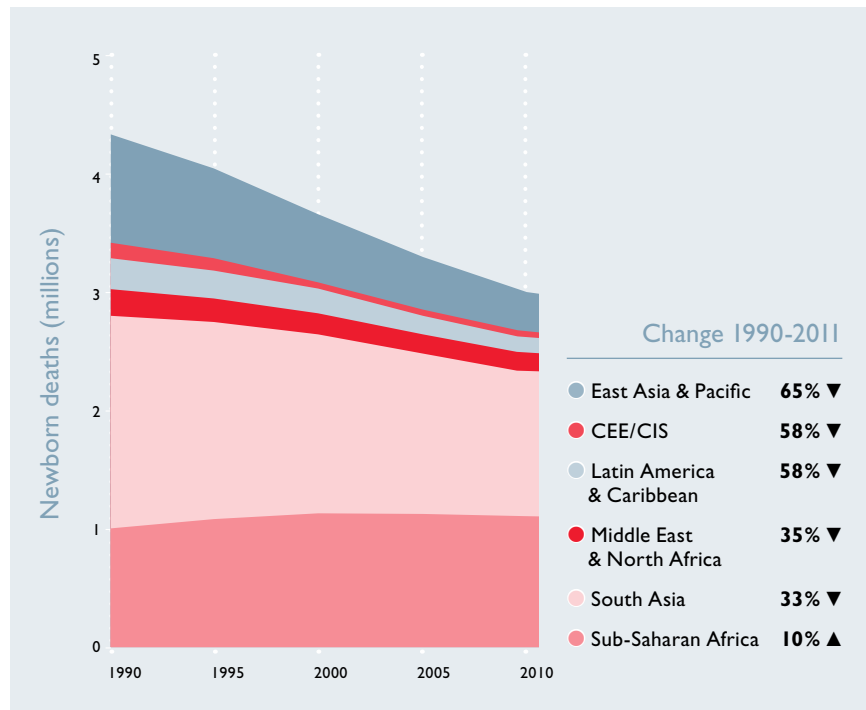
The majority of babies whose lives have been saved were often the ones who were easiest to reach. Two decades of progress, despite great accomplishments, have left large gaps between rich and poor. The challenge now is to deliver proven solutions to the remaining communities and finish the job.

While dozens of countries – mostly middle-income countries in Eastern Europe and Latin America – have halved newborn mortality in the last decade, countries in sub-Saharan Africa, on average, have seen no statistically significant change.<sup>6</sup> Without dramatic change in the trajectory for Africa, it is estimated that it will take over 150 years for an African newborn to have the same chance of survival as one born in Europe or North America.<sup>7</sup> Progress in South Asia, while significant, has also lagged behind the rest of the world.

## NEWBORN DEATHS HAVE DECLINED EVERYWHERE BUT AFRICA

Sub-Saharan Africa has shown the least progress of any region in combating newborn deaths over the last two decades. In fact, due to slowly declining mortality rates and rising population over the period 1990-2011, the number of newborns who died in sub-Saharan Africa actually went up (from 1.0 to 1.1 million) even though newborn mortality rates fell overall.

Data source: UNICEF Global Databases.



High-income countries have the lowest newborn mortality rates and fewest newborn deaths compared to the rest of the world, and they have also made some of the fastest reductions in newborn mortality. While newborn mortality rates have declined in all regions of the world, progress has been *slowest* in the regions with the *highest* rates, especially sub-Saharan Africa. Because of this, the gap between rich and poor countries continues to increase.

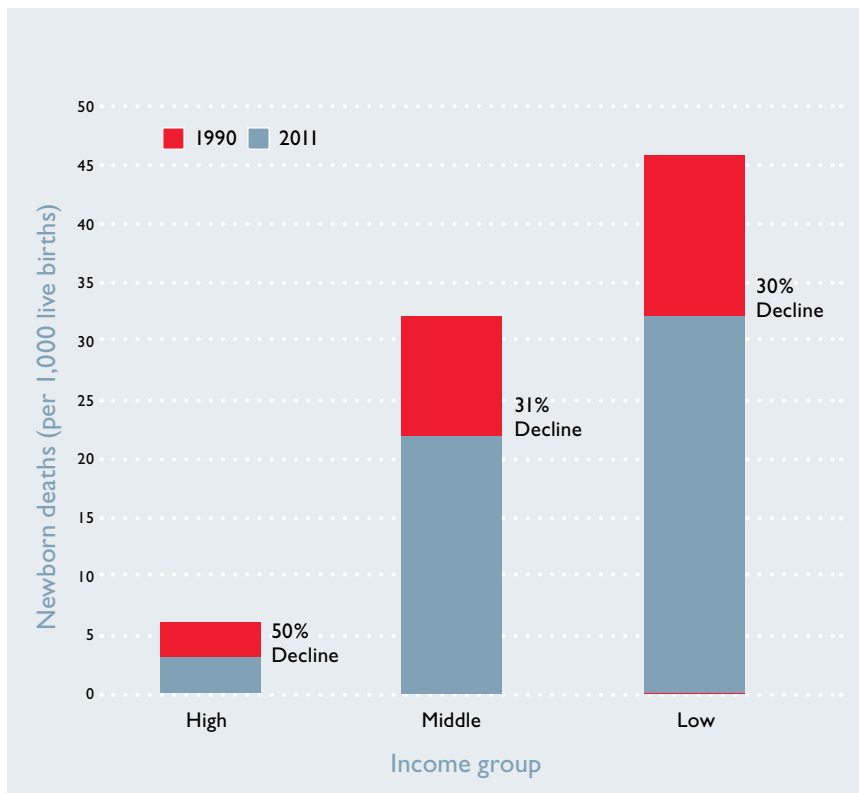
As a whole, the developed world has seen a 2.7 percent reduction per year in newborn mortality. This is twice the reduction seen in sub-Saharan Africa (1.3 percent per year) and 50 percent higher than that seen in South Asia (1.9 percent per year) from 1990-2011. Moreover, of the 10 countries with the greatest relative reductions in newborn mortality (all achieved reductions of more than 70 percent), nine are industrialized or high-income countries (Cyprus, Czech Republic, Estonia, Lithuania, Oman, Portugal, San Marino, Saudi Arabia and Slovenia) and one a South Asian upper-middle-income country (Maldives).

National averages often hide important disparities within countries. In many countries, the newborn mortality gap between rich and poor has widened despite falling national rates overall. When progress disfavors those who need it most, increased efforts are needed to deliver quality health care to the hardest-to-reach families. In Cambodia, for example, the newborn mortality rate among the poorest fifth of the population has declined by only 5 percent over the past 10 years, but among the wealthiest fifth the rate has fallen by nearly 40 percent. Similarly, in Nepal, declines were 35 percent among the poorest and 60 percent among the richest between 1996 and 2011. In Peru and the Philippines, survival gains also appear to have disproportionately benefited the best-off families.<sup>8</sup>

On the positive side, several countries have shown that it is possible to make progress in saving newborn lives without increasing inequity. Bangladesh, for example, has made relatively even gains in reducing newborn mortality across all income groups, which means it has neither increased nor decreased inequity. In Egypt, progress appears to have actually favored the poorest and narrowed



**NEWBORN SURVIVAL GAINS ARE SLOWEST IN THE POOREST COUNTRIES**



Countries across all income level categories have made progress in reducing newborn mortality. However, the gap between rich and poor has widened as high-income countries maintain the lowest rates and achieve the fastest reductions.

Data source: UNICEF. *Levels and Trends in Child Mortality: 2012 Report*.

the equity gap. Between 1995 and 2008, the newborn mortality rate for babies born into the wealthiest Egyptian families fell by 38 percent, while the rate for the poorest Egyptians fell 60 percent.<sup>9</sup>

## Where Are Babies Most at Risk?

At the heart of the newborn survival problem is a stubborn and widening gap between the health of the world's rich and poor. Virtually all (98 percent) of newborn deaths occur in developing countries.

A mother in sub-Saharan Africa, for example, is 30 times more likely than a mother in an industrialized country to lose a newborn baby at some point in her life.<sup>10</sup> On average, 1 in 6 African mothers is likely to lose a newborn baby – a commonplace but largely untold tale of grief.

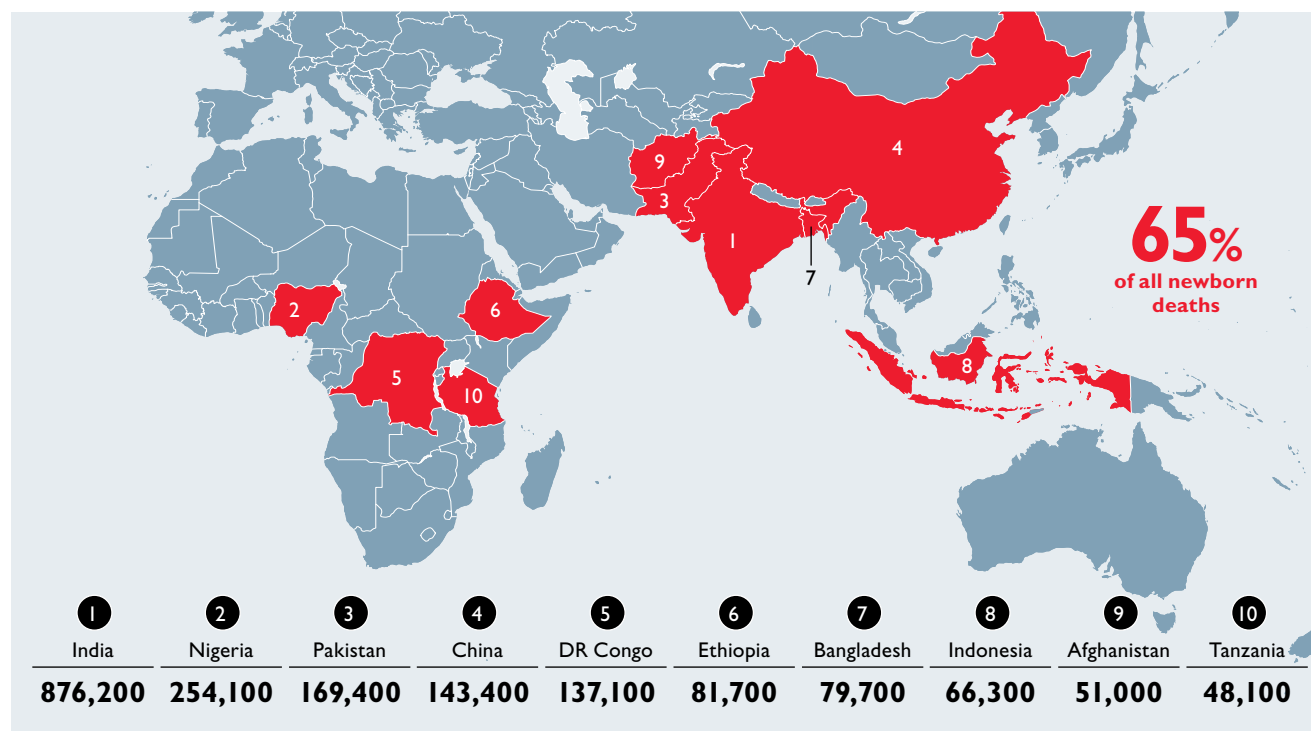
The newborn mortality rate (34 per 1,000 live births) is highest in sub-Saharan Africa, and highest of all in west and central Africa (39 per 1,000 live births). South Asia has a slightly lower newborn death rate (32 per 1,000), but because of that region's higher population density, it accounts for 41 percent of the world's newborn deaths – the most of any region. India alone accounts for 30 percent of the world's newborn deaths.<sup>11</sup>

Especially high newborn mortality rates are seen in countries with recent wars or civil unrest, such as Angola, Central African Republic, Côte d'Ivoire, Democratic Republic of the Congo, Mali, Sierra Leone and Somalia.



Nigeria

## MOST NEWBORN DEATHS OCCUR IN JUST 10 COUNTRIES



Nearly two-thirds of all newborn deaths (2 million out of 3 million each year) occur in just 10 countries. Many of these countries have very large populations (such as China and Indonesia) and others have high percentages of newborns dying (Afghanistan, DR Congo, Ethiopia and Tanzania). Several have both large populations and high newborn mortality rates (Bangladesh, India, Nigeria and Pakistan). These are places where mothers are also at high

risk of death during pregnancy and childbirth – 59 percent of maternal deaths occur in these same 10 countries.

—  
Data sources: Healthy Newborn Network (data compiled for *A Decade of Change for Newborn Survival, Policy and Programmes (2000-2010): A Multi-Country Evaluation of Progress Towards Scale*) and UNICEF Global Databases.

Babies born to poor mothers in rural areas face great challenges to survival. While many countries have achieved some success in increasing the number of mothers who give birth in health care facilities, many poor women in rural areas still give birth at home, without any contact with the health system. The mother might be aided at delivery by a neighbor or family member or by no one at all. In sub-Saharan Africa, for example, only 46 percent of women deliver in a health facility. This figure is even lower in South Asia (43 percent).<sup>12</sup> In some communities, such as certain rural areas of India, a woman gives birth in the filthiest area of the house, the newborn is placed on the dirt floor immediately after birth, and breastfeeding is discouraged for several days. In Bangladesh, Ethiopia and India, the mother and her newborn are often kept in isolation for two weeks or more, for the purpose of fending off evil spirits.<sup>13</sup> These are just two examples of cultural practices that are harmful to newborns.

An analysis of 50 developing countries found babies born to mothers in the poorest fifth of the population were on average 40 percent more likely to die compared to those in the richest fifth.<sup>14</sup> A similar analysis of 38 countries in Africa and Asia found babies born in rural areas were 20 percent more likely to die compared to those in urban areas.<sup>15</sup>

Disparities within some countries are especially dramatic. For example, in Bolivia, babies born to the poorest 20 percent of mothers die at nearly three times the rate of babies born to the richest 20 percent of mothers. Similarly,

babies born to the poorest mothers in Cambodia, India, Morocco, Mozambique and the Philippines die at twice the rate of babies born to the richest mothers. On the other end of the equity spectrum, in Ghana, Uganda and Malawi there is no measurable gap in newborn death rates across income groups. Notably, these countries all have policies to provide free health care during childbirth.<sup>16</sup>

Many newborn lives could be saved by targeting programs to reach the poorest families in developing countries. For example: If all newborns in India experienced the same survival rates as newborns from the richest 20 percent of Indian families, nearly 360,000 more babies would survive each year. Closing the equity gaps in Pakistan and Democratic Republic of the Congo would similarly save the lives of 48,000 and 45,000 newborns each year, respectively. And if newborns in all these 50 countries experienced the same chances of survival as babies born to the wealthiest families in the same country (i.e. if the poorest 80 percent of families had the same newborn mortality rates as the richest 20 percent of families), deaths would be reduced by 29 percent overall, saving 653,000 newborn babies' lives every year. The biggest effect would be seen in Cambodia, where closing the equity gap would result in a 48 percent reduction in newborn mortality. In Nepal, newborn mortality rates would be reduced by 46 percent.<sup>17</sup>

## INDIA VOWS TO CONTINUE PROGRESS



Today, the world is on the brink of a major breakthrough to ensure newborn babies everywhere survive. If there's one place to trace the seeds of this brewing revolution, it's India. Yet today, India also faces some of the greatest challenges in seeing this revolution through. It has persistently high rates of newborn mortality and accounts for 29 percent of all first-day deaths globally – more than 300,000 a year.

In 1993, Dr. Abhay Bang, who spent his early childhood in a Gandhi ashram and is now an internist and a public health expert trained at Johns Hopkins University, set out to address the biggest challenge facing pregnant women in rural India – no access to health clinics or hospitals to give birth. Together with his wife, Rani, Dr. Bang pioneered a system of training community volunteers in 39 villages of a tribal, insurgent, rural and poor district of Gadhchiroli in central India to provide home-based newborn care. This included essential newborn care, management of birth complications and management of newborn sepsis. Their efforts produced dramatic local improvements to newborn survival.

Since then, some of the world's poorest countries have adapted Dr. Bang's model and achieved remarkable results. Over the years, health workers in Bangladesh, Malawi and Nepal have likely prevented hundreds of thousands of newborn deaths.

In 2006, India went in a different direction and began offering financial incentives for rural women to give birth in health facilities. Facility births have boomed, but newborn survival rates have not reduced commensurately, because most of the facilities had neither the quality of care nor trained, motivated and equipped health workers in place to handle the influx.

In the past year, India has begun a major political movement to systematically take on the complex and large-scale problem of newborn and child mortality in the world's second most populous country. Together with the United States and Ethiopia, India co-hosted a Child Survival Call to Action in Washington in June 2012 (A Promise Renewed). It has since recommitted itself to a national policy goal of ending child mortality in a generation and developed a clear road map for success.

Many challenges remain, including a decentralized political structure, health worker shortages, rapid urbanization and policies that currently prohibit the use of some of the most effective interventions to save babies, such as chlorhexidine and antenatal steroids. But India has already mobilized the most important ingredient to achieve any large-scale change – political will. And, for the first time, newborn survival is a central element of a clear national agenda for improving maternal and child health.

## 10 COUNTRIES THAT COULD SAVE THE MOST NEWBORN LIVES BY CLOSING THE EQUITY GAP

	SIZE OF THE EQUITY GAP			EFFECT OF CLOSING THE GAP	
	NMR* among the richest 20%	NMR* among the poorest 20%	Poorest's elevated risk of death	% reduction in newborn mortality	Lives saved per year
Cambodia	16	39	144%	48	3,000
Nepal	19	37	95%	46	8,900
Bolivia	17	50	194%	45	2,600
India	26	56	115%	41	358,400
Philippines	10	20	100%	41	11,800
Eritrea	18	24	33%	40	1,600
Mozambique	29	59	103%	40	11,800
Namibia	16	29	81%	39	400
Haiti	19	24	26%	37	2,500
DR Congo	27	44	63%	33	44,600
Niger	29	43	48%	33	8,000

\* Newborn mortality rate (per 1,000 live births)

Source: Analysis of DHS data for 50 developing countries, 2000-2011.  
For additional details, see Methodology and Research Notes.



Ethiopia





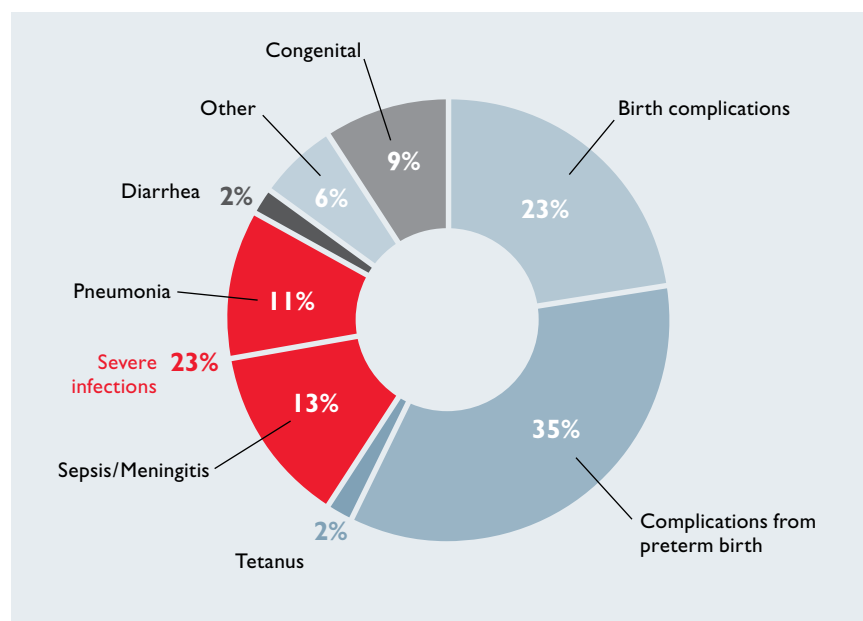
# Why Do Newborns Die?

Researchers have made tremendous advances in recent years to pinpoint the causes of newborn mortality. We are now positioned as never before to target effective solutions to the problems that kill the most newborns and to save more lives.

As recently as 2005, gaps in monitoring and reporting meant that the relative importance of different causes of newborn deaths was unclear in many developing countries. This made it difficult to fight the real killers of newborn babies.

Now we know that the three major causes of newborn mortality are preterm birth, severe infections and complications during childbirth. These three causes together account for more than 80 percent of all deaths among newborn babies.<sup>18</sup>

## CAUSES OF NEWBORN DEATHS



Prematurity is the single largest cause of newborn deaths worldwide. Preterm births, severe infections and complications during childbirth together account for more than 80 percent of all deaths among newborn babies.

Source: Li Liu, et al. "Global, Regional and National Causes of Child Mortality: An Updated Systematic Analysis for 2010 with Time Trends Since 2000." *The Lancet*.

According to the most recent estimates, 35 percent of newborn deaths are caused by complications of premature birth. Every year, about 15 million babies are born preterm and rates are increasing in almost all countries with reliable data.<sup>19</sup> More than 1 million babies die each year due to complications of preterm birth.<sup>20</sup> Survivors may face a lifetime of disability, including learning disabilities and visual and hearing problems.<sup>21</sup> Babies born before 37 weeks of pregnancy are at risk due to loss of body heat, inability to take enough nutrition, breathing difficulties and infections. Almost half of all preterm babies are born at home, and even for those born in facilities, essential care is often lacking.<sup>22</sup> Preterm birth can be prevented by investing more in health care for mothers before, during and after childbirth. Family planning and increased empowerment of women, especially adolescents, will also help to reduce preterm birth rates. More research

is needed to link the multiple causes of preterm birth to effective solutions. But it is clear that hundreds of thousands of preterm babies' lives could be saved each year using inexpensive solutions that haven't yet taken hold in developing countries. For example, corticosteroids – a common anti-inflammatory – can be given to mothers in preterm labor to develop the lungs of fetuses so they can breathe when they are born. (See pages 38-46 for more about low-cost solutions.)

**The first hours and days of a baby's life are especially critical. About three-quarters of all newborn deaths (over 2 million) take place within one week of birth. 36 percent of newborn deaths (over 1 million) occur on the day a child is born.**

The second most common killer of newborns is infections, particularly sepsis (blood infection), pneumonia (lung infection) and meningitis (infection of the lining of the brain). These deaths are the easiest to prevent and treat, so rapid reductions in death rates are possible with

expanded care. Some infections – such as newborn tetanus – almost exclusively affect the poorest families.<sup>23</sup> To prevent death, newborn infections must be identified and treated early, usually with antibiotics. Continued breastfeeding is also important, as the mother's milk contains important antibodies to protect the baby. Promising innovations such as chlorhexidine – an easy-to-use antiseptic in a tube – are beginning to be available in a few developing countries, but much more needs to be done to put this product into the hands of more health workers and mothers. (See pages 38-46 for more about low-cost solutions to fight infections.)

## GRIEVING IN SILENCE

Losing a baby is a devastating experience and every mother experiences grief in her own way. But the pain can be especially intense in cultures where a woman's status is defined by her fertility, where newborn deaths are hidden from society, and where outward expressions of grief are discouraged.

Because a woman's value in traditional cultures is usually closely linked to her ability to produce children, losing a baby may severely affect her self-esteem and the way she is treated by others. A study in rural India observed that women who had suffered stillbirths were at higher risk for mental health problems than their western counterparts because of the social isolation they experienced at a time when they were most in need of emotional support.<sup>24</sup>

Women in Malaysia who had lost a newborn reported feelings of emptiness, confusion, anger, anxiety and guilt. "I asked myself, did I do something wrong?" said one woman.<sup>25</sup>

In rural Tanzania, public grieving after the loss of a newborn is discouraged in order to prevent gossip and bewitchment. Female elders tell the mother that such mourning could lead to infertility and even death of future children. The mother is advised to suppress her emotions in order to speed her healing and prevent another loss. "I never cried when my babies died, not even for one minute," said one Tanzanian woman. "It is said it is forbidden to cry. You cry only silently *kimoyo moyo* (in your heart)."<sup>26</sup>

In Nigeria, women are discouraged from seeing or holding the body of their baby and it is often buried quickly in an unmarked grave. The baby is not given a name and there is no official mourning process. Women are told they should not talk about the loss.<sup>27</sup>

Women in Bangladesh reported feelings of guilt and experienced high rates of depression. They also experienced deterioration of relationships with their husbands and husbands' families. The authors of one study concluded there is an urgent need to develop mental health services for mothers who have suffered perinatal loss, a daunting challenge in a country with only one psychiatrist for every 2 million people. Their recommendation: A special approach using community health workers with training in culturally appropriate mental health care.<sup>28</sup>



Liberia



Babies born in the world's least developed countries have a particularly high risk of childbirth-related complications (known as “birth asphyxia”) and stillbirth. More frontline health workers – and better training and equipment for existing health workers – are needed to prevent these deaths by providing prenatal care, skilled care during birth and emergency obstetric care. These services are also critical for saving mothers who suffer with obstructed labor or hemorrhage. Within a minute of birth, a baby who is not breathing should be ventilated with a bag and a mask. Up to 10 percent of newborns require some assistance to begin breathing.<sup>29</sup> Only 3–6 percent require basic resuscitation (even fewer – less than 1 percent – need extensive resuscitation)<sup>30</sup>, but the correct technique will save 4 out of 5 babies who need it.<sup>31</sup> Every skilled birth attendant should be able to resuscitate a non-breathing baby. However, many facilities in developing countries lack even the most basic equipment for resuscitation, and often where it is available, health workers may not be competent in its use. (See pages 41–42 for more about simple resuscitation devices and their potential to save lives.)

In addition to inadequate care of the baby, another major cause of newborn deaths in developing countries is the poor health of mothers, especially during pregnancy, delivery and the early postpartum period. Many pregnant women are inadequately nourished, overworked and may still be recovering from a previous pregnancy. For many mothers, health care during this critical period – particularly during and immediately after birth – is virtually nonexistent. It is estimated that each year 40 million women in developing countries give birth at home with no professional health care whatsoever,<sup>32</sup> and about 287,000 women die in childbirth or from complications of pregnancy.<sup>33</sup> A baby whose mother dies in childbirth rarely survives.<sup>34</sup> One study from Bangladesh estimated the risk of death to be up to 10 times higher for babies whose mothers die within the first six weeks after childbirth.<sup>35</sup>

Cultural attitudes and practices that discriminate against girls and women also significantly contribute to maternal and newborn deaths. For example, in many parts of Africa and South Asia, control of household finances and the decision-making authority lies with the husband or other male relatives. Unfortunately, many women and babies have lost their lives while waiting for a decision to be made by such gatekeepers. Constraints placed on women's movement outside the home also limit their access to health facilities. This contributes to low levels of prenatal care, low rates of birth in health facilities, low use of postnatal services and limited newborn immunizations.

Low levels of education among males and females can negatively influence health-seeking behaviors, and make it harder for families to base decisions on accurate information. In poor communities of developing countries, it is often the practice to seek medical care only as a last resort, for a variety of cultural and family reasons, and also because of economic barriers.

## THE NEGLECTED TRAGEDY OF STILLBIRTHS

Every day, more than 7,300 babies are stillborn. Like newborn deaths, stillbirths occur mostly among the poor in developing countries, often in rural areas.<sup>36</sup> The loss is equally tragic, and often preventable, yet stillbirths have been largely neglected by the global public health community until recently. And progress in reducing stillbirths has been even slower than progress for newborn survival.<sup>37</sup>

In many developing countries, stillbirth deaths are not counted, but rates are thought to be highest in Pakistan and Nigeria (47 and 42 per 1,000 births, respectively). Both countries lose more than 264,000 stillborn babies each year.<sup>38</sup> Stillbirth rates are lowest in Finland and Singapore (2 per 1,000 births).

Many of the 2.6 million stillbirths each year could be prevented with the same solutions that save mothers and newborns, such as quality care at birth, emergency obstetric care (including caesarean section) and prenatal care.<sup>39</sup>

Stillbirths are not mentioned in MDG 4 or MDG 5. And only recently (2011) have United Nations data systems included information on stillbirths. Failure to set global policy goals and targets to reduce stillbirths suggests that these newborns are in particular need of attention.<sup>40</sup> *The Lancet Stillbirth Series* in 2011 culminated in a call for action to the international community, individual countries, professional organizations, and families to take a stand for stillbirths and commit to halving the number of stillbirths by 2020 from the 2008 rate.<sup>41</sup>

The Global Alliance to Prevent Prematurity and Stillbirth (GAPPS) is a collaborative effort to advance research, accelerate development and delivery of cost-effective solutions, and raise awareness about these neglected issues. Nearly 200 global stakeholders have outlined what needs to be done in the *2015 Global Action Agenda on Preterm Birth and Stillbirth* (GAA).<sup>42</sup>



Somalia

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# The Most Dangerous Places to be Born

Worldwide, the day a child is born is by far the most dangerous day in that child's life. An estimated 1,049,300 children die each year on their first day of life, representing 15 percent of all deaths of children under 5 each year. This staggering death toll, which has been determined through new original research, is largely the result of prematurity and complications during childbirth. If nations are truly committed to progress in reducing child mortality, they must concentrate more attention and resources on every child's initial birth day.

Save the Children's *Birth Day Risk Index* compares first-day deaths in 186 countries. It shows that every baby, everywhere, is at great risk of death on the day they are born. This is true in every country in the world – rich and poor alike. The birth day is a highly vulnerable time for mothers as well – about half of maternal deaths take place within one day of childbirth.<sup>43</sup>

Somalia has the world's highest first-day death rate (18 per 1,000 live births). First-day death rates are almost as high in Democratic Republic of the Congo, Mali and Sierra Leone (17 per 1,000). These four countries are also incredibly risky places for mothers. Mothers in Somalia and Sierra Leone face the second and third highest lifetime risk of death in the world, respectively.<sup>44</sup> In Somalia, 1 woman in 16 is likely to die in pregnancy or childbirth. In Sierra Leone, the odds are 1 in 23. DR Congo and Mali are also among the riskiest places in the world to be a mother.

Newborn deaths now represent 43 percent of global under-5 mortality. An estimated 36 percent of these newborn deaths occur on the day a child is born. If current trends are allowed to continue, both of these percentages are likely to rise.

The world's lowest first-day mortality rates are found in Cyprus, Estonia, Iceland, Luxembourg, Singapore and Sweden. These six countries all have rates of less than 0.5 per 1,000 live births, meaning that less than 1 birth in every 2,000 results in the death of a baby on the day he or she is born. Industrialized countries tend to have low rates of first-day death, but these deaths make up a relatively large percentage of child mortality, due to high incidence of preterm births and fewer deaths later in childhood. Generally speaking, 30 percent of all under-5 deaths in industrialized countries occur on the first day.

Two regions – sub-Saharan Africa and South Asia – together account for nearly 80 percent of the world's first-day deaths.

## Sub-Saharan Africa

Sub-Saharan Africa is by far the riskiest region to be born. The 14 countries with the highest first-day death rates are all in sub-Saharan Africa. As a region, sub-Saharan Africa's first-day mortality rate is 12 per 1,000 live births. Babies born in sub-Saharan Africa are more than 7 times as likely to die on the day they are born as babies in industrialized countries.

An estimated 397,000 babies die each year in sub-Saharan Africa on the day they are born. The region accounts for 12 percent of the world's population but 38 percent of the world's first-day deaths.

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## SAVING MOTHERS AND BABIES DURING EMERGENCIES

Imagine being eight months pregnant when armed rebels attack your village. You flee your home in search of safety. You lose family members and friends. The crisis has left you without the emotional support and the health care system you were depending on. You have no choice but to deliver your baby alone, or if you are fortunate, in a mobile or temporary clinic.

In the poorest countries, an emergency event – be it conflict, earthquake or flood – usually leads to a humanitarian crisis that can be devastating for pregnant women and their newborn babies.

Eight of the 10 countries with the highest maternal mortality ratios in the world are in fragile circumstances due to current or recent conflict.<sup>45</sup> Newborn mortality rates are also highest in areas affected by humanitarian emergencies.<sup>46</sup> However, reproductive health – particularly ensuring care during childbirth – has only recently been recognized as a key gap and priority in these settings.

A group of global health experts led by WHO recently agreed on minimum standards for care of mothers and babies during emergencies. The standards include providing kits to facilitate clean and safe deliveries and establishing referral systems to manage obstetric emergencies.<sup>47</sup> The Centers for Disease Control and Save the Children have also created an *Emergency Health and Nutrition Toolkit* with best practices to save the lives of women and newborns after disaster strikes.<sup>48</sup>

Why is sub-Saharan Africa such a dangerous place to be born?

Many sub-Saharan African countries have unusually high rates of preterm birth. For example, in Malawi, 18 percent of babies are born too early – the highest prevalence in the world.<sup>49</sup> In Botswana, Mauritania, Mozambique, Zimbabwe and several other African countries, more than 15 percent of babies are born prematurely.<sup>50</sup> Even more African babies are born too small. In Mauritania, 34 percent of babies are born with low birthweight.<sup>51</sup> In Niger, 27 percent of babies have low birthweight.<sup>52</sup>

Poor health among African mothers contributes to high rates of first-day death for babies. Serious maternal undernutrition is common in the region, where 10-20 percent of women are underweight.<sup>53</sup> Low body mass index and short maternal stature are important risk factors for birth complications, low birthweight and newborn mortality. Especially large numbers of underweight mothers are found in Ethiopia (24 percent), Madagascar (28 percent) and Eritrea (38 percent).<sup>54</sup> In Sierra Leone, 13 percent of women are stunted – this is nearly twice the rate found in any other African country with available data.<sup>55</sup>

It is common for women in sub-Saharan Africa to marry and begin having babies at a young age, before their bodies have fully matured. Central African Republic, Chad and Niger have the highest rates of child marriage in the world – more than two-thirds of women in their early 20s were married by the age of 18. Child marriage rates above 80 percent are found in rural Niger.<sup>56</sup> And in the Amhara region of Ethiopia, 50 percent of girls are married before the age of 15.<sup>57</sup> Region-wide, an estimated 14.5 million young women were married as children.<sup>58</sup> Not surprisingly, countries with high levels of child marriage tend to have high levels of early childbearing.<sup>59</sup> In Chad and Niger, for example, about half (48 and 51 percent, respectively) of all young women were mothers by the age of 18.<sup>60</sup>

Low contraceptive use, high fertility and poor newborn outcomes go hand-in-hand.<sup>61</sup> Across the region, less than 16 percent of women use a modern method of contraception.<sup>62</sup> Contraceptive use is lowest in Somalia and Chad – at only 1 and 2 percent – but rates are also below 5 percent in Angola and Guinea.<sup>63</sup> It's not surprising, then, that women in the region have on average five children each. Mothers in Malawi, Mali, Somalia and Zambia have six children on average. And in Niger, where fertility rates are highest in the world, it's closer to seven children per woman.<sup>64</sup>

Health care for mothers in sub-Saharan Africa is woefully insufficient. On average, only half the women in the region receive skilled care during birth.<sup>65</sup> In Ethiopia, Niger and South Sudan, more than half of all women receive absolutely no skilled prenatal care. In Somalia, 74 percent of pregnant women go without care during pregnancy – the highest rate in the world. In Niger and South Sudan, more than 80 percent of women are unattended during childbirth.<sup>66</sup> And in Ethiopia, up to 90 percent of women give birth at home without skilled care.<sup>67</sup> In Mali and Niger, 13 and 17 percent of women give birth alone. And in Nigeria, nearly 1 woman in 5 has no one – not even a family member or friend – to help her during childbirth.<sup>68</sup>

A severe shortage of health workers in Africa explains many of these dire statistics. The region as a whole has only 11 doctors, nurses and midwives per 10,000 people – less than half the critical threshold of 23 generally considered necessary to deliver essential health services.<sup>69</sup> The most severe shortages of health workers are found in Guinea, Niger, Sierra Leone and Somalia, where there are fewer than two skilled health workers for every 10,000 people. Out of 48 countries in sub-Saharan Africa with available data, only eight meet the minimum threshold for number of health workers.<sup>70</sup>



Niger



Pakistan

## South Asia

South Asia is the second riskiest region to be born. First-day mortality rates vary greatly across the region, ranging from a high of almost 13 deaths per 1,000 live births in Afghanistan and Pakistan to about 2.5 per 1,000 in Maldives and Sri Lanka. As a whole, the region's rate is 11 per 1,000.

An estimated 420,000 babies die each year in South Asia on the day they are born. South Asia accounts for 24 percent of the world's population and 40 percent of the world's first-day deaths.

What factors contribute to these high rates of first-day death?

Many babies in South Asia are born too early. Region-wide, an average of 13.3 percent of all live births are preterm, the highest regional rate in the world.<sup>71</sup> Especially high preterm birth rates are found in Pakistan, where 16 percent of babies are born too early and in Bangladesh and Nepal where the rate is 14 percent.

Low birthweight is also a serious public health problem in most South Asian countries. An estimated 28 percent of infants in South Asia are born too small – more than double the rate found in any other region of the world. Rates are highest in Pakistan, where 32 percent of all babies are born with low birthweight and India (28 percent). Most likely these are underestimates, as 2 out of 3 newborns in the region are not weighed at birth.<sup>72</sup>

The birth of so many small babies in South Asia is due in large part to the poor nutritional status of mothers. Stunting among women (height of less than 145 cm, or 4'7") is particularly severe in this region. For example, in Bangladesh,

## WHICH COUNTRIES HAVE THE MOST FIRST-DAY DEATHS?

Top 10 countries with the most first-day deaths	Number of first-day deaths	Share of global first-day deaths
1 India	309,300	29%
2 Nigeria	89,700	9%
3 Pakistan	59,800	6%
4 China	50,600	5%
5 DR Congo	48,400	5%
6 Ethiopia	28,800	3%
7 Bangladesh	28,100	3%
8 Indonesia	23,400	2%
9 Afghanistan	18,000	2%
10 Tanzania	17,000	2%
<b>Total:</b>	<b>673,200*</b>	<b>64%*</b>

\*Total differs from column sum because of rounding.

Nearly two-thirds of all first-day deaths (673,000 out of 1 million in 2011) occur in just 10 countries. Many of these countries have very large populations (such as China and Indonesia) and others have relatively high percentages of babies dying on their birth day (Afghanistan, DR Congo, Ethiopia, Pakistan and Tanzania). India – with both a large population and a high first-day mortality rate – is home to more than 309,000 first-day deaths (29 percent of the global total). Nigeria has the second highest burden with nearly 90,000 first-day deaths, or 9 percent of the global total. Source: *Birth Day Risk Index*, page 31.

India and Nepal, 12 to 13 percent of women are stunted, which puts them at higher risk of complications during delivery and of having small babies. In these same countries, 20 to 40 percent of women are excessively thin, which compounds the risk of poor pregnancy outcomes.<sup>73</sup>

Early marriage and childbearing heighten the risks for both mothers and babies. According to UNICEF's estimates, 34 million South Asian women aged 20-24 were married or in union before the age of 18 in 2009.<sup>74</sup> Child marriage and early childbearing are most prevalent in Bangladesh, where 66 percent of young women were married<sup>75</sup> and 40 percent had given birth<sup>76</sup> by the time they were 18. High rates of child marriage are also found in India, where 47 percent of girls marry by the age of 18, although rates vary dramatically across income levels, from a low of 16 percent among girls from the wealthiest fifth of families to 75 percent among the poorest fifth.<sup>77</sup> In Afghanistan and Nepal, 40 percent of girls are married before the age of 18.<sup>78</sup>

Too many women in South Asia give birth alone or with only a friend or family member helping, so many newborns die from complications that could easily be prevented by a health worker with the right skills, the right equipment and the right support. Region-wide, only 49 percent of births are assisted by a skilled care provider. Coverage is lowest in Bangladesh, where 68 percent of women deliver their babies without skilled attendance.<sup>79</sup> Birth attendance rates are similarly low in Nepal and Afghanistan, where more than 60 percent of women do not have skilled care during birth,<sup>80</sup> and among the women who do have skilled assistance, half or more likely give birth at home.<sup>81</sup> As a whole, South Asia has the lowest facility birth rate of any region – only 43 percent of births take place in a health facility.<sup>82</sup>

Although many countries in South Asia have made great gains in increasing access to family planning, use remains especially low in Afghanistan and Pakistan, where only 16 and 19 percent of women use modern forms of contraception.<sup>83</sup> Partly as a result, these countries have the highest fertility rates in the region, which puts both mothers and babies at higher risk of death. In Afghanistan, women have six children on average. In Pakistan, women have three children on average.<sup>84</sup>

There are not enough health workers in South Asia to meet the basic needs of mothers and babies. As a whole, the region has about 14 doctors, nurses and midwives per 10,000 people (9 less than the recommended 23).<sup>85</sup> Health worker shortages are most severe in Afghanistan, Bangladesh and Nepal (6 to 7 health workers per 10,000 people).<sup>86</sup> Only Maldives and Sri Lanka have enough doctors, nurses and midwives to deliver essential health services.



## BIRTH DAY RISK INDEX

Country or Territory	First Day*			First Month*			First 5 Years*	
	First-day mortality rate (per 1,000 live births)	Number of first-day deaths	Share of under-5 deaths that are first-day deaths**	Newborn mortality rate (per 1,000 live births)	Number of newborn deaths	Share of under-5 deaths that are newborn deaths**	Under-5 mortality rate (per 1,000 live births)	Number of under-5 deaths
Somalia	18	7,400	10%	50	20,800	29%	180	71,100
Congo, Democratic Republic of the	17	48,400	10%	47	137,100	29%	168	465,100
Mali	17	12,600	10%	49	35,800	29%	176	121,500
Sierra Leone	17	4,000	9%	49	11,200	27%	185	42,100
Central African Republic	16	2,500	10%	46	7,200	29%	164	24,600
Angola	15	12,300	10%	43	34,800	29%	158	119,900
Côte d'Ivoire	15	9,900	13%	41	28,000	37%	115	75,500
Chad	15	7,600	10%	42	21,600	27%	169	79,300
Burundi	15	4,400	11%	43	12,400	32%	139	38,600
Guinea-Bissau	15	910	10%	44	2,600	29%	161	9,000
Nigeria	14	89,700	12%	39	254,100	34%	124	755,700
Guinea	14	5,500	12%	39	15,500	33%	126	47,500
Mauritania	14	1,700	13%	40	4,800	37%	112	12,900
Lesotho	14	820	16%	39	2,300	46%	86	5,100
Pakistan	13	59,800	17%	36	169,400	48%	72	352,400
Afghanistan	13	18,000	14%	36	51,000	40%	101	128,400
South Sudan	13	4,400	10%	38	12,600	29%	121	43,400
Togo	13	2,500	12%	36	7,000	33%	110	20,900
Equatorial Guinea	13	350	12%	37	980	33%	118	2,900
Mozambique	12	10,600	12%	34	29,900	35%	103	86,000
Burkina Faso	12	8,900	9%	34	25,100	25%	146	101,300
Cameroon	12	8,400	10%	33	23,900	27%	127	87,500
Gambia	12	810	13%	34	2,300	36%	101	6,400
Swaziland	12	430	12%	35	1,200	34%	104	3,600
Djibouti	12	300	13%	33	860	38%	90	2,200
India	11	309,300	19%	32	876,200	53%	61	1,655,400
Ethiopia	11	28,800	15%	31	81,700	42%	77	193,900
Sudan	11	12,200	13%	31	34,700	37%	86	94,700
Yemen	11	10,600	15%	32	30,000	43%	77	70,100
Myanmar	11	8,700	17%	30	24,600	47%	62	52,600
Niger	11	8,700	10%	32	24,700	28%	125	89,000
Zimbabwe	11	4,000	16%	30	11,300	46%	67	24,300
Benin	11	3,900	11%	31	11,000	30%	106	36,300
Congo	11	1,600	12%	32	4,600	33%	99	13,800
Comoros	11	310	15%	32	880	41%	79	2,100
Uganda	10	15,100	12%	28	42,700	33%	90	130,900
Ghana	10	8,100	14%	29	22,900	38%	78	59,700
Nepal	10	6,900	21%	27	19,500	58%	48	33,600
Zambia	10	6,000	13%	27	17,100	37%	83	46,300
Liberia	10	1,500	13%	27	4,300	36%	78	11,900
Sao Tome and Principe	10	50	12%	29	150	34%	89	450
Bangladesh	9	28,100	21%	26	79,700	60%	46	133,600

Country or Territory	First Day*			First Month*			First 5 Years*	
	First-day mortality rate (per 1,000 live births)	Number of first-day deaths	Share of under-5 deaths that are first-day deaths**	Newborn mortality rate (per 1,000 live births)	Number of newborn deaths	Share of under-5 deaths that are newborn deaths**	Under-5 mortality rate (per 1,000 live births)	Number of under-5 deaths
Tanzania, United Republic of	9	17,000	14%	25	48,100	40%	68	121,700
Kenya	9	14,700	14%	27	41,700	39%	73	106,800
Malawi	9	6,500	13%	27	18,400	35%	83	51,800
Senegal	9	4,300	14%	26	12,200	41%	65	29,600
Haiti	9	2,400	13%	25	6,700	36%	70	18,500
Tajikistan	9	1,700	14%	25	4,800	40%	63	12,100
Gabon	9	360	14%	24	1,000	39%	66	2,600
Bhutan	9	130	17%	25	370	48%	54	770
Madagascar	8	6,100	14%	23	17,200	38%	62	44,700
Bolivia, Plurinational State of	8	2,100	16%	22	5,800	45%	51	12,900
Papua New Guinea	8	1,700	14%	23	4,700	39%	58	11,900
Eritrea	8	1,500	12%	21	4,100	33%	68	12,700
Turkmenistan	8	840	16%	22	2,400	44%	53	5,300
Timor-Leste	8	370	15%	24	1,100	43%	54	2,400
Iraq	7	8,000	19%	20	22,800	54%	38	42,400
South Africa	7	7,500	16%	19	20,200	43%	47	47,400
Morocco	7	4,100	20%	19	11,600	56%	33	20,800
Rwanda	7	3,400	15%	21	9,500	42%	54	22,800
Cambodia	7	2,200	16%	19	6,200	46%	43	13,400
Azerbaijan	7	1,200	15%	19	3,500	42%	45	8,400
Kyrgyzstan	7	940	22%	16	2,100	48%	31	4,300
Guyana	7	90	23%	20	260	65%	36	410
Kiribati	7	15	14%	19	40	41%	47	100
Algeria	6	4,200	20%	17	11,800	56%	30	21,100
Korea, Democratic People's Republic of	6	2,100	18%	17	6,100	52%	33	11,800
Paraguay	6	910	27%	13	2,000	59%	22	3,400
Lao People's Democratic Republic	6	870	15%	17	2,500	42%	42	5,900
Namibia	6	390	16%	18	1,100	44%	42	2,500
Suriname	6	50	20%	16	160	56%	30	280
Micronesia, Federated States of	6	15	15%	17	45	41%	42	110
Indonesia	5	23,400	17%	15	66,300	49%	32	134,400
Iran, Islamic Republic of	5	6,100	19%	14	17,300	53%	25	32,700
Uzbekistan	5	3,100	11%	15	8,800	30%	49	29,600
Guatemala	5	2,400	17%	15	6,900	49%	30	13,900
Kazakhstan	5	1,700	16%	14	5,000	47%	28	10,600
Dominican Republic	5	1,100	20%	14	3,000	57%	25	5,300
Occupied Palestinian Territory	5	630	21%	13	1,800	60%	22	3,000
Trinidad and Tobago	5	110	19%	18	360	66%	28	550
Saint Vincent and the Grenadines	5	10	21%	13	25	60%	21	40
Brazil	4	10,700	24%	10	29,100	66%	16	44,000
Philippines	4	10,100	18%	12	28,700	50%	25	57,300
Vietnam	4	6,100	19%	12	17,300	55%	22	31,500
Colombia	4	3,600	22%	11	10,200	63%	18	16,300
Ecuador	4	1,100	16%	10	3,000	45%	23	6,800
Honduras	4	770	18%	11	2,200	50%	21	4,300
Jordan	4	660	19%	12	1,900	54%	21	3,500
Nicaragua	4	610	17%	12	1,700	47%	26	3,600
Mongolia	4	270	12%	12	770	35%	31	2,200
Jamaica	4	200	20%	11	570	57%	18	1,000

Country or Territory	First Day*			First Month*			First 5 Years*	
	First-day mortality rate (per 1,000 live births)	Number of first-day deaths	Share of under-5 deaths that are first-day deaths**	Newborn mortality rate (per 1,000 live births)	Number of newborn deaths	Share of under-5 deaths that are newborn deaths**	Under-5 mortality rate (per 1,000 live births)	Number of under-5 deaths
Georgia	4	200	19%	15	740	69%	21	1,100
Botswana	4	190	15%	11	540	43%	26	1,200
Armenia	4	180	24%	11	520	67%	18	780
Solomon Islands	4	60	18%	10	180	50%	22	370
Barbados	4	10	16%	10	30	46%	20	70
Dominica	4	5	43%	8	10	83%	12	10
Marshall Islands	4	< 5	16%	12	15	46%	26	30
China	3	50,600	20%	9	143,400	58%	15	248,600
United States	3	11,300	35%	4	18,400	57%	8	32,200
Egypt	3	4,900	12%	7	13,900	35%	21	39,600
Turkey	3	4,100	20%	9	11,500	57%	15	20,300
Thailand	3	2,200	22%	8	6,200	62%	12	10,100
Peru	3	1,900	18%	9	5,400	51%	18	10,700
Syrian Arab Republic	3	1,400	19%	9	4,000	55%	15	7,300
Sri Lanka	3	1,000	22%	8	2,900	63%	12	4,600
Tunisia	3	600	20%	9	1,700	57%	16	3,000
Romania	3	580	21%	8	1,700	58%	13	2,800
Libya	3	490	21%	10	1,400	60%	16	2,300
Panama	3	190	14%	9	620	46%	20	1,400
Albania	3	100	18%	7	290	50%	14	580
Fiji	3	50	16%	8	140	46%	16	310
Cape Verde	3	35	16%	10	100	46%	21	220
Bahamas	3	15	15%	7	40	41%	16	90
Saint Lucia	3	10	20%	9	30	57%	16	50
Tonga	3	10	18%	8	20	51%	15	45
Samoa	3	10	15%	8	35	43%	19	80
Seychelles	3	< 5	17%	9	10	47%	14	20
Mexico	2	5,000	15%	7	15,400	46%	16	33,800
Russian Federation	2	3,900	19%	6	10,900	54%	12	20,200
Argentina	2	1,600	16%	7	5,200	52%	14	10,000
Venezuela, Bolivarian Republic of	2	1,300	15%	8	5,000	56%	15	8,900
Saudi Arabia	2	1,100	19%	5	3,300	54%	9	6,000
Canada	2	960	43%	4	1,400	62%	6	2,200
Ukraine	2	820	16%	5	2,300	44%	10	5,300
Poland	2	670	27%	3	1,400	58%	6	2,500
Chile	2	590	28%	5	1,100	53%	9	2,100
Australia	2	480	34%	3	800	57%	5	1,400
El Salvador	2	280	14%	6	800	39%	15	2,100
Costa Rica	2	180	25%	6	450	62%	10	720
Switzerland	2	170	48%	3	240	68%	4	350
Serbia	2	170	23%	4	480	64%	7	750
Bulgaria	2	130	14%	7	490	52%	12	940
Lebanon	2	120	19%	5	340	53%	9	640
Austria	2	110	37%	2	180	59%	4	310
New Zealand	2	100	26%	3	180	47%	6	390
Moldova, Republic of	2	100	13%	8	340	44%	16	770
Oman	2	90	18%	5	250	51%	9	500
Croatia	2	70	30%	3	140	62%	5	230
Bosnia and Herzegovina	2	60	21%	5	160	60%	8	270

Country or Territory	First Day*			First Month*			First 5 Years*	
	First-day mortality rate (per 1,000 live births)	Number of first-day deaths	Share of under-5 deaths that are first-day deaths**	Newborn mortality rate (per 1,000 live births)	Number of newborn deaths	Share of under-5 deaths that are newborn deaths**	Under-5 mortality rate (per 1,000 live births)	Number of under-5 deaths
Latvia	2	45	22%	5	120	63%	8	200
Mauritius	2	40	17%	9	150	67%	15	230
Macedonia, The former Yugoslav Republic of	2	35	17%	6	140	66%	10	220
Maldives	2	15	23%	6	35	60%	11	60
Montenegro	2	15	23%	5	35	64%	7	60
Vanuatu	2	15	19%	7	50	53%	13	90
Belize	2	15	12%	8	60	49%	17	130
Antigua and Barbuda	2	< 5	22%	4	5	64%	8	10
Grenada	2	< 5	17%	7	15	48%	13	25
United Kingdom	1	1,100	26%	3	2,300	56%	5	4,100
Germany	1	720	25%	2	1,600	55%	4	2,900
Malaysia	1	700	19%	3	2,000	55%	7	3,600
France	1	670	20%	2	1,800	55%	4	3,300
Japan	1	610	16%	1	1,200	33%	3	3,700
Italy	1	440	20%	2	1,300	59%	4	2,100
Korea, Republic of	1	350	13%	2	990	38%	5	2,600
Spain	1	340	16%	3	1,300	59%	4	2,100
Netherlands	1	200	29%	3	480	69%	4	690
Hungary	1	130	20%	4	370	59%	6	620
United Arab Emirates	1	130	20%	4	370	58%	7	640
Israel	1	120	17%	2	330	50%	4	670
Cuba	1	110	18%	3	300	51%	6	600
Belarus	1	100	16%	3	280	46%	6	610
Ireland	1	90	29%	2	160	52%	4	310
Greece	1	90	17%	3	310	58%	4	540
Belgium	1	90	17%	2	290	54%	4	530
Denmark	1	70	27%	2	150	63%	4	240
Slovakia	1	70	15%	4	240	54%	8	450
Uruguay	1	70	13%	5	270	53%	10	510
Kuwait	1	70	12%	5	270	44%	11	610
Portugal	1	60	19%	2	170	54%	3	320
Czech Republic	1	60	13%	2	270	58%	4	460
Finland	1	40	22%	2	100	55%	3	180
Norway	1	40	19%	2	110	54%	3	200
Qatar	1	30	19%	4	90	54%	8	160
Lithuania	1	30	14%	3	100	48%	6	210
Bahrain	1	30	13%	4	90	39%	10	230
Slovenia	1	15	24%	2	30	53%	3	60
Brunei Darussalam	1	10	20%	4	30	57%	7	50
Malta	1	< 5	20%	4	15	63%	6	25
Sweden	< 0.5	50	18%	1	170	53%	3	310
Singapore	< 0.5	20	15%	1	60	42%	3	130
Estonia	< 0.5	10	13%	2	30	46%	4	60
Cyprus	< 0.5	5	14%	1	20	44%	3	40
Iceland	< 0.5	< 5	19%	1	5	42%	3	10
Luxembourg	< 0.5	< 5	13%	1	10	47%	3	20

Summary Statistics§	First Day**+			First Month*			First 5 Years*	
	First-day mortality rate (per 1,000 live births)	Number of first-day deaths	Share of under-5 deaths that are first-day deaths**	Newborn mortality rate (per 1,000 live births)	Number of newborn deaths	Share of under-5 deaths that are newborn deaths**	Under-5 mortality rate (per 1,000 live births)	Number of under-5 deaths
Sub-Saharan Africa	12	396,500	12%	34	1,122,200	33%	109	3,369,800
South Asia	11	423,300	18%	32	1,199,100	52%	62	2,308,800
Middle East and North Africa	6	55,800	16%	16	158,300	45%	36	351,400
East Asia and Pacific	4	110,000	19%	11	311,500	53%	20	589,800
Latin America and Caribbean	3	37,400	18%	10	106,800	53%	19	202,500
CEE/CIS	3	20,100	16%	10	56,600	45%	21	125,100
Industrialized countries	2	18,800	30%	3	35,500	56%	6	63,700
World	8	1,049,300	15%	22	2,954,500	43%	51	6,914,300

\*Estimates were rounded according to the following schemes: Mortality rates  $\geq 0.5$ , rounded to the nearest whole number; Number of deaths:  $5 \leq x < 50$ , rounded to the nearest 5,  $50 \leq x < 1,000$ , rounded to nearest 10,  $x \geq 1,000$ , rounded to the nearest 100.

\*\* The share of under-5 deaths that occur on the first day and during the first month are based on unrounded estimates.

§ UNICEF regions. For a complete list of countries and territories in these regions, see: UNICEF. *The State of the World's Children 2012*. (New York: 2012) p.124

+ "First Day" estimates are for the countries within each region included in this analysis. Data is not available for five less-populous industrialized countries, five small Pacific islands, and one Caribbean island. The effect of these missing values on regional indicators is likely negligible as all missing countries have fewer than 1,000 annual live births.

Note: Data estimates are for 2011.

Data sources: "First Day" data are the result of an original analysis done for Save the Children by Shefali Oza, Simon Cousens and Joy Lawn (*The Risk of Dying on the Day of Birth: Estimates for 186 Countries*. Submitted manuscript, 2013). Findings are reported for all countries with at least 1,000 live births in 2011. For detailed methodology of this analysis, see Methodology and Research Notes. National and regional estimates for the "First Month" and "First 5 Years" were sourced from UNICEF Global Databases and the Healthy Newborn Network (data compiled for *A Decade of Change for Newborn Survival, Policy and Programmes (2000–2010): A Multi-Country Evaluation of Progress Towards Scale. Health Policy and Planning*).



# Continuum of Care for Mothers and Newborns

Research consistently shows that cost-effective services to improve women's overall health and nutrition, to make childbirth safer, and to help mothers care for themselves and their babies will save a significant number of mothers' and newborn lives.

## Care of Future Mothers

The three interventions that are most effective in preventing high-risk pregnancies – thus saving the lives of mothers and babies – are female education, nutrition and family planning.

- **Female education** – One of the most effective ways to reduce risks to mothers and newborns is to ensure that more girls enroll in school and stay in school. The more time girls spend in school, the later they marry and begin childbearing. Educated girls also are more likely to grow up to be mothers who are healthy, well-nourished, economically empowered and resourceful when it comes to caring for themselves and their babies. Educated women tend to have fewer children, healthier pregnancies and safer deliveries. Their babies are more likely to survive childbirth, the vulnerable first hours and days of life, and the critical first five years.<sup>87</sup> Sadly, more than 32 million girls around the world are not attending school at all.<sup>88</sup>
- **Nutrition** – The importance of good nutrition in improving survival rates for mothers and newborns extends beyond the time that a woman is pregnant, gives birth, and attends to her baby's needs. Undernourished girls grow up to become small women. Underweight mothers tend to have undernourished babies. Promoting adequate nutrition and counseling women to gain enough weight during pregnancy are important. But equally important is promoting a healthy and varied diet through an adequate supply of food that improves the nutrition of girls and women throughout life. Some countries have addressed micronutrient malnutrition by fortifying foods (such as putting iodine in salt); others are providing iron and folic acid supplements and, where appropriate, vitamin A and zinc. Still, more than 55 million adult women in developing countries are stunted as a result of malnutrition during childhood<sup>89</sup> and 40 percent of all women in the developing world suffer from iron deficiency anemia,<sup>90</sup> a major cause of maternal mortality<sup>91</sup> and a risk factor for preterm birth and low-birthweight babies.<sup>92</sup>
- **Family planning** – Effective use of family planning methods can help save the lives of mothers and babies by enabling women to avoid pregnancy when they are too young or too old, and to space their births at intervals that are healthy for them and their babies. Family planning remains one of the most cost-effective ways to reduce maternal and newborn deaths, as well as stillbirths.<sup>93</sup> Contraceptive services empower couples to choose the number and timing of their pregnancies, leading to smaller families, improved survival, educational gains and economic growth.<sup>94</sup> A recent multi-country analysis identified family planning as critical to improvements in newborn survival in Bangladesh and Brazil.<sup>95</sup> Another analysis found that at least 228,000 babies



could be saved in 2015 (and 345,000 by 2025) if 60 percent of women had access to family planning.<sup>96</sup> Unfortunately, more than 175 million women in developing countries who do not want to become pregnant are not using effective contraception,<sup>97</sup> and over 40 percent of pregnancies are unplanned.<sup>98</sup>

## Low-Cost Solutions During Pregnancy, Childbirth and the First Weeks of Life

Improving the health of mothers and newborns is largely a matter of applying sound health-care practices at the appropriate milestones during pregnancy, at birth and after birth, through the first 28 days. Stronger health systems and more trained birth attendants are clearly needed, but another barrier to progress on newborn survival has been the erroneous perception that only expensive, high-level technology and specialized, hospital-based care can save newborn lives. The truth is that low-cost, evidence-based interventions in the hands of trained birth attendants could reduce newborn deaths by up to 75 percent if provided universally.<sup>99</sup> If taken to scale, these interventions together could save as many as 2 million of the 3 million newborns who die each year.<sup>100</sup>

The cost of these solutions is not high. One recent study estimated that 90 percent coverage of essential newborn health interventions could be achieved at an additional cost of less than \$1 per capita in the 75 countries where most children die. About 30 percent of the cost is for newborn-specific interventions, while the majority is for interventions that would also benefit mothers and older children.<sup>101</sup>

### Prenatal Care

Caring for newborn babies starts with caring for pregnant mothers, ensuring that they are adequately nourished, free from infections and exposure to harmful substances, and monitored for complications during pregnancy. Immunization against tetanus should be part of all prenatal care packages. For babies born at home, good prenatal care also includes counseling to encourage a clean birth, planning to have a skilled attendant, teaching awareness of danger signs and the importance of immediate and exclusive breastfeeding. The cost to deliver prenatal care to 90 percent of pregnant women in Africa is estimated at only an additional 20 cents per capita.<sup>102</sup>

- **Tetanus toxoid vaccination** – Immunizing women of reproductive age with the tetanus toxoid vaccine protects both mothers and newborns. Tetanus toxoid is one of the safest, most effective and least expensive vaccines available. It can prevent tetanus infection in mothers during childbirth, and it passes immunity on to the fetus. Tetanus kills about 58,000 newborns<sup>103</sup> and a significant number of mothers each year.<sup>104</sup> These deaths can be prevented by ensuring that every pregnant woman receives two doses of tetanus toxoid during pregnancy, or that all women of childbearing age receive three shots over a two-year period. Two doses of tetanus toxoid cost only about 40 cents.
- **Treatment of maternal infections** – Infections during pregnancy are a major cause of complications such as miscarriage, premature rupture of the amniotic sac, preterm birth and congenital infection and anomalies. Prevention of infection should be part of prenatal care. Testing and treatment for sexually transmitted infections such as syphilis and gonorrhea are simple and inexpensive, with significant payoffs for newborns. The risk that





an HIV-positive woman will transmit the virus to her baby can be reduced to less than 5 percent with effective interventions, including antiretroviral drugs.<sup>105</sup> And in areas where malaria is endemic, treatment for the disease, administered during pregnancy, can reduce the incidence of low birthweight by 40 percent.<sup>106</sup>



Desita, a midwife trained by Save the Children, teaches new mother Syafrina how to breast-feed her baby.

## A MIDWIFE SAVES THE DAY

Syafrina, a healthy 25-year-old, was recently married and pregnant with her first child. She lived in a remote village in Aceh, Indonesia, but she was fortunate to have a dedicated and knowledgeable midwife named Desita nearby. During her pregnancy, Syafrina visited Desita for monthly check-ups, and everything seemed to be going well until the day she went into labor.

“It was very painful,” said Syafrina. “I cannot describe it. I just wanted my baby to come out fast.” Syafrina had planned to give birth at home, but Desita suspected something was wrong and urged Syafrina to go to the village health center where it would be easier to manage complications. Syafrina resisted this idea, but after six hours of increasing pain, she finally agreed to go.

“It was a long and difficult birth,” said Desita. “The baby had the umbilical cord wrapped around her. It took two hours, but eventually I delivered the baby.”

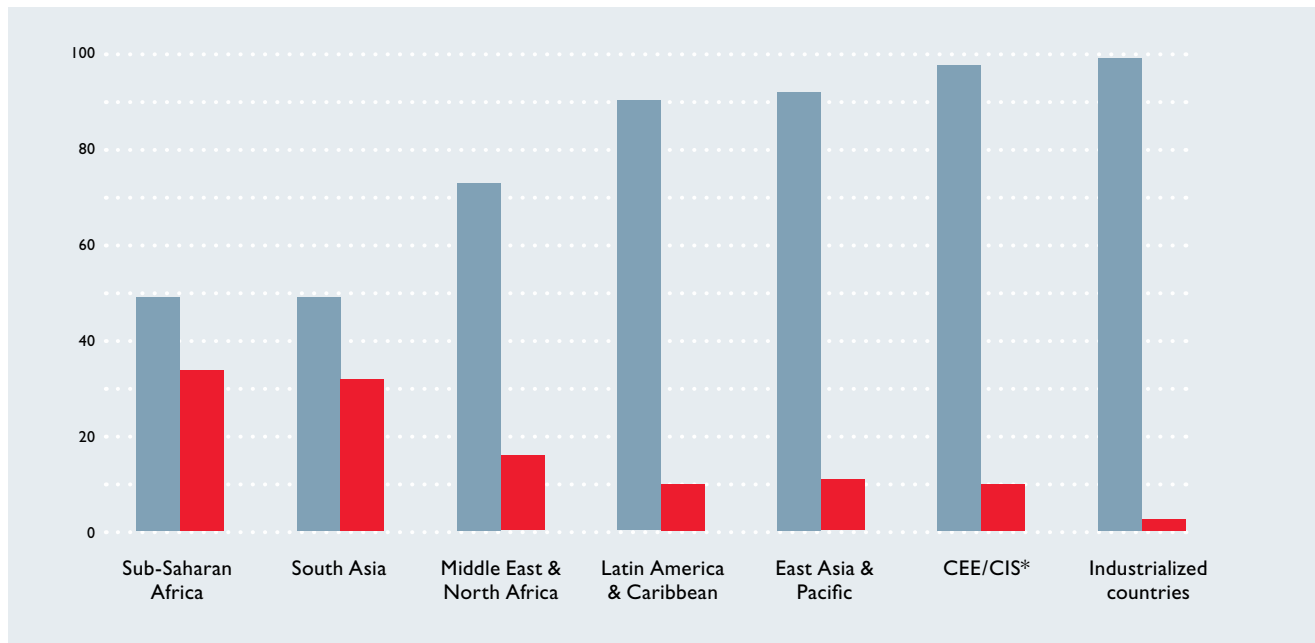
The baby was a blueish color and she didn’t cry. “I was panicked because I thought my baby might die,” said Syafrina. “But I had faith in Desita, so I tried to stay calm.”

Desita cleared the baby’s airways and tried to stimulate breathing by gently rubbing her body, but still she did not cry. So she resuscitated the baby using a tube. “Finally she cried!” said Desita. “We all felt so happy and relieved!”

Baby Naisa was a beautiful little girl. She weighed 7.7 pounds and was 19 inches long at birth. Soon after the birth, Desita showed Syafrina the correct position for breastfeeding. Naisa had problems latching at first, but Desita encouraged Syafrina to keep trying, and after about an hour she was breastfeeding successfully.

Naisa is now almost 6 months old and has been exclusively breastfed since birth. She is starting to become more active and speaks in her own baby language. Desita visits Syafrina and Naisa at home regularly to check on their health, answer questions and give encouragement. “I am very grateful that I have Desita to help me,” said Syafrina. “We talk about everything. She taught me how to bathe my baby and how to breast-feed. Desita is an excellent midwife and she has also become a friend.”

## WHERE THERE IS SKILLED CARE AT BIRTH, MORE NEWBORNS SURVIVE



■ Skilled attendant at birth (%)  
 ■ Newborn deaths per 1,000 live births

\* Central and Eastern Europe and Commonwealth of Independent States

Data for skilled care at birth and newborn deaths are for 2011, or the most recent year available.

Data sources: Industrialized countries: UNICEF's *The State of the World's Children 2008* (Skilled attendant at birth) and *The State of the World's Children 2012* (Newborn mortality rate); All other data points: UNICEF Global Databases.

## Skilled Care During Childbirth

Skilled birth attendants are people with midwifery skills (for example, doctors, nurses and midwives) who have been trained to manage normal deliveries and to diagnose and manage or refer complicated cases. Every year, about 40 million women give birth without someone present who has these skills,<sup>107</sup> and more than 2 million women give birth completely alone, without even a friend or relative to help them.<sup>108</sup> Skilled birth attendants provide for a clean delivery, ensure the newborn is dried and kept warm, recognize and immediately resuscitate asphyxiated babies, and identify other danger signs in both mother and baby to avoid delay in seeking additional care when needed. Skilled care providers may practice in a health facility or a household setting, but they need a functioning referral system for the management of complications. In places where skilled providers are not yet available, births should be attended by alternative health workers who are trained to provide clean deliveries and refer complications.

- **A shot to save preterm babies** – Many preterm babies die from immature lung development. Those that survive are at risk of lifelong health challenges such as impaired brain development, impaired learning ability and compromised physical health. When a mother is in preterm labor, a skilled birth attendant can administer an injection of corticosteroids to accelerate lung development of the fetus while the baby is still in the womb. A baby born with more mature lungs is less likely to suffer from respiratory distress syndrome and more likely to survive. Prenatal corticosteroids cost as little as 51 cents per treatment<sup>109</sup> and could save 340,000 newborn lives each year.<sup>110</sup>



Nakintu Prossy's 2-day-old preterm baby girl sleeps in an incubator in the neonatal intensive care unit at Kiwoko Hospital in Nakaseke district, Uganda. Nakintu gave birth to twins – a boy and a girl – six weeks early.

## UGANDA STEPS UP EFFORTS TO SAVE PRETERM BABIES

Globally, preterm birth is the leading cause of newborn mortality and now the number two cause of child mortality. In Uganda, 14 out of every 100 babies are born preterm<sup>111</sup> and complications of prematurity cause 38 percent of newborn deaths,<sup>112</sup> translating to more than 16,000 babies each year.<sup>113</sup>

In October 2012, the government of Uganda announced a new commitment to do more to prevent preterm births and care for preterm babies.<sup>114</sup> The government's actions are aimed at increasing availability and accessibility of quality maternal and newborn care services at a national level.

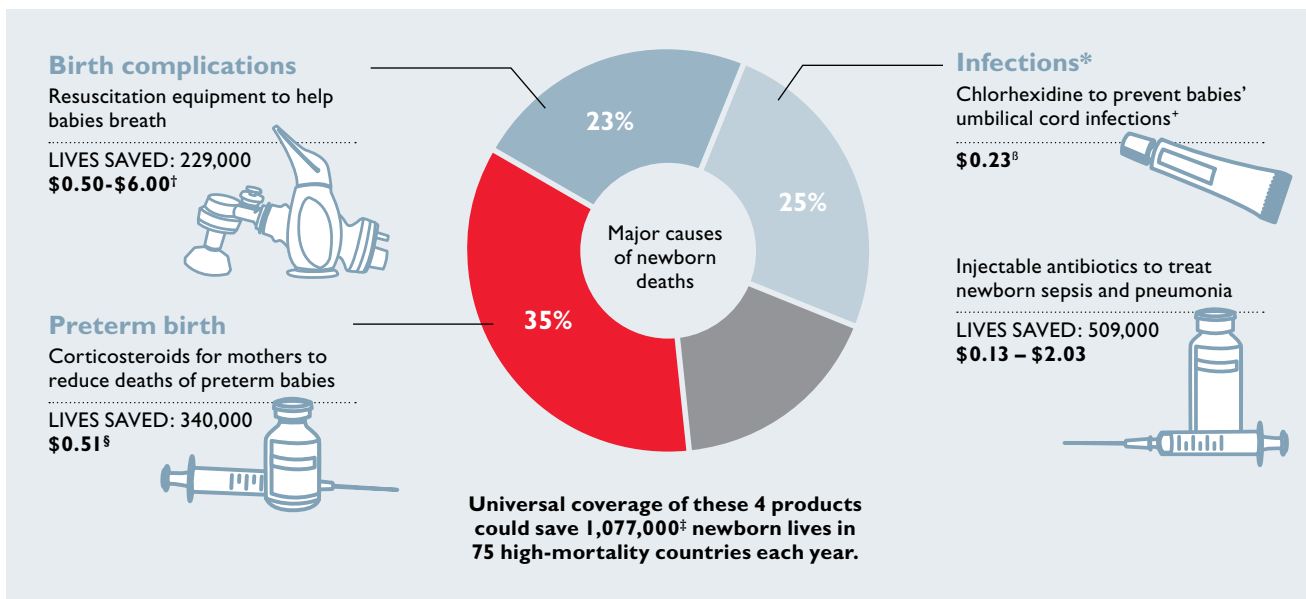
As part of this effort, Uganda has pledged to improve prenatal and childbirth care. High priority has been given to two interventions

Uganda believes have significant potential to lower preterm mortality in a cost-effective manner: helping mothers to practice “kangaroo care” which keeps the baby warm and facilitates breastfeeding, and steroid injections for all women in preterm labor to help speed up the development of the baby's lungs. At a cost of about 50 cents to \$1, two steroid shots can stop premature babies from going into respiratory distress when they are born.

In high-income countries, steroids have been widely used for women in preterm labor since the 1990s and an estimated 95 percent of women in preterm labor before 34 weeks now receive steroid injections prior to delivery. By comparison, in low- and middle-income countries, only an estimated 5 percent of women receive these steroid injections.<sup>115</sup>

- **Helping babies breathe** – When midwives and other birth attendants are trained to help babies start breathing immediately after birth, they can help prevent one of the major causes of newborn deaths. Birth asphyxia – when babies are born not breathing – kills 717,000 babies each year.<sup>116</sup> The simple practice of drying the baby and gently rubbing its body will stimulate breathing and prevent death in most cases. If stimulation does not work within the first minute, a basic resuscitation device consisting of a bag and a mask is used. A recent study in Tanzania found training health workers in these techniques reduced newborn deaths by 47 percent and stillbirths by 24 percent.<sup>117</sup> Similar reductions in stillbirths were also found in India.<sup>118</sup> Universal coverage of newborn resuscitation would save 229,000 newborn lives each year.<sup>119</sup>

## 4 LOW-COST PRODUCTS TO SAVE OVER 1 MILLION BABIES



† Basic resuscitation equipment includes: a reusable bag and mask resuscitator (\$6-100+), a suction device (\$0.50-0.85) which is not for routine use, and a training mannequin (\$60-1,500 – not shown).

§ Cost per treatment in India.

β Cost per baby in Nepal (depending on packaging format and whether a program opts for day-of-birth-only or daily-for-week, costs could vary from about 10 cents to \$1 per baby).

\* Includes sepsis, meningitis, pneumonia and tetanus.

‡ Total calculated from unrounded estimates.

+ Chlorhexidine is not yet included in LiST so estimates for lives saved could not be run at this time. However, the lives that could be saved with chlorhexidine would be a subset of those saved by injectable antibiotics.

Note: These estimates do not include the cost of health staff, facilities and health system management.

For detailed methodology of this analysis, see *Methodology and Research Notes*.

To demonstrate the cost-effectiveness of saving a newborn life, Save the Children conducted a Lives Saved Analysis (LiST)<sup>120</sup> of four inexpensive, underutilized, lifesaving products. Universal coverage of these four products in high-mortality countries could save 1,077,000 babies' lives, many on the first day and most in the first week.<sup>121</sup> The products are: resuscitation devices to help babies breathe; chlorhexidine to prevent umbilical cord infections; injectable antibiotics to treat newborn sepsis and pneumonia; and corticosteroid injections for women in preterm labor to prevent breathing problems in preterm babies. These four products have been identified by global health experts as priority interventions to immediately and effectively address avoidable newborn deaths. Other newborn health interventions, such as kangaroo mother care and early and exclusive breastfeeding, would save many more babies.

These products were endorsed by the United Nations Commission on Lifesaving Commodities for Maternal and Child Health. As part of the Secretary General's global strategy for women's and children's health – *Every Woman, Every Child* – this Commission has taken up the challenge to save 16 million lives by 2015 by increasing access to, and appropriate use of, essential medicines, medical devices and health supplies that address leading causes of death during pregnancy, childbirth and childhood. The Commission selected an initial list of 13 overlooked, lifesaving commodities, including these four for newborn survival.

## Postnatal Care

Since so many deaths occur in the first hours and days after birth, early postnatal care is key to improving newborn health and survival. The early postnatal period is a highly vulnerable time for mothers as well – 60 percent of maternal deaths occur in the first six weeks after birth, and nearly half those deaths occur in the first day after delivery.<sup>122</sup> Midwives and community health workers can offer counseling on newborn care practices, help ensure immediate and exclusive breastfeeding, and recognize health problems (such as infections) among mothers and newborns that require immediate attention. Postnatal care would cost less than half the amount of skilled care during childbirth to scale up<sup>123</sup> and has the potential to prevent as many as 20 to 50 percent of newborn deaths, depending on the setting.<sup>124</sup> But to date, postnatal care for mothers

and newborns has received relatively little emphasis in public health programs, with only a minority of mothers and babies in high-mortality settings receiving postnatal care in the first hours, days and weeks.

- **Breastfeeding** – Immediate breastfeeding is one of the most effective interventions for newborn survival. It provides nutrients, warmth and stronger immunity for the baby. It also promotes bonding and helps a mother’s uterus contract to reduce her blood loss. During the first days of life, breastfeeding helps to prevent low blood sugar (hypoglycaemia) and low temperature (hypothermia), both of which are important contributors to newborn deaths. One of the most important services that can be provided to a mother is preparation for, and support during, breastfeeding. The World Health Organization recommends that newborn babies should be put to the breast within one hour after birth and that exclusive breastfeeding should continue for six months.<sup>125</sup> With the right interventions, breastfeeding behaviors can be changed quickly and dramatically. One effort in Africa that enlisted families and communities to become breastfeeding advocates documented impressive results: Within three to four years, the program increased early initiation of breastfeeding by about 30 percent in Ghana and Zambia. Rates more than doubled in Madagascar in five years. And in Ethiopia, they rose by nearly 80 percent in just two years. Exclusive breastfeeding for longer periods of time also increased significantly in all countries.<sup>126</sup> Recent studies in Ghana<sup>127</sup> and Nepal<sup>128</sup> suggest that 20 percent of newborn deaths – almost 600,000 deaths each year<sup>129</sup> – could be prevented if all babies were breastfed within the first hour of life. Sadly, in most regions of the world, fewer than half of all newborns are put to the breast within one hour of birth.<sup>130</sup>
- **Kangaroo mother care** – “Kangaroo mother care” is a simple, effective way for mothers to help underweight babies survive the first critical days of life. Preterm and low-birthweight babies need special care, particularly with regard to warmth and feeding. Through this approach, mothers are taught how to keep their newborns warm through continuous skin-to-skin contact on the mother’s chest. This encourages the mother and baby to bond emotionally and enables the baby to breastfeed at will, giving the baby the energy to produce its own body heat. In many cases, kangaroo care reduces the need for incubators, which are prohibitively expensive in developing countries. A recent comparison of studies in 15 developing countries found that kangaroo care was more effective than incubator care, cutting newborn deaths by 51 percent for preterm babies who were stable.<sup>131</sup> An analysis based on these findings suggested that up to half a million newborns could be saved each year if kangaroo care was promoted everywhere.<sup>132</sup>
- **Clean cord care to prevent infection** – Sepsis, meningitis and tetanus account for approximately 15 percent of all newborn deaths each year. Many of these infections come from bacteria that enter the baby’s bloodstream through the recently-cut umbilical cord. To prevent infection, the cord should be cut with sterile scissors or a new razor blade. The cord stump should then be kept clean and uncovered until it falls off and heals. New evidence suggests many thousands of newborn lives could be saved by applying a low-cost antiseptic called chlorhexidine (or CHX) to the umbilical cords of all newborns, especially those born in settings with poor hygiene.<sup>133</sup> A tube of chlorhexidine costs about 25 cents. It can be administered successfully by health workers with minimal training, and even by family members. Amazingly, this inexpensive, easy-to-use product is not yet commonly used



This baby was treated with 4 percent chlorhexidine soon after birth. His umbilical cord is healing well and he is free from infection.



## BETTER CORD CARE SAVES BABIES' LIVES IN NEPAL

In Nepal, 63 percent of births still take place at home,<sup>134</sup> often in unhygienic conditions. Until recently, many families would follow traditional teachings and apply ash, oil, spice paste or other substances to the umbilical cords of newborn babies, which often led to infection and death. An inexpensive and easy-to-use ointment called chlorhexidine (CHX) can prevent these infections, and it is now being used throughout Nepal.

After community-based trials in Nepal, Bangladesh and Pakistan found CHX cord cleansing reduces the risk of newborn death by up to 23 percent,<sup>135</sup> Nepal decided to promote its use nationwide. The first step was to educate health workers so they could educate families about this lifesaving product. All levels of health care providers were given training on how to introduce the product to mothers and how to apply it correctly. Female community health volunteers have been key to this effort, as they reach pregnant women in the most impoverished rural areas where the risks of death are highest.

Health workers now routinely teach women and their families to use *kawach* – the Nepali

word for CHX, which means protector or shield. A tube of *kawach* is given to women in their eighth month of pregnancy. They are told to use it immediately after cutting the cord, and not to use any other substances.

Sita is one of 50,000 female community health volunteers in Nepal. She has been providing services to mothers and newborns in her community for 25 years, and she is a respected and sought-after source of knowledge. Sita recently helped a woman named Rihana to deliver her second baby. Immediately afterward, she applied chlorhexidine to the baby's umbilical cord to prevent infection. Impressed with how well it worked, Rihana says: "I now tell my friends to use chlorhexidine since the cord heals sooner."

Nepal's success with CHX is a model for other countries to follow. The Nepal example is now informing efforts by Nigeria to make CHX widely available in the Sokoto region and accelerate training of community-based health volunteers to promote its use.<sup>136</sup> Plans also are underway to begin manufacturing CHX locally in Sokoto in the future.<sup>137</sup>

Natnael is now a healthy 3-month-old. He survived newborn sepsis thanks to timely treatment from a dedicated community health worker who was trained through a nationwide program in Ethiopia.



## FIGHTING SEPSIS IN ETHIOPIA

Three years ago, Natnael probably would not have survived his first week of life. He was born healthy, but two days after he returned home from the birthing facility, he became feverish and restless. His breaths were very fast and he had difficulty breastfeeding.

Natnael was suffering from sepsis, an infection that affects a baby's entire body. In Ethiopia, sepsis is responsible for up to 19 percent of newborn deaths and kills approximately 15,500 babies each year.<sup>138</sup>

Natnael was fortunate to have a health extension worker named Belaynesh in his village. In 2010, Belaynesh had received training on how to diagnose and treat diseases like sepsis that kill many newborns. She discovered Natnael's illness during a routine post-natal home visit and urged the parents to take their baby to the hospital right away for treatment. But the family would not go. The baby's grandmother and several neighbors said Natnael's illness was not serious and he would get better soon. Also, there was a long-held belief in the community that newborns cannot receive medicine until they are 2 months old. "That is why I refused to take my baby to the hospital for treatment," said Doyole, the baby's mother.

Doyole couldn't sleep that night, she was so worried for her son. "My baby was on the verge of dying," she said. "I so desperately wanted him to get better."

Belaynesh returned the next day and tried again to convince the family to take their baby to the hospital. Eventually they agreed to let her treat Natnael at home. "I immediately went to the health post to get the medicine and started giving the baby an antibiotic injection once a day," said Belaynesh. "I also gave him amoxicillin syrup three times a day for seven days."

"My baby's condition started improving on the first day after the treatment," said Doyole. "He started sleeping well and breastfeeding, which were positive signs for us. We are so grateful to the health extension worker for treating our child and saving his life."

"Now I realize that the long-held belief in our community is untrue," Doyole continued. "I have told people this and I will continue to spread the message to all members of the community so that our babies will get treatment when they need it and they won't die from these diseases."

## REMOVING BARRIERS TO CARE

Newborn and child mortality are highest among the poorest segments of society. Many social, cultural and financial barriers deter care-seeking, and must be addressed to ensure access to lifesaving maternal and newborn health services. For the poorest populations, out-of-pocket expenses, including user fees, often prevent timely and appropriate care-seeking. To reduce mortality and lessen inequalities in access to care, a number of countries have opted to abolish fees for basic health services. Others have waived fees for children under age 5 and pregnant and breastfeeding women. This has led to significant increases in demand for maternal and newborn health services. In Niger, for example, use of health services increased dramatically when user fees were abolished.<sup>139</sup> In Sierra Leone, rates of deliveries in clinics and hospitals increased by 45 percent the year after fees were removed.<sup>140</sup>

However, in many countries, including Pakistan and Democratic Republic of the Congo, out-of-pocket costs remain an important barrier to maternal and newborn health care. Moreover, policies intended to protect the poor, including waiving fees, are often not applied fully or fairly, and under-the-table payments are not uncommon even where such fees have been waived. Since demand for services typically increases when fees are removed, it is important that steps be taken prior to the introduction of such policies to ensure that sufficient staff, medicine and facilities are available. Families also need to know that they should not have to pay for services that are free.

The movement towards Universal Health Coverage encourages governments to increase overall funding for health through fair policies and to ensure the availability of quality health care for all, while concurrently helping to reduce the financial barriers to care.

in the developing world. Only two countries – Nepal and Nigeria – have taken steps to make it widely available.

- **Antibiotics to treat sepsis** – Sepsis is an infection affecting the baby's whole body. It may be in the blood or in one or more of the baby's organs. Organisms that cause sepsis may enter the baby during pregnancy, during labor or birth, or after birth. They can spread through the body from an infection of the skin, or cord, or other organ. Sepsis can kill quickly, but low-cost injectable antibiotics – such as procaine, benzylepenicillin, gentamicin and ceftriaxone – can save lives if administered by a skilled health professional or a community health worker in some settings. Costing up to \$2 and often much less, these drugs – together with chlorhexidine for clean cord care – could save 509,000 newborn lives each year if they were available to every baby who might need them.<sup>141</sup>

## Stronger Health Systems for Mothers and Babies

There is now global consensus around the essential reproductive and maternal, newborn and child health interventions that are needed within the continuum of care.<sup>142</sup> To achieve universal, equitable coverage and high-quality health care, interventions to save newborn lives must be integrated within existing health systems, and not be forgotten when scaling up care for mothers and for older children. Lower-income countries need international support to scale-up and implement health service delivery packages that include expanded human resource capacity, health facility infrastructure, financial resources, government stewardship, district-level management and use of data.

A recurring theme in countries where dramatic reduction in newborn deaths are taking place is the use of data and evidence to inform policies and programs, with locally-generated evidence often found to be critical in creating the ownership needed for adoption and replication at scale. Even more lives can be saved if countries use local data to identify priority interventions and increase coverage and quality in the short term.<sup>143</sup>

A number of countries have made remarkable progress in reducing newborn mortality in the last two decades:

- **Bangladesh** has reduced newborn mortality by 49 percent since 1990 – more than any other low-income country. Increased family incomes, lower fertility rates and higher levels of female education likely account for a significant share of this success.<sup>144</sup> Bangladesh has made newborn care more accessible by training community health workers to reach mothers and babies at home. These health workers go door-to-door teaching families about the importance of cleanliness, nutrition, family planning, prenatal care and essential newborn care. Too many women in Bangladesh still give birth at home with unskilled care. While deliveries in facilities are on the rise, care in these facilities – many of which are privately operated – needs to be improved to help lower mortality rates.<sup>145</sup> Skilled birth attendants, nurses, paramedics and doctors are being trained to use resuscitation devices to help babies breathe and post-natal visits by community health workers are now recommended.<sup>146</sup> Still, Bangladesh's newborn mortality rate remains unacceptably high at 26 per 1,000 live births, and greater investments are needed, especially to address preterm births and newborn sepsis.
- **Malawi** – a rare African success story – has reduced newborn mortality by 44 percent since 1990. With consistent, high-level political commitment and



help from international organizations, Malawi has taken a comprehensive national health sector approach to saving newborn lives.<sup>147</sup> To address high rates of preterm birth, Malawi has invested heavily in kangaroo mother care. After opening the first kangaroo care facility in 2001, the lifesaving technique was expanded throughout the country, reaching all 28 districts by the end of 2011.<sup>148</sup> Malawi eliminated maternal and newborn tetanus in 2004.<sup>149</sup> The country's first national "road map" to reduce newborn mortality was launched in 2007, resulting in better training for nurses and midwives to deliver high-quality maternal and newborn care services.<sup>150</sup> Meanwhile, Malawi is scaling up the training of Health Surveillance Assistants who provide health care for mothers and babies at home during pregnancy and within a week after birth. These health workers also encourage women to give birth at facilities instead of at home.<sup>151</sup> Malawi is on track to meet MDG 4, but as newborn deaths become a growing percentage of under-5 deaths, sustaining progress towards the MDG will require increased focus on childbirth and the first 28 days.

- **Nepal** – despite high levels of poverty, poor infrastructure, difficult terrain and recent conflict – has succeeded in reducing newborn mortality by 47 percent since 1990. A dramatic reduction in the total fertility rate and improvements in female education have helped save thousands of newborn lives.<sup>152</sup> The government used global and local evidence to inform a national newborn health strategy and to design a community-based newborn care package, parts of which are to be expanded to 35 of 75 districts this year. Female community health volunteers are distributing chlorhexidine to pregnant women and teaching them to use it to prevent umbilical cord infection, making Nepal a world leader in adopting this low-cost, lifesaving product. Rapid expansion of community care combined with an increase in facility births have positioned Nepal for future progress, but the quality of care in facilities must be improved in order to save more lives.<sup>153</sup>
- **Brazil** has reduced newborn mortality by 64 percent since 1990 and it is one of only a few countries that have narrowed the health care equity gap between rich and poor. In 1988, Brazil launched a unified health system, providing universal access to comprehensive health care without user fees. Geographic targeting has guided the deployment of family health teams of doctors, nurses and community health workers in the poorest areas of the country to deliver a wide range of primary care services.<sup>154</sup> As a result, primary health care coverage is now virtually universal.<sup>155</sup> For example, in 1996, about 30 percent of Brazilian mothers in the poorest fifth of the population did not receive skilled care during childbirth, but by 2007 skilled care at birth was nearly universal (97 percent). Similarly, rates of prenatal care among the poorest mothers rose from 53 to 93 percent over the same time period.<sup>156</sup> Brazil has improved water and sanitation, improved women's education, increased breastfeeding rates, increased immunization coverage and improved incomes of vulnerable families with the help of cash transfer programs.<sup>157</sup> Brazil has also achieved a dramatic drop in unwanted pregnancies and lowered its fertility rate.<sup>158</sup> Despite these improvements, major challenges remain, including the over-medicalization of childbirth (50 percent of babies are delivered by caesarean section<sup>159</sup>), maternal deaths caused by illegal abortions, and a high frequency of preterm deliveries.<sup>160</sup>
- **Turkey**, an upper middle-income country, has reduced newborn mortality by 69 percent since 1990. The transformation of Turkey's health system over

## MORE HEALTH WORKERS NEEDED

In the poorest communities in the developing world where deaths during childbirth are most common, doctors and hospitals are often unavailable, too far away or too expensive. Midwives and community health workers are increasingly meeting the critical health needs of mothers and babies in these communities, but there are not enough of them to do the job.

The world faces a shortage of 5 million health workers of all types.<sup>161</sup> And there is an acute shortage of at least 1 million frontline health workers in the developing world,<sup>162</sup> including 350,000 with midwifery skills.<sup>163</sup>

If all women delivered with a midwife in a facility capable of providing basic emergency care, it is estimated that 56 percent of maternal, fetal and newborn deaths could be prevented. This estimate is based on reductions of 61 percent of maternal deaths, 49 percent of fetal deaths, and 60 percent of newborn deaths, which equates to as many as 3.6 million lives saved.<sup>164</sup>

In addition to the insufficient number of health workers, many existing health workers are not well enough trained, equipped and supported to deliver lifesaving maternal and newborn care. Increased investments are needed to ensure midwives, birth attendants and community health workers have the right skills and tools to effectively do their job, and to link these health workers to functioning health systems for supervision and referrals.

the past decade has been comprehensive, with reforms aimed at mothers and newborns playing a central role. Turkey has improved transportation systems for referral care, upgraded newborn intensive care units, and expanded skill training and standardization of care for newborn resuscitation.<sup>165</sup> Turkey has actively promoted prenatal care and facility births with cash incentives and free accommodations in maternity waiting homes in cities for expectant women from rural areas.<sup>166</sup> As a result, rates of skilled birth attendance and institutional births have risen to 90 percent, and even poor families have a high chance of getting access to newborn intensive care if they need it.<sup>167</sup>

## Measuring a Country's Readiness to Expand Newborn Health

Newborn survival has only recently become a political priority for many countries.

Recognizing that national governments are better able to achieve their policy goals if they can monitor and evaluate their efforts effectively, Save the Children developed a framework of 27 benchmarks to help national health care systems assess their readiness to implement newborn care interventions on a country-wide scale.

The benchmarks focus on three broad categories – agenda setting, policy formulation and policy implementation – and are designed to measure the degree to which health systems and national programs are prepared to deliver interventions for newborn survival to mothers and newborns country-wide.

Save the Children did a retrospective analysis of countries, summarizing information along three time points – 2000, 2005 and 2010. In nine countries, the agency found significant progress in efforts to integrate effective newborn interventions within existing health systems at facility and community levels. By 2010, more countries had made progress in agenda setting compared with the other categories. Bangladesh, Bolivia, Mali, Nepal, Pakistan and Uganda had all achieved at least 80 percent of agenda setting benchmarks by 2010. Progress had also been made in policy formulation with five countries achieving at least 70 percent of the benchmarks.

While in some countries ensuring that newborn survival was on the national agenda came first, before policy formulation and implementation, in other countries policy formulation and implementation actually preceded agenda-setting. This finding reinforces the non-linear nature of the policy process and highlights the importance of adapting to local contexts and utilizing windows of opportunity.

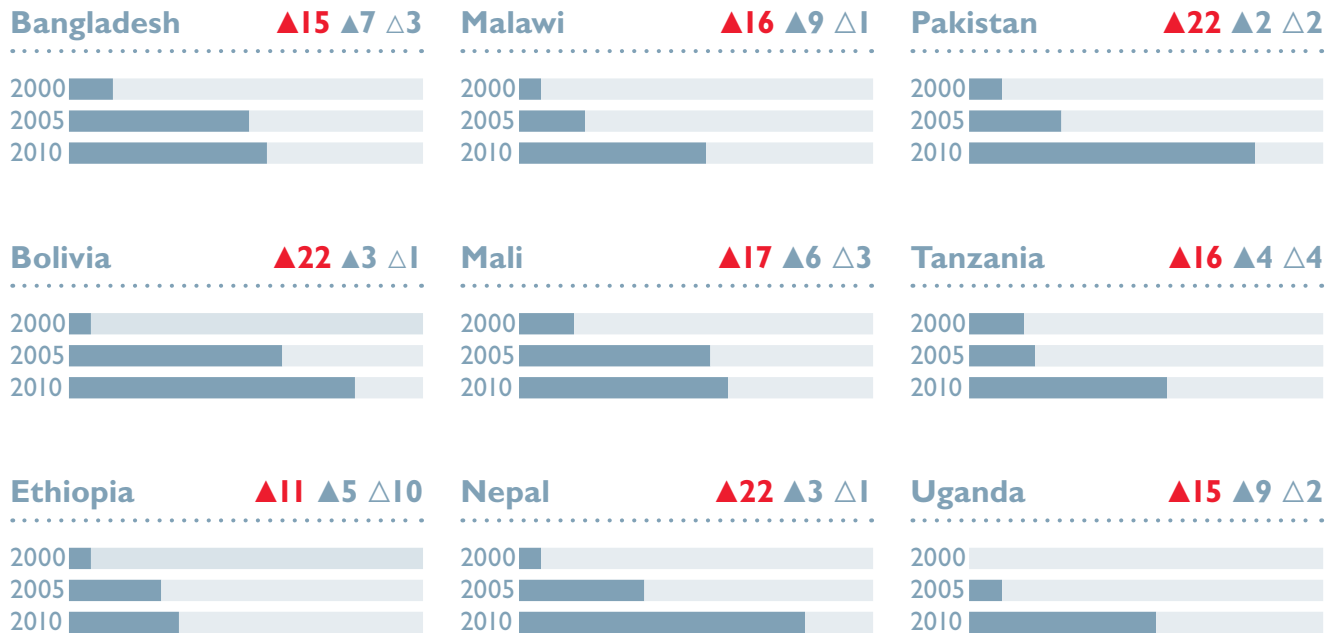


Pakistan

## BENCHMARKING SYSTEM READINESS FOR NEWBORN CARE SCALE UP

Benchmarks Achieved Over Time (out of 27)

Benchmark Status in 2010\* (▲ Achieved ▲ Partially achieved △ Not achieved)



\*May not add up to 27 due to missing or not applicable data

## CATEGORIES OF BENCHMARKS

Scale Up Readiness: Reaching Every Mother and Newborn

### Agenda Setting

Benchmarks include:

- National needs assessment conducted
- Local evidence generated
- Local evidence disseminated
- Convening mechanism established
- Focal person identified within the Ministry of Health
- Key indicators included in surveys

### Policy Formulation

Benchmarks include:

- Policies endorsed
- Policies integrated
- Behavior change strategy formulated
- Injectable antibiotics for newborns on essential drug list at primary level
- Health Management Information System (HMIS) includes key indicators
- National targets established
- Total expenditure on reproductive, maternal, newborn and child health
- Costed implementation plan

### Policy Implementation

Benchmarks include:

- In-service training for community/facility cadres
- Pre-service education for community/facility cadres
- Supervision system established at primary level
- Protocols for sick newborns in place at district level
- Integrated Management of Childhood Illness (IMCI) adapted to include first week of life
- Midwives/community cadre/primary level cadre authorized to resuscitate babies
- Community cadre/primary level cadre authorized to administer injectable antibiotics
- Cadre identified for home-based maternal and newborn care



Source: Allysian Moran et al. "Benchmarks to Measure Readiness to Integrate and Scale Up Newborn Survival Interventions." *Health Policy and Planning: A Decade of Change for Newborn Survival (2000-2010): A Multi-Country Evaluation of Progress Towards Scale.*

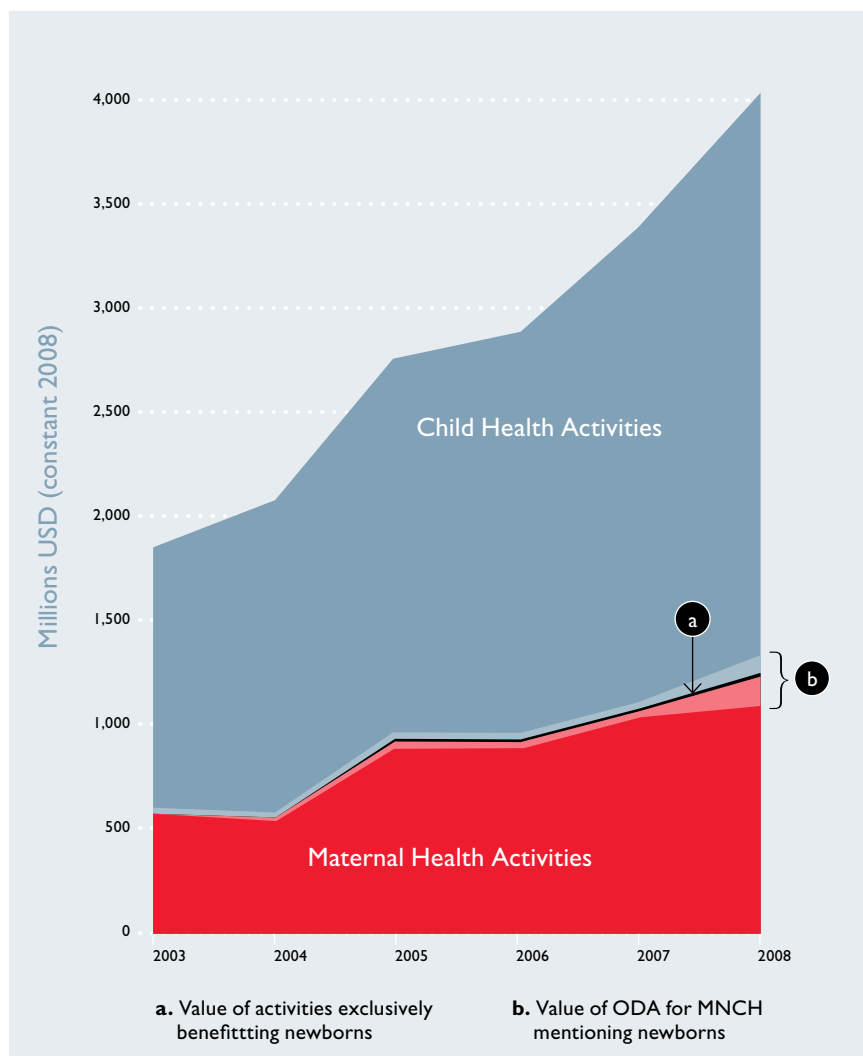


# Donor Funding for Newborn Survival Does Not Match Need

Appropriately, domestic financing, from public and private resources, accounts for most newborn health funding in developing countries, and many developing countries are making great strides to improve the quality, impact and accessibility of health services, from removing financial barriers to training more frontline health workers (see sidebars on pages 46 and 47).

Within this context, development assistance can play an important role in helping low-income nations meet these needs. Global support for maternal, newborn and child health (MNCH) has been rising since 2000 and it more than doubled between 2003 and 2008.<sup>168</sup> Donor support mentioning newborns has increased 20-fold since 2002.<sup>169</sup> However, the actual level of this support is extremely low and does not match the need given the 3 million newborn deaths and 2.6 million stillbirths that occur worldwide every year.

## CHANGES IN DEVELOPMENT ASSISTANCE FOR MOTHERS, NEWBORNS AND CHILDREN FOR 68 COUNTRIES



Since 2000, there has been a significant increase in donor funding for maternal newborn and child health (MNCH), with more funding marked for child health projects. Only 6 percent of official development assistance (ODA) for MNCH goes to newborn survival programs. Given the lagging progress in newborn survival, more funding is needed for MNCH overall and more specifically targeting newborns.

A note on the analysis of ODA mentioning newborns: A search of the Creditor Reporting System database was undertaken for any mention of the word “newborn” or a derivative thereof, and also for 23 terms referring to newborn-specific interventions. All projects identified were classified according to whether projects: 1.) Mentioned newborns, but may also benefit other populations (e.g. mothers or older children); or 2.) Exclusively benefit newborns. Analysis was limited to the 68 high-mortality countries considered “Countdown” countries in 2008.

Source: Adapted from *A Decade of Change for Newborn Survival: Changing the Trajectory for Our Future. Executive Summary. Health Policy and Planning.*

While 43 percent of under-5 deaths are newborns, only 6 percent of aid dollars for maternal, newborn and child health go to newborn-sensitive activities, and only 0.1 percent of these dollars go to programs exclusively benefitting newborns.<sup>170</sup>

While increasing, donor support for newborn health does not always reflect individual countries' share of the global newborn death burden. For example: Haiti, Indonesia and Nigeria received roughly the same amount of aid for newborn survival programs in 2008 (the most recent year for which data are available), but Nigeria has about 4 times the newborn deaths of Indonesia and 40 times the newborn deaths of Haiti.

The United States provides more funding for newborn survival programs than any other country, although newborn funding is still a very small part of overall U.S. health sector assistance. Netherlands, Norway and United Kingdom give higher percentages of their national income to official development assistance (ODA) than the U.S. does, but much smaller dollar amounts to newborn programs.

In addition to both developing and donor country governments, private groups including the Bill & Melinda Gates Foundation have increasingly made newborn health a priority and now provide significant funding. However, funding – and the political and program priority that donor resources help build – still lags far behind the need.



## TOP RECIPIENTS AND DONORS OF AID FOR NEWBORNS

Top 10 Recipients	AID FOR NEWBORNS (2008)‡			Share of global newborn deaths (2011)
	Total	Per newborn	As a % of total MNCH	
1 Pakistan	\$36 million	\$8	19%	5.7%
2 Afghanistan	\$22 million	\$16	12%	1.7%
3 Bangladesh	\$18 million	\$6	14%	2.7%
4 Tanzania	\$16 million	\$8	8%	1.6%
5 India	\$14 million	\$1	4%	29.7%
6 Zimbabwe	\$10 million	\$26	24%	0.4%
7 Haiti	\$9 million	\$35	24%	0.2%
7 Indonesia	\$9 million	\$2	10%	2.2%
7 Nigeria	\$9 million	\$1	4%	8.6%
10 DR Congo	\$8 million	\$3	4%	4.6%
10 Yemen	\$8 million	\$9	20%	1.0%

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‡ Represents the total value of ODA (official development assistance) to MNCH (maternal, newborn and child health) activities that mention the word “newborn” or a derivative, in constant 2008 US\$. Aid per newborn is calculated as total value of activities mentioning newborns divided by total number of live births in 2011.

Top 10 Donors	Total aid for newborns ‡ (2002-2010)	Total ODA for health ‡ (2002-2010)	Net ODA as a percentage of GNI (2011)
1 USA	\$1,115 million	\$43,468 million	0.20%
2 Canada	\$209 million	\$4,107 million	0.31%
3 Australia	\$84 million	\$2,122 million	0.35%
4 UK	\$76 million	\$6,600 million	0.56%
5 Spain	\$42 million	\$2,126 million	0.29%
6 Norway	\$39 million	\$2,132 million	1.00%
7 Netherlands	\$25 million	\$3,197 million	0.75%
8 Switzerland	\$14 million	\$497 million	0.46%
9 Germany	\$13 million	\$3,291 million	0.40%
10 Japan	\$12 million	\$3,654 million	0.18%

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‡ Constant 2010 US\$

Note: ODA for health = “health, total” (CRS sector 120) + “population policies/programmes & reproductive health, total” (CRS sector 130)

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Data sources: ODA for newborns (2008): Joy Lawn, et al. “Newborn Survival: A Multicountry Analysis of a Decade of Change.” *Health Policy and Planning*; ODA for newborns (2002-2010): Catherine Pitt, et al. “Donor Funding for Newborn Survival: An Analysis of Donor-Reported Data, 2002 – 2010.” *PLoS Medicine*; ODA as a % of GNI: UNSTATS (mdgs.un.org); Newborn deaths: Healthy Newborn Network (Data compiled for *A Decade of Change for Newborn Survival, Policy and Programmes (2000–2010): A Multi-Country Evaluation of Progress Towards Scale*. *Health Policy and Planning*.); Total ODA for health: OECD. QWIDS Query Wizard for International Development Statistics. (Accessed April 2, 2013)





# Saving Newborn Lives in Industrialized Countries

While only 1 percent of the world's newborn deaths occur in industrialized countries,<sup>171</sup> the newborn period is still the riskiest time, no matter where a baby is born. The percentage of child deaths that occur during the newborn period is rising in wealthy countries, as it is in poor countries. Almost everywhere, the day of birth is the riskiest time for newborns.

Some causes of newborn deaths in wealthy countries are similar to those in developing countries, especially those related to preterm birth. But many common killers of newborns in developing countries – such as birth complications and infections – almost never cause babies to die in rich countries.<sup>172</sup>

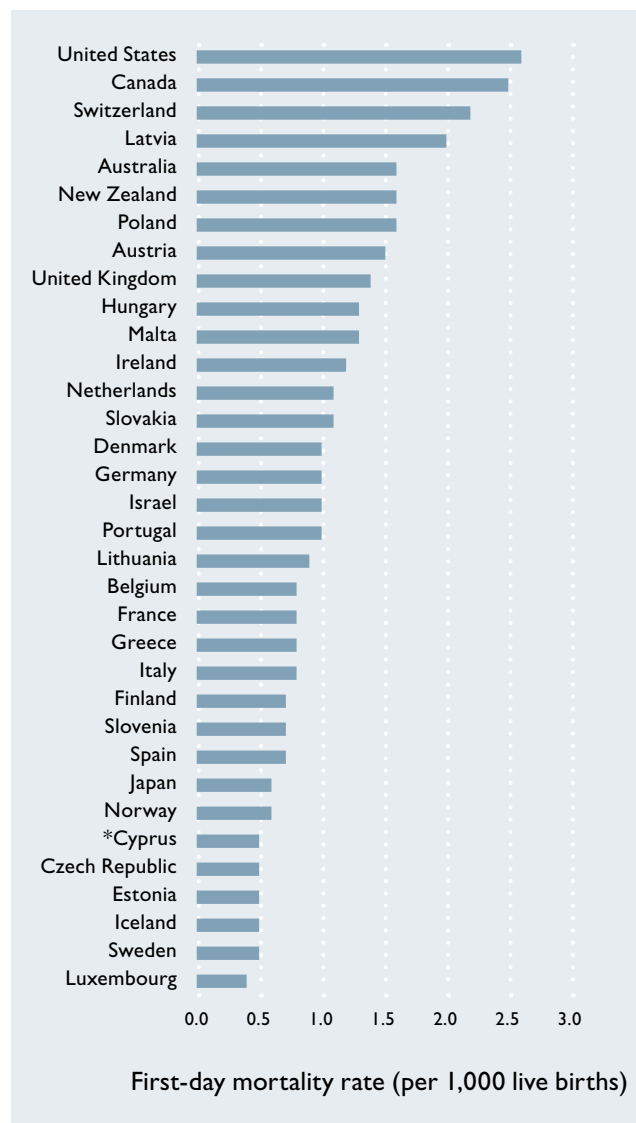
The United States has the highest first-day death rate in the industrialized world. An estimated 11,300 newborn babies die each year in the United States on the day they are born. This is 50 percent more first-day deaths than all other industrialized countries combined. The 33 other industrialized countries for which there are data have a combined total of 7,500 first-day deaths each year.

The large U.S. population size explains some of this disparity, but it does not explain all of it. The U.S. represents 31 percent of the population in these 34 industrialized countries and 38 percent of the annual live births, but it has 60 percent of all first-day deaths. When first-day deaths in the United States are compared to those in the 27 countries making up the European Union, the findings show that European Union countries, taken together, have 1 million more births each year (4.3 million vs. 5.3 million, respectively), but only about half as many first-day deaths as the United States (11,300 in the U.S. vs. 5,800 in EU member countries).

Canada and Switzerland have the second and third highest first-day death rates in the industrialized world, respectively. Switzerland has the highest share of newborn deaths that are first-day deaths found anywhere in the world: 71 percent of Swiss babies who die in their first month die on their first day.

Newborns in these three countries – the United States, Canada and Switzerland – are at least 4 times as likely to die on the day they are born as babies born in the lowest-mortality countries where first-day death rates are at or below 0.5 per 1,000 live births.

## FIRST-DAY DEATHS IN INDUSTRIALIZED COUNTRIES



\* Estimate is < 0.5

Note: Estimates are reported for 2011 for 34 of 39 industrialized countries with available data. First-day mortality rates have been rounded according to the following scheme: countries with complete vital registration (VR) data (see WHO, *Trends in Maternal Mortality 1990-2010*, pp.32-36) are rounded to one decimal place; countries without VR data (i.e. countries with modeled estimates, e.g. Israel, Latvia and Portugal) or incomplete VR data (e.g. Cyprus), were rounded to the nearest whole number. In the case of Cyprus, where rates are estimated to be less than 0.5 per 1,000, 0.5 was used for graphing purposes. Data source: Original analysis for Save the Children by Shefali Oza, Simon Cousens and Joy Lawn (*The Risk of Dying on the Day of Birth: Estimates for 186 Countries*. Submitted manuscript, 2013).

Across these industrialized countries, first-day deaths account for 30 percent of under-5 mortality. In Australia, Austria, Canada and the United States, the share is higher – more than 1 in 3 deaths to children under age 5 are to newborns on their first day of life. In Switzerland, it's closer to 1 in 2 (48 percent).

## Why does the United States have so many first-day deaths?

**“When Charlotte died shortly after birth, I felt isolated. Charlotte's sudden death led me to reach out and connect with others who have lost babies. There are more of us in this country than people realize.”**

— Angela Rodman  
Salem, Oregon, USA



Angela and Jonathan Rodman with their daughter Charlotte.

Many babies in the United States are born too early. The U.S. preterm birth rate (1 in 8 births) is one of the highest in the industrialized world (second only to Cyprus). In fact, 130 countries from all across the world have lower preterm birth rates than the United States. The U.S. prematurity rate is twice that of Finland, Japan, Norway and Sweden. The United States has over half a million preterm births each year – the sixth largest number in the world (after India, China, Nigeria, Pakistan and Indonesia).<sup>173</sup>

According to the latest estimates, complications of preterm birth are the direct cause of 35 percent of all newborn deaths in the U.S., making preterm birth the number one killer of newborns. Preterm birth is a major cause of death in most industrialized countries and is responsible for up to two-thirds of all newborn deaths in countries such as Iceland and Greece.<sup>174</sup>

The United States also has the highest adolescent birth rate of any industrialized country. Teenage mothers in the U.S. tend to be poorer,<sup>175</sup> less educated,<sup>176</sup> and receive less prenatal care<sup>177</sup> than older mothers. Because of these challenges, babies born to teen mothers are more likely to be low-birthweight and be born prematurely<sup>178</sup> and to die in their first month.<sup>179</sup> They are also more likely to suffer chronic medical conditions, do poorly in school, and give birth during their teen years (continuing the cycle of teen pregnancy).<sup>180</sup>

Poverty, racism and stress are likely to be important contributing factors to first-day deaths in the United States and other industrialized countries. Current data do not allow for analysis of first-day death rates among disadvantaged groups in wealthy countries, but newborn and infant mortality are often higher among the poor and racial and ethnic minorities,<sup>181</sup> and populations with high newborn mortality rates also tend to have high first-day death rates. Poor and minority groups also suffer higher burdens of prematurity<sup>182</sup> and low birthweight<sup>183</sup> which likely lead to first-day deaths in the U.S. and elsewhere. One recent analysis of U.S. data found that most of the higher infant mortality experienced by black and Puerto Rican infants compared with white infants was due to preterm-related causes.<sup>184</sup> These groups are also less likely to receive the high-risk care they need, which puts their babies at even higher risk.<sup>185</sup>

What can be done to reduce first-day deaths in the United States and elsewhere in the industrialized world? Investments in education, health care and sexual health awareness for youth will help address some of the root causes.<sup>186</sup> Wider use of family planning will also improve birth outcomes and reduce newborn deaths. In the United States, 49 percent of pregnancies are unplanned<sup>187</sup> and these babies are at higher risk of death and disability.<sup>188</sup> Efforts to improve women's health would also have a positive impact on survival rates of babies. High-quality care before, during and after pregnancy (including home visits by nurses or community health workers if appropriate) and access to the appropriate level of care at the time of delivery can result in healthier mothers giving birth to healthier babies. More research is needed to better understand the causes of prematurity in high-income settings and to develop better solutions to prevent preterm births.<sup>189</sup>

## Lessons Without Borders

In recent years, a number of solutions that were pioneered in developing countries have been gaining acceptance – and saving lives – in richer countries. For example: kangaroo mother care is now being used to improve newborn survival outcomes and support parent-child bonding; community health workers have been trained to reach marginalized communities where there are fewer doctors; and the emphasis on breastfeeding that started in developing countries has now begun to catch on in Australia, Canada, New Zealand, the United States and many European countries, with an increase in baby-friendly hospitals and the adoption of other efforts to encourage breastfeeding.

Kangaroo mother care (KMC) – also known as skin-to-skin contact – originated in low-income countries, but it provides high-quality, cost-effective care in high-income settings as well.<sup>190</sup> Many developed countries are now taking KMC to scale and moving away from incubators and other invasive approaches. Countries where large percentages of neonatal intensive care units now routinely offer kangaroo mother care include: Denmark, Finland, Iceland, Japan, Norway, Sweden and the United States.<sup>191</sup>

Community health workers have become significant providers of health care, not only in low-income countries, but in industrialized countries as well. The first prominent large-scale community health worker programs were in Latin America, Tanzania, Mozambique, Malawi and China as early as the 1960s.<sup>192</sup> Since then, the model has been picked up in many high-income countries, driven by the need for mechanisms to deliver health care to culturally-distinct, marginalized, and/or minority communities and to support people with a wide range of health issues.<sup>193</sup> In New Zealand, health workers from the Maori community deliver services to some of the most marginalized families throughout the country.<sup>194</sup> In Canada, the United Kingdom and the United States, community health workers in urban areas have been successful in increasing the number of women who initiate breastfeeding and exclusively breastfeed their babies.<sup>195</sup> And in Ireland and the United States, they have increased the number of low-income children who are immunized.<sup>196</sup>





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# Take Action for Newborns

The world is in the midst of a new child survival revolution. Since 1990, the number of deaths for children under 5 has almost halved. We have a deeper understanding of what works and how to save these lives, even in the lowest income countries. More importantly, we as a global community are making that happen. In 2012, the governments of India, Ethiopia and the United States, together with UNICEF, issued a *Child Survival Call to Action: A Promise Renewed*, calling for ending preventable child deaths within a generation and developing a global road map to get there.

In pursuit of this goal, one thing is clear: we will not achieve our objective unless we focus increased attention on newborns, who now account for 43 percent of child deaths before the age of 5. The Global Newborn Action Plan will be launched later this year by governments and partners, including Save the Children, in support of the UN Secretary General's *Every Woman, Every Child* strategy and *A Promise Renewed*. This plan – if made a reality – will provide a unique opportunity to improve the survival and health of newborns for the next generation – and ensure more happy birth days.

As a global community, we have political and programmatic frameworks for moving this forward. Over the last decade we have gained clear insights on the causes of newborn deaths and we have proven solutions that can be scaled up. We know the transformative power that saving children's lives has on families, communities, nations and economies. What we need to do now is act.

## What Needs to Be Done?

### I. Every mother and every newborn must have access to high-impact care that will save their lives.

- Midwives, nurses and community health workers need training, supplies and appropriate facilities to prevent and respond to complications from preterm birth. For example, it should be routine, as it is in rich countries, to give mothers in preterm labor an injection of corticosteroids, which helps babies' lungs develop and prevents breathing problems when they are born.
- Clean cord care, including chlorhexidine cord cleaning and newborn/pediatric doses of antibiotics, could prevent and treat simple but deadly infections.
- Midwives and all birth attendants need training to help newborn babies survive the "golden minute" – that first moment after birth when, if a baby is not breathing spontaneously, a simple intervention can save her life. The global "Helping Babies Breathe" partnership has developed and tested a training model, but it has not yet reached most babies.<sup>197</sup>
- Immediate and exclusive breastfeeding and "kangaroo mother care" cost virtually nothing, but could save hundreds of thousands of babies' lives each year. Yet few frontline workers are trained to support mothers for this care.

## **2. We need to create mother and baby-friendly health systems to deliver lifesaving interventions, especially at the time of birth.**

- We need to provide women with greater access to midwives so that all women receive quality obstetric care and give birth with attendants who are trained in newborn as well as maternal health care. This requires training new health workers and ensuring that existing workers have the right training, skills and supplies; they also need to be part of a functioning health system that focuses on communities of the greatest need and uses the latest evidence to guide program improvement.
- With more mothers delivering in health facilities such as clinics or hospitals, increased attention needs to be given to improving the quality of care in those facilities. With millions more births in facilities, we must seize the opportunity to ensure effective care is given, lives are saved, conditions are hygienic and women are respected. Health providers should ensure that mothers are knowledgeable about appropriate care practices before they leave a facility – and that they know when and where to seek care if needed once they get home.
- Community health workers can play a vital role, especially in the critical postnatal period, visiting women and babies, promoting breastfeeding, providing access to family planning, and supporting families for basic newborn care – things such as warmth, breastfeeding, cord care and hygiene. These workers need to be part of a broader health system.
- We need to move Universal Health Coverage from aspiration to reality. Investing in midwives and other frontline health workers is a critical piece of a broader movement to ensure Universal Health Coverage so that everyone – starting with the most vulnerable – receives essential, high-quality care without descending into poverty. It also requires increasing investment in health, building strong, fully functioning health systems and removing financial and other barriers to access and use of services. The success of Universal Health Care must be judged on results for health outcomes, including newborn, maternal and child mortality.

## **3. We need to address the underlying causes of newborn mortality, especially gender inequality and malnutrition.**

- We need to empower women and girls so that they can make the health decisions that are best for themselves and their babies, especially to plan their families. When mothers are strong and stable – physically, financially and socially – their children are more likely to survive and thrive. But women and girls are only part of the answer. Men must also be engaged as stakeholders in maternal and child health so that they support family choices that will lead to healthier mothers and babies.
- We need to invest in fighting malnutrition, which is an underlying cause of more than one-third of under-5 deaths and contributes to babies being born too small. The right feeding practices – such as immediate and exclusive breastfeeding after babies are born – will save newborn lives, and also help children get the proper nutrition their brains and bodies need for development.



## Who Needs To Act?

Under many international agreements and rights conventions, including the UN Convention on the Rights of the Child, it is a globally shared responsibility to ensure that newborns and children are protected, supported and given the best opportunities to have a healthy life.

### Developing Countries:

- More than 70 countries have made commitments under *Every Woman, Every Child*, and 172 countries pledged their support to end preventable child deaths through *A Promise Renewed*. Countries must develop their own road maps to end preventable child deaths and identify the proven, low-cost interventions that address the most critical causes of death and integrate them into their existing health systems at scale.
- In most countries, the majority of health financing comes from their own national budgets. Countries should increase their investment in health – especially maternal, newborn and child health – and take steps to ensure that the direct costs of healthcare are not a barrier to survival. Countries should at least meet the WHO recommendation of spending a minimum of \$65 per capita on health by 2015 to fund a basic package of services and should commit to Universal Health Coverage for their people.
- Every country should recognize that improving newborn health is part of a broader obligation to ensure every child's right to health under the U.N. Convention on the Rights of the Child.
- Nigeria not only has high levels of newborn mortality, but large disparities in how this affects people of different income levels. Passage of a National Health Bill and approval from the executive branch to become law would provide a national framework for huge gains in reducing newborn mortality and preventable child and maternal deaths, in a country that accounts for 11 percent of global child deaths.
- Countries with high malnutrition burdens should put plans in place to scale up direct and indirect interventions to treat and prevent malnutrition, and commit domestic resources to tackling this hidden crisis.

## Donor Countries and International Agencies:

- While the majority of health funding in most developing countries is from domestic resources, donors have an important role to play, particularly in sub-Saharan Africa. Donors must increase funding for maternal, newborn and child health and nutrition to secure progress and achieve the end of preventable child deaths. Within the funding given, it should be targeted to the biggest causes of mortality and invested in the ways that will change lives. Donor funding for newborn care is pitifully small compared to the burden, apart from a few leading donors.
- Donors must increase resources for maternal and newborn care to help ensure that health care – during pregnancy, labor, delivery, and the postnatal period – is available to all, addresses the risks of preterm birth and prepares frontline health workers to prevent and treat newborn complications and infections.
- The G8 and other donors must deliver resources to contribute to the full funding of national, costed plans developed by countries within *Every Women Every Child* and the Scaling Up Nutrition Movement (SUN) and commit to provide funding for plans developed by high malnutrition burden countries which are not part of SUN.
- Donors must continue to drive political will and public awareness to support the end of preventable child deaths, through engagement in efforts such as the G8; the UN Secretary General's *Every Woman, Every Child* Campaign; *A Promise Renewed*; Universal Health Coverage; the Convention on the Rights of the Child; and the upcoming Global Newborn Action Plan.

## The Private Sector:

- The private sector should use its expertise and resources to innovate and test solutions to advance newborn, maternal and child survival and invest in what works. This includes committing resources to SUN national plans through financial and technical support as well as capacity-building.
- The private sector plays a critical role in training and supplying health workers and delivering services. Government departments and private sector enterprises should seek ways to align and coordinate their efforts in support of national health priorities and plans, and pursue bringing those resources to bear to address critical gaps in the delivery of health services.



El Salvador



- In most countries, the private sector has a powerful voice which can have a huge impact in a number of ways, from advocating to governments and mobilizing the public to educating people about healthy behaviors that can save newborn lives.

## **NGOs:**

- Nongovernmental organizations are a source of innovation and expertise. NGOs can help answer critical questions affecting access and use of services and practices, and help fill gaps in technical expertise.
- NGOs also play an important role – in some countries a very large one – in training health workers and delivering services, especially to hard-to-reach populations. These efforts should align with and support national health priorities and plans, and seek to employ approaches that are sustainable in low-resource settings.
- Finally, NGOs must play a critical role in mobilizing political and public support and holding governments and others accountable for newborn and child survival.

## **What YOU Can Do:**

- Citizens everywhere should urge their governments – both recipient and donor governments – to invest in newborns and live up to the commitments made to achieve Millennium Development Goals 4 and 5. Mobilizing around the Global Newborn Action Plan is a practical way to do this.
- Join Save the Children’s global newborn and child survival campaign. Visit [everyone.savethechildren.net](http://everyone.savethechildren.net) to find the campaign in your country, make your voice heard, and join our movement.

# **U.S. Leadership on Saving Newborn Lives at Home and Around the World**

## **Babies in the United States**

Congress should create a National Commission on Children to address the needs of the 16 million children in the U.S. now living in extreme poverty. Modeled after one created by Congress and President Ronald Reagan in 1987, it would tackle critical issues such as the nation’s high first-day mortality rate (*see page 55*) and incidents of deadly violence in our schools. Twenty-five years ago, the first Commission provided support for the creation of the Child Tax Credit and the Children’s Health Insurance Program. It’s time for a new commission to develop bold and new ideas to tackle today’s challenges – including the survival of our newborns.

## **The World’s Babies**

Congress should protect U.S. Global Health funding that saves lives every day around the world and increase support for Maternal and Child Health and Nutrition. Support for programs that provide health, education and opportunity for people living in poverty around the world make up less than 1 percent of the U.S. budget. We need to protect these programs that save lives and give kids everywhere a chance.

**To learn more, go to [www.savethechildren.org/newborn-action](http://www.savethechildren.org/newborn-action)**



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# Appendix:

## The 2013 Mothers' Index and Country Rankings

Save the Children's 14th annual *Mothers' Index* helps document conditions for mothers around the world – in 46 developed nations and 130 in the developing world<sup>198</sup> – and shows where mothers fare best and where they face the greatest hardships. All countries with populations over 100,000 and sufficient data are included in the *Index*.

Why should Save the Children be so concerned with mothers? Because more than 90 years of experience have taught us that the quality of children's lives depends on the health, security and well-being of their mothers. In short, providing mothers with access to education, economic and political opportunities and maternal and child health care gives mothers and their children the best chance to survive and thrive.

Important changes have been introduced to the *Mothers' Index* this year. As a result, the *Index* has become simpler and even more powerful.

The revised *Index* looks at patterns of cause and effect differently. It now focuses primarily on a small set of important outcomes rather than a larger mix of outcomes along with services that cause those outcomes. As a result, the *Index* shines a spotlight more brightly on what matters most to mothers.

All countries – rich and poor alike – are now evaluated against the same five indicators. There is one indicator for each dimension of maternal well-being: maternal health, children's well-being, educational status, economic status and political status.

The hope is that *Index* users will recognize country achievements and unmet challenges. Armed with on-the-ground knowledge of the unique circumstances mothers face, users of the *Index* can urge policymakers to implement strategies to improve health outcomes for mothers and their children.

The *Index* relies exclusively on information published by authoritative international data agencies. The *Complete Mothers' Index*, based on a composite score of five indicators related to maternal well-being, begins on page 69 in this appendix.

For a closer look at what's changed, why and a detailed methodology of the new approach, see *Methodology and Research Notes*.

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### THE 5 INDICATORS OF THE 2013 MOTHERS' INDEX

**Maternal health – Lifetime risk of maternal death:** No mother should die giving life. A woman's risk of maternal death is a function of the number of pregnancies/births she has, the spacing of births, the conditions under which she gives birth as well as her own health and nutritional status. Maternal mortality is also a sensitive measure of health system strength, access to quality care and coverage of effective interventions to prevent maternal deaths.

**Children's well-being – Under-5 mortality rate:** A mother's well-being is intimately connected to the health and well-being of her children. U5MR is a leading indicator of child well-being, reflecting children's health and nutritional status. It is also a key indicator of coverage of child survival interventions as well as the quality of care mothers receive before, during and after pregnancy.

**Educational status – Expected years of formal schooling:** Education is a basic human right and a powerful determinant of life quality. Numerous studies show a robust relationship between years of schooling and a number of important life outcomes, including income, health and civic participation. And when a girl is educated, her children are more likely to be healthy and well schooled.

**Economic status – Gross national income per capita:** Mothers are likely to use the resources they control to promote the needs of their children. GNI per capita is the best measure available to gauge a mother's access to economic resources and, therefore, her ability to provide for her children.

**Political status – Participation of women in national government:** When women have a voice in politics, issues that are important to mothers and their children are more likely to surface on the national agenda and emerge as national priorities.

*Note: For indicator definitions and data sources, see Methodology and Research Notes.*

## Mothers' Index Rankings

### WHAT THE NUMBERS DON'T TELL YOU

The national-level data presented in the *Mothers' Index* provide an overview of many countries. However, it is important to remember that the condition of geographic or ethnic sub-groups and the poorest families in a country may vary greatly from the national average. Remote rural areas and urban slums often have fewer services and more dire statistics. War, violence, corruption and lawlessness also do great harm to the well-being of mothers and children, and often affect certain segments of the population disproportionately. These details are hidden when only broad national-level data are available.

European countries – along with Australia – dominate the top positions on the *Mothers' Index* while countries in sub-Saharan Africa fill the lowest ranks. The United States places 30th this year.

The 10 top-ranked countries, in general, are among the best countries in the world for mothers' and children's health, educational, economic and political status.

The 10 bottom-ranked countries – all from sub-Saharan Africa – are a reverse image of the top 10, performing poorly on all indicators. Conditions for mothers and their children in these countries are devastating:

- On average, 1 woman in 30 is likely to die from a pregnancy-related cause.
- 1 child in 7 dies before his or her fifth birthday.
- Children can expect to receive as little as 2 years but at most only 9 years of formal education.
- GNI per capita, a measure of a country's economic welfare and a mother's access to resources, is less than \$600 on average.
- Women hold only 11 percent of parliamentary seats on average.
- Eight out of 10 women are likely to suffer the loss of a child in their lifetime.<sup>199</sup>

The contrast between the top-ranked country, Finland, and the lowest-ranked country, Democratic Republic of the Congo, is striking. In Finland, nearly 43 percent of parliamentary seats are held by women; in DR Congo only 8 percent are. A Finnish child can expect to receive almost 17 years of formal education, while the typical child in DR Congo receives 8.5 years. Maternal death is a rare event in Finland (a woman has less than a 1 in 12,000 chance of dying in pregnancy or childbirth). But in DR Congo, 1 woman in 30 is likely to die of a maternal cause. Children in DR Congo face similarly poor odds: 1 in 6 Congolese children don't live to see their fifth birthday. In Finland, only 1 child in 345 doesn't survive his or her first five years. At these rates, 9 out of 10 women in DR Congo are likely to lose a child under age 5, whereas only 1 in 181 Finnish women is likely to suffer the loss of a child in her lifetime.

The data collected for the *Mothers' Index* document the tremendous gaps between rich and poor countries and the urgent need to accelerate progress in the health and well-being of mothers and their children. The data also highlight the regional dimension of this tragedy. The bottom 12 countries are all in sub-Saharan Africa. Sub-Saharan Africa also accounts for 26 of the 30 lowest-ranking countries.

On a regional level, sub-Saharan Africa performs the worst on every indicator but one (political status). The greatest disparity across regions is found in the lifetime risk of maternal death. In sub-Saharan Africa, 1 woman in 39 is likely to die in pregnancy or childbirth. This is nearly 4 times the risk women in South Asia face (1 in 150) and 120 times the risk women in industrialized countries face (1 in 4,700).<sup>200</sup>

African children are similarly disadvantaged compared to children in other regions. Across the region as a whole, nearly 1 child in 9 does not live to see his or her 5th birthday.<sup>201</sup> This is nearly twice the risk of death a child in South Asia faces and 18 times the risk in the industrialized world.<sup>202</sup> In 2011, an estimated 3.4 million children in sub-Saharan Africa died before reaching age 5. This is nearly half the world total.<sup>203</sup>

The capacity of countries to address these issues is often constrained by financial resources. DR Congo and Somalia are the two poorest countries in the world, with an estimated GNI per capita of only \$190 and \$110, respectively. Burundi does little better, at \$250 per capita. Compare this to the national wealth of Norway – \$88,890 per capita.

Individual country comparisons are especially startling when one considers the human suffering behind the statistics:

- According to the most recent estimates, 1 woman in 15 in dies in pregnancy or childbirth in Chad. The risk is 1 in 16 in Somalia and 1 in 23 in Niger and Sierra Leone. In Estonia, Greece and Singapore, by contrast, the risk of maternal death is less than 1 in 25,000.
- 1 child in 6 does not reach his or her fifth birthday in Chad, DR Congo, Mali and Somalia. In Sierra Leone it's 1 in 5. Compare this to Iceland, where only 1 child in 400 dies before age 5.
- A typical child in Niger and Eritrea can expect to receive only about 5 years of formal education. Somali children receive only about 2 years of schooling. In Australia and New Zealand, however, the average child stays in school for nearly 20 years.
- In Micronesia, Qatar and Vanuatu, not one parliamentary seat is occupied by a woman. In Comoros, Solomon Islands and Tonga, women have only 1 seat. Compare this to Cuba, Rwanda and Sweden, where women hold 45 percent or more of all seats in parliament.

Statistics are far more than numbers. It is the human despair and lost opportunities behind these numbers that call for changes to ensure that mothers everywhere have the basic tools they need to break the cycle of poverty and improve the quality of life for themselves, their children, and for generations to come.

## A NOTE ON INTERPRETING INDEX RANKINGS

Rankings reflect a composite score derived from five different indicators related to maternal well-being (i.e. maternal health, children's well-being, educational status, economic status and political status). Consistently strong performance across the five indicators yields a higher ranking than exceptional performance on a few and somewhat lower performance on the others. In other words, all-around excellence is rewarded with higher rankings than super performance on some, but not all, indicators. Similarly, consistently poor performance across the five indicators yields a lower ranking than the worst performance on some indicators and somewhat better performance on others. This is the nature of composite scores.

It is also important to note that countries in the top and bottom 10 – particularly the top and bottom three – cluster very tightly. Consequently, while a ranking necessitates that some country will be first and another last, the differences across top and bottom performers can be very modest. This also means that the smallest change could shuffle ranks.



Democratic Republic of the Congo

## Frequently Asked Questions about the *Mothers' Index*

### Why doesn't the United States do better in the rankings?

The United States ranks 30th on this year's *Index*. Although the U.S. performs quite well on educational and economic status (both 10th best in the world) it lags behind all other top-ranked countries on maternal health (46th in the world) and children's well-being (41st in the world) and performs quite poorly on political status (89th in the world). To elaborate:

- In the United States, women face a 1 in 2,400 risk of maternal death. Only five developed countries in the world – Albania, Latvia, Moldova, the Russian Federation and Ukraine – perform worse than the United States on this indicator. A woman in the U.S. is more than 10 times as likely as a woman in Estonia, Greece or Singapore to eventually die from a pregnancy-related cause.
- In the United States, the under-5 mortality rate is 7.5 per 1,000 live births. This is roughly on par with rates in Bosnia and Herzegovina, Qatar and Slovakia. At this rate, children in the U.S. are three times as likely as children in Iceland to die before their 5th birthday.
- Women hold only 18 percent of seats in the United States Congress. Half of all countries in the world perform better on this indicator than the U.S. Sixteen countries have more than double this percentage of seats occupied by women. In Finland and Sweden, for example, women hold 43 and 45 percent of parliamentary seats, respectively.

### Why is Finland first?

Finland has strong performance across all five dimensions of maternal and child health and well-being. Although Finland does not perform the absolute “best” overall on any one indicator, it is the only country to place in the top 12 on all five indicators. In fact, all other top 10 countries (apart from the Netherlands) perform significantly lower (i.e. they rank in the 20s or worse) on at least one indicator. Thus, it is consistently high performance that puts Finland on top.

### Why is Democratic Republic of the Congo last?

In DR Congo, levels of maternal mortality, child mortality, educational status, poverty and women's participation in parliament are among the very worst in the world. Unlike most other countries in the bottom 10 which perform substantially “better” on at least one indicator, the DR Congo performs poorly (i.e. in the bottom 12 percent of countries) across all indicators. This consistently poor performance on all five indicators causes DRC to rank last.

### Why are some countries not included in the *Mothers' Index*?

The only basis for excluding a country was insufficient data or a national population below 100,000.



Finland

COUNTRY	RANK	COUNTRY	RANK	COUNTRY	RANK
Finland	1	Turkey	60	Swaziland	119
Sweden	2	Romania	61	Bhutan	120
Norway	3	Mauritius	62	Lao People's Democratic Republic	121
Iceland	4	Oman	63	Nepal	121
Netherlands	5	Trinidad and Tobago	64	Angola	123
Denmark	6	Kazakhstan	65	Morocco	124
Spain	7	Venezuela (Bolivarian Republic of)	65	Tajikistan	124
Belgium	8	Bahamas	67	Senegal	126
Germany	9	China	68	Vanuatu	127
Australia	10	Lebanon	68	Guatemala	128
Austria	11	Malaysia	70	Sao Tome and Principe	129
Switzerland	12	Ecuador	71	Cambodia	130
Portugal	13	Saint Lucia	72	Lesotho	131
Slovenia	14	Peru	73	Uganda	132
Singapore	15	Algeria	74	Micronesia (Federated States of)	133
France	16	El Salvador	74	Solomon Islands	133
Italy	17	Ukraine	74	United Republic of Tanzania	135
New Zealand	17	South Africa	77	Bangladesh	136
Greece	19	Brazil	78	Burundi	137
Ireland	20	Saint Vincent and the Grenadines	79	Mozambique	138
Estonia	21	Thailand	80	Pakistan	139
Canada	22	Albania	81	Equatorial Guinea	140
United Kingdom	23	Cape Verde	81	Ethiopia	141
Czech Republic	24	Colombia	83	India	142
Israel	25	Republic of Moldova	84	Sudan	143
Belarus	26	Iran (Islamic Republic of)	85	Malawi	144
Lithuania	26	Maldives	86	Afghanistan	145
Poland	28	Vietnam	86	Ghana	146
Luxembourg	29	Belize	88	Eritrea	147
United States	30	Nicaragua	89	South Sudan	147
Japan	31	Sri Lanka	89	Zimbabwe	147
Republic of Korea	31	Mongolia	91	Togo	150
Cuba	33	Dominican Republic	92	Madagascar	151
Croatia	34	Bolivia (Plurinational State of)	93	Myanmar	152
Slovakia	35	Georgia	94	Cameroon	153
Argentina	36	Armenia	95	Mauritania	154
Serbia	36	Jamaica	96	Djibouti	155
Latvia	38	Panama	96	Kenya	156
Cyprus	39	Azerbaijan	98	Congo	157
TfYR Macedonia	40	Turkmenistan	99	Papua New Guinea	158
Costa Rica	41	Suriname	100	Zambia	159
Montenegro	42	Namibia	101	Benin	160
Bulgaria	43	Tonga	102	Burkina Faso	161
Bahrain	44	Jordan	103	Yemen	162
Malta	45	Kyrgyzstan	104	Comoros	163
Saudi Arabia	46	Uzbekistan	105	Haiti	164
Bosnia and Herzegovina	47	Indonesia	106	Guinea-Bissau	165
Barbados	48	Philippines	106	Liberia	166
Mexico	49	Gabon	108	Côte d'Ivoire	167
United Arab Emirates	50	Guyana	109	Chad	168
Chile	51	Timor-Leste	110	Nigeria	169
Grenada	52	Honduras	111	Gambia	170
Hungary	52	Syrian Arab Republic	112	Central African Republic	171
Uruguay	54	Iraq	113	Niger	172
Kuwait	55	Paraguay	114	Mali	173
Tunisia	56	Samoa	115	Sierra Leone	174
Libya	57	Botswana	116	Somalia	175
Qatar	58	Rwanda	117	Democratic Republic of the Congo	176
Russian Federation	59	Egypt	118		

Country or Territory	MATERNAL HEALTH	CHILDREN'S WELL-BEING	EDUCATIONAL STATUS	ECONOMIC STATUS	POLITICAL STATUS	Mothers' Index Rank (out of 176 countries)
	Lifetime risk of maternal death (1 in number stated)	Under-5 mortality rate (per 1,000 live births)	Expected number of years of formal schooling	Gross national income per capita (current US\$)	Participation of women in national government (% seats held by women)*	
	2010	2011	2012	2011	2013	
Afghanistan	32	101.1	8.8 (b)	470	27.6	145
Albania	2,200	14.3	11.3	3,980	15.7	81
Algeria	430	29.8	13.6	4,470	25.8	74
Angola	39	157.6	10.2	3,830	34.1	123
Argentina	560	14.1	16.4	9,740	37.7	36
Armenia	1,700	17.5	12.0	3,360	10.7	95
Australia	8,100	4.5	19.6 (a)	49,130	29.2	10
Austria	18,200	4.2	15.6	48,190	28.7	11
Azerbaijan	1,000	44.7	11.8	5,290	16.0	98
Bahamas	1,100	16.2	12.6 (x)	21,970	16.7	67
Bahrain	1,800	10.0	14.4	15,920	18.8	44
Bangladesh	170	46.0	8.1 (x)	780	19.7	136
Barbados	1,300	19.7	16.6	12,660	19.6	48
Belarus	16,300	5.6	15.3	5,830	29.5	26
Belgium	7,500	4.3	16.5	45,990	38.9	8
Belize	610	16.9	13.1	3,710	13.3	88
Benin	53	106.0	11.3 (b)	780	8.4	160
Bhutan	210	53.7	12.4	2,130	13.9	120
Bolivia, Plurinational State of	140	50.6	13.5	2,020	30.1	93
Bosnia and Herzegovina	11,400	7.7	13.6	4,780	19.3	47
Botswana	220	25.9	11.8	7,470	7.9	116
Brazil	910	15.6	14.2	10,720	9.6	78
Brunei Darussalam	1,900	7.2	15.1	31,800	—	—
Bulgaria	5,900	12.1	14.0	6,530	22.9	43
Burkina Faso	55	146.4	6.9	570	15.7	161
Burundi	31	139.1	11.9 (b)	250	34.9	137
Cambodia	150	42.5	11.0	820	18.5	130
Cameroon	31	127.2	11.5	1,210	13.9	153
Canada	5,200	5.6	15.1	45,560	28.0	22
Cape Verde	480	21.3	13.0	3,540	20.8	81
Central African Republic	26	163.5	7.2	480	12.5	171
Chad	15	169.0	8.2	690	14.9	168
Chile	2,200	8.7	14.9	12,280	13.9	51
China	1,700	14.6	11.9	4,940	21.3	68
Colombia	430	17.7	13.6	6,070	13.6	83
Comoros	67	79.3	10.2	770	3.0	163
Congo, Democratic Republic of the	30	167.7	8.5	190	8.3	176
Congo	39	98.8	9.8 (b)	2,250	9.6	157
Costa Rica	1,300	10.1	13.5	7,640	38.6	41
Côte d'Ivoire	53	114.9	6.6 (b)	1,090	10.4	167
Croatia	4,100	5.1	14.1	13,530	23.8	34
Cuba	1,000	5.8	15.4	5,460	45.2	33
Cyprus	6,300	3.1	14.0	29,450	10.7	39
Czech Republic	12,100	3.9	15.8	18,620	20.6	24



Country or Territory	MATERNAL HEALTH	CHILDREN'S WELL-BEING	EDUCATIONAL STATUS	ECONOMIC STATUS	POLITICAL STATUS	Mothers' Index Rank (out of 176 countries)
	Lifetime risk of maternal death (1 in number stated)	Under-5 mortality rate (per 1,000 live births)	Expected number of years of formal schooling	Gross national income per capita (current US\$)	Participation of women in national government (% seats held by women)*	
	2010	2011	2012	2011	2013	
Denmark	4,500	3.7	16.8	60,120	39.1	6
Djibouti	140	89.5	5.8 (b)	1,270	13.8	155
Dominican Republic	240	24.7	12.3	5,240	19.1	92
Ecuador	350	22.8	13.7 (x)	4,200	32.3	71
Egypt	490	21.1	12.4	2,600	2.8	118
El Salvador	490	15.2	12.2	3,480	26.2	74
Equatorial Guinea	88	118.1	7.9	15,670	10.0	140
Eritrea	86	67.8	4.6	430	22.0	147
Estonia	25,100	3.7	16.0	15,260	20.8	21
Ethiopia	67	77.0	9.1	370	25.5	141
Fiji	1,400	16.4	15.7	3,720	—	—
Finland	12,200	2.9	16.9	47,770	42.5	1
France	6,200	4.1	16.3	42,420	25.1	16
Gabon	130	65.6	13.0 (x)	8,080	16.7	108
Gambia	56	100.6	8.6	500	7.5	170
Georgia	960	20.5	13.2	2,860	12.0	94
Germany	10,600	4.0	16.4 (x,d)	44,270	32.4	9
Ghana	68	77.6	11.3	1,410	10.3	146
Greece	25,500	4.4	16.3	24,480	21.0	19
Grenada	1,700	12.8	15.8	7,350	17.9	52
Guatemala	190	30.4	10.7	2,870	13.3	128
Guinea	30	125.8	9.5	430	— (f)	—
Guinea-Bissau	25	160.6	9.5	600	14.0	165
Guyana	150	35.9	10.6	2,900	31.3	109
Haiti	83	70.0	7.6 (x,d)	700	3.5	164
Honduras	270	21.4	11.7	1,980	19.5	111
Hungary	3,300	6.3	15.5	12,730	8.8	52
Iceland	8,900	2.5	18.5	34,820	39.7	4
India	170	61.3	10.7	1,410	10.9	142
Indonesia	210	31.8	12.9	2,940	18.6	106
Iran, Islamic Republic of	2,400	25.0	13.9	4,520	3.1	85
Iraq	310	37.9	10.0	2,640	25.2	113
Ireland	8,100	4.0	18.7 (a)	39,930	19.0	20
Israel	5,100	4.3	15.7	28,930	21.7	25
Italy	20,300	3.7	16.1	35,290	20.6	17
Jamaica	370	18.3	12.9	3,300	15.5	96
Japan	13,100	3.4	15.3	44,900	11.3	31
Jordan	470	20.7	12.7	4,380	11.9	103
Kazakhstan	770	28.3	15.4	8,260	18.2	65
Kenya	55	72.8	11.1	820	9.8	156
Kiribati	—	47.4	12.0	2,030	8.7	—
Korea, Democratic People's Republic of	670	33.2	—	510 (x)	15.6	—
Korea, Republic of	4,800	4.8	17.2	20,870	15.7	31
Kuwait	2,900	10.9	14.2	48,900	6.2	55

Country or Territory	MATERNAL HEALTH	CHILDREN'S WELL-BEING	EDUCATIONAL STATUS	ECONOMIC STATUS	POLITICAL STATUS	Mothers' Index Rank (out of 176 countries)
	Lifetime risk of maternal death (1 in number stated)	Under-5 mortality rate (per 1,000 live births)	Expected number of years of formal schooling	Gross national income per capita (current US\$)	Participation of women in national government (% seats held by women)*	
	2010	2011	2012	2011	2013	
Kyrgyzstan	480	30.6	12.5	880	23.3	104
Lao People's Democratic Republic	74	41.9	10.5	1,130	25.0	121
Latvia	2,000	8.3	14.5	12,350	23.0	38
Lebanon	2,100	9.3	14.4	9,140	3.1	68
Lesotho	53	86.0	10.0	1,220	26.8	131
Liberia	24	78.3	10.5	330	11.7	166
Libya	620	16.2	16.2	12,320	16.5	57
Lithuania	9,400	5.7	15.5	12,280	24.5	26
Luxembourg	3,200	3.2	13.5	77,580	21.7	29
Macedonia, The former Yugoslav Republic of	6,300	9.6	13.4	4,730	32.5	40
Madagascar	81	61.6	10.4	430	15.8	151
Malawi	36	82.6	10.8	360	22.3	144
Malaysia	1,300	6.5	12.6	8,770	13.2	70
Maldives	870	10.7	12.6	5,720	6.5	86
Mali	28	175.6	7.5	610	10.2	173
Malta	8,900	5.9	15.1	18,620	8.7	45
Mauritania	44	112.1	8.2	1,000	19.2	154
Mauritius	1,000	15.1	13.6 (x)	8,040	18.8	62
Mexico	790	15.7	13.7	9,420	36.0	49
Micronesia, Federated States of	290	41.5	11.7 (b)	2,860	0.0	133
Moldova, Republic of	1,500	16.0	11.9	1,980	19.8	84
Mongolia	600	30.7	14.5	2,310	14.9	91
Montenegro	7,400	7.2	15.0	7,140	17.3	42
Morocco	400	32.8	11.0 (b)	2,970	11.0	124
Mozambique	43	103.1	9.7	470	39.2	138
Myanmar	250	62.4	9.5 (b)	1,140 (x)	4.6	152
Namibia	160	41.5	11.3	4,700	25.0	101
Nepal	190	48.0	8.9	540	33.2	121
Netherlands	10,500	4.0	17.0	49,650	37.8	5
New Zealand	3,300	5.9	19.7 (a)	29,140	32.2	17
Nicaragua	350	25.6	10.8	1,510	40.2	89
Niger	23	124.5	5.3	360	13.3	172
Nigeria	29	124.1	9.0	1,280	6.6	169
Norway	7,900	3.1	17.5	88,890	39.6	3
Occupied Palestinian Territory	330	22.0	13.4	1,250	—	—
Oman	1,200	8.7	13.8	19,260	9.6	63
Pakistan	110	72.0	7.5	1,120	21.1	139
Panama	410	19.5	13.2	7,470	8.5	96
Papua New Guinea	110	57.8	5.8 (x,d)	1,480	2.7	158
Paraguay	310	22.4	11.9	3,020	13.6	114
Peru	570	18.1	13.2	5,150	21.5	73
Philippines	300	25.4	11.3	2,210	22.1	106
Poland	14,400	5.8	15.4	12,480	21.8	28
Portugal	9,200	3.4	16.2	21,210	28.7	13

Country or Territory	MATERNAL HEALTH	CHILDREN'S WELL-BEING	EDUCATIONAL STATUS	ECONOMIC STATUS	POLITICAL STATUS	Mothers' Index Rank (out of 176 countries)
	Lifetime risk of maternal death (1 in number stated)	Under-5 mortality rate (per 1,000 live births)	Expected number of years of formal schooling	Gross national income per capita (current US\$)	Participation of women in national government (% seats held by women)*	
	2010	2011	2012	2011	2013	
Qatar	5,400	7.7	12.9	80,440	0.0	58
Romania	2,600	12.5	14.5	7,910	11.6	61
Russian Federation	2,000	11.9	14.3	10,730	12.1	59
Rwanda	54	54.1	11.1	570	51.9	117
Saint Lucia	1,400	15.6	12.9	6,820	17.2	72
Saint Vincent and the Grenadines	940	20.9	13.3	6,070	17.4	79
Samoa	260	18.7	13.0	3,160	4.1	115
Sao Tome and Principe	330	88.8	11.2 (b)	1,350	18.2	129
Saudi Arabia	1,400	9.2	13.7	17,820	19.9	46
Senegal	54	64.8	8.2	1,070	42.7	126
Serbia	4,900	7.1	13.6	5,690	33.2	36
Sierra Leone	23	185.3	7.4	340	12.4	174
Singapore	25,300	2.6	14.4 (x,c)	42,930	24.2	15
Slovakia	12,200	7.7	14.7	16,070	18.7	35
Slovenia	5,900	2.8	17.0	23,610	24.6	14
Solomon Islands	240	21.6	12.3 (b)	1,110	2.0	133
Somalia	16	180.0	2.4 (b)	110 (x)	13.8	175
South Africa	140	46.7	13.1 (x,d)	6,960	41.1 (g)	77
South Sudan †	31	120.5	6.3 (b)	1,310	24.3	147
Spain	12,000	4.2	16.8	30,890	35.2	7
Sri Lanka	1,200	12.2	13.8	2,580	5.8	89
Sudan ‡	31	86.0	6.3 (b)	1,310	24.1	143
Suriname	320	29.5	13.0 (b)	7,640	11.8	100
Swaziland	95	103.6	11.3	3,300	21.9	119
Sweden	14,100	2.8	16.0	53,150	44.7	2
Switzerland	9,500	4.4	15.7	76,400	27.2	12
Syrian Arab Republic	460	15.3	11.7 (x,d)	2,750	12.0	112
Tajikistan	430	63.3	11.5	870	17.5	124
Tanzania, United Republic of	38	67.6	9.2	540	36.0	135
Thailand	1,400	12.3	12.3	4,440	15.7	80
Timor-Leste	55	54.1	11.7	2,730	38.5	110
Togo	80	110.1	12.9	570	11.1	150
Tonga	230	15.4	14.7	3,820	3.6	102
Trinidad and Tobago	1,300	27.7	11.8	15,840	26.0	64
Tunisia	860	16.2	14.9	4,070	26.7	56
Turkey	2,200	15.2	13.8	10,410	14.2	60
Turkmenistan	590	52.5	12.6 (x,d)	4,800	16.8	99
Uganda	49	89.9	11.1	510	35.0	132
Ukraine	2,200	10.1	14.8	3,130	9.4	74
United Arab Emirates	4,000	6.6	12.0 (x)	40,760	17.5	50
United Kingdom	4,600	5.1	16.7	37,840	22.6	23
United States	2,400	7.5	16.8	48,620	18.2	30
Uruguay	1,600	10.3	15.5	11,860	12.3	54
Uzbekistan	1,400	48.6	11.6	1,510	19.2	105

Country or Territory	MATERNAL HEALTH	CHILDREN'S WELL-BEING	EDUCATIONAL STATUS	ECONOMIC STATUS	POLITICAL STATUS	Mothers' Index Rank (out of 176 countries)
	Lifetime risk of maternal death (1 in number stated)	Under-5 mortality rate (per 1,000 live births)	Expected number of years of formal schooling	Gross national income per capita (current US\$)	Participation of women in national government (% seats held by women)*	
	2010	2011	2012	2011	2013	
Vanuatu	230	13.2	11.1 (b)	2,750	0.0	<b>127</b>
Venezuela, Bolivarian Republic of	410	15.0	14.3	11,820	17.0	<b>65</b>
Vietnam	870	21.7	11.9	1,270	24.4	<b>86</b>
Yemen	90	76.5	8.7	1,070	0.7	<b>162</b>
Zambia	37	82.9	9.3 (b,e)	1,160	11.5	<b>159</b>
Zimbabwe	52	67.1	10.1 (x)	660	17.9	<b>147</b>

REGIONAL MEDIANS§						
Sub-Saharan Africa	53	94	10	775	16	<b>147</b>
South Asia	180	51	10	1,265	17	<b>129</b>
East Asia and Pacific	295	22	12	2,750	16	<b>106</b>
Latin America and Caribbean	525	18	13	6,070	18	<b>76</b>
Middle East and North Africa	555	18	13	4,425	12	<b>74</b>
CEE/CIS	2,200	14	14	4,800	18	<b>65</b>
Industrialized countries	8,900	4	16	36,565	25	<b>18</b>
WORLD	180	51	11	9,511	20	

Note: Data refer to the year specified in the column heading or the most recent year available. For indicator definitions and data sources see Methodology and Research Notes.

— Data are not available.

\* Figures correspond to the number of seats currently filled in parliament.

‡ Data for maternal health, educational and economic status are pre-secession estimates.

§ UNICEF regions. For a complete list of countries and territories in these regions see: UNICEF. *The State of the World's Children 2012*. p.124. Medians are based only on the countries included in the *Index* table.

a Discounted to 18 years prior to calculating the *Index* rank.

b Refers to primary and secondary education only.

c Calculated by the Singapore Ministry of Education.

d Based on cross-country regression.

e Estimate excludes years spent repeating grades.

f Parliament was dissolved following the December 2008 coup.

g Figures are calculated on the basis of permanent seats only.

x Data are from a secondary source.

## The Complete Mothers' Index

In the first year of the *Mothers' Index* (2000), a review of literature and consultation with members of the Save the Children staff identified maternal health status, educational status, political status and children's well-being as key factors related to the well-being of mothers. In 2007, the *Mothers' Index* was revised to include indicators of economic status and countries were placed into one of three tiers – more, less and least developed countries – according to United Nations regional development groups, along with indicators specific to that group. This year, in keeping with best practice, another revision of the *Index* was conducted. As a result, many important changes were introduced. An overview of these changes is included in the box to the right.

All countries – rich and poor alike – are now evaluated against the same five indicators (outlined below), one for each of the five dimensions of maternal well-being. To better facilitate cross-country comparisons and improve reliability and validity, indicators were selected based on inclusivity (availability across countries) and variability (ability to differentiate between countries).

### *General note on the data*

Save the Children does not collect original data for the *Mothers' Index*. Instead, it uses data from international data agencies with the mandate, resources and expertise to collect, certify and publish national data on specific indicators. International agencies sometimes harmonize data to ensure comparability across countries, and adjust for under-reporting, which can lead to discrepancies between international and national estimates. The data included in the *Index* are those most recently published as of March 25, 2013. Full source details and indicator definitions are included below.

Because of the methodological changes introduced over the years, and the fact that international agencies continually improve their data sets, the data included in this report – especially the *Index* rankings – are not comparable to those published in earlier editions.

Unless otherwise noted, regional averages and medians are for countries and territories as classified by UNICEF (see *The State of the World's Children 2012*, p.124).

### *Indicators, definitions and data sources*

**Lifetime risk of maternal death:** The probability that a 15-year-old female will die eventually from a maternal cause. This indicator takes into account both the probability of becoming pregnant and the probability of dying as a result of that pregnancy, accumulated across a woman's reproductive years. Data are for 2010. *Source: United Nations Inter-agency Group (WHO, UNICEF, UNFPA and the World Bank). Trends in Maternal Mortality: 1990 to 2010. (WHO: Geneva: 2012)*

**Under-five mortality rate:** The probability of dying between birth and exactly five years of age, expressed per 1,000 live births. Data are for 2011. *Source: United Nations Inter-agency Group for Child Mortality Estimation (UNICEF, WHO, UN Population Division, and the World Bank) 2012. Retrieved from CME Info on March 25, 2013*

## THE 2013 MOTHERS' INDEX REVISION

### *Why change?*

In keeping with best practice, Save the Children re-thinks the *Index* every few years. This allows for a systematic review of indicators, sources and structure and the incorporation of latest research and newly available data. Revision helps keep the approach fresh and relevant. Moreover, the previous indicator for economic status – ratio of estimated female to male earned income – is no longer reported by the UNDP.

### *What has changed?*

- The indicator count has dropped from 10-12 down to five. Reducing the number of indicators shines a spotlight on what matters most in the lives of mothers and their children.
- Indicators now primarily capture important outcomes, not a mix of inputs (i.e. causes) and outcomes (i.e. effects). This focuses attention on problematic outcomes and allows users to consider a wider range of solution options.
- The *Index* no longer divides countries into three tiers (more, less and least developed countries), each with a different set of indicators. All countries are now assessed against the same five indicators. This allows for a straight 1 to 176 ranking.
- All dimensions of maternal well-being are weighted equally, which is consistent with a tierless system (i.e. doesn't advantage or disadvantage countries based on their level of development) and makes it easier for readers to understand the main messages of the *Index*.

**Expected number of years of formal schooling:** School life expectancy (SLE) is defined as the number of years a child of school entrance age can expect to spend in school and university (i.e. primary, secondary and tertiary education), including years spent on repetition, if prevailing patterns of age-specific enrollment rates persist throughout the child's life. Data are for 2012 or the most recent year available. *Sources: UNESCO Institute for Statistics (2013). Data Centre, supplemented with data from: UNDP. International Human Development Indicators (2013). Accessed March 25, 2013*

**Gross national income (GNI) per capita:** Aggregate income of an economy generated by its production and its ownership of factors of production, less the incomes paid for the use of factors of production owned by the rest of the world, converted to U.S. dollars using the World Bank Atlas method, divided by midyear population. Data are for 2011 or the most recent year available. *Sources: The World Bank (2012). DataBank, supplemented with data from: UN SNA Main Aggregates database (2012). Accessed March 25, 2013*

**Participation of women in national government:** The share of seats occupied by women in a single house or, in the case of countries with bicameral legislatures, upper and lower houses of national parliament. Data reflect the situation as of February 1, 2013. *Source: Inter-Parliamentary Union (2013). PARLINE database on women in parliament. Accessed March 25, 2013*

### Calculation methodology

1. All countries with a 2010 population > 100,000 and data available (2000 or later) for all five indicators were included in the *Mothers' Index*. Countries missing one data point were included in the *Index* table, but not in the rankings.

Notes on specific indicators:

- Where primary-to-secondary SLE estimates were higher than primary-to-tertiary, primary-to-secondary were used. Where primary-to-tertiary estimates were not available, primary-to-secondary (gross or net of repetition) or SLE estimates published by UNDP (the secondary source), whichever were highest, were used.
  - To avoid rewarding school systems where pupils do not start on time or fail to progress through the system at expected rates, countries with SLEs over 18 years and gross enrollment ratios (primary-to-tertiary) over 105 had their school life expectancy discounted to 18.0 years before calculating indicator ranks.
2. Where relevant, data points were rounded to the nearest tenth for analysis purposes.

3. Countries were arrayed and ranked from 1 to 176 (1 being the best and 176 the worst) for each of the five indicators of maternal well-being.
4. Composite scores were then calculated as the average of these five indicator ranks with each indicator given equal weighting.
5. Scores were sorted from low to high and ranked from 1 to 176 to give the overall *Mothers' Index* rank.

## Birth Day Risk Index

Although it is well known that babies are at most risk of dying around the time of birth, no systematic estimates had been done to quantify the risk of death on the day of birth for each country of the world. The aim of this work, then, was to estimate the risk and number of newborn deaths by country for the day of birth (i.e. "day 0"), as well as the first week of life (i.e. days 0-6), and the full neonatal period (i.e. days 0-27). These estimates were generated for 186 countries from a combination of high-quality vital registration (VR) data, and a model produced using neonatal survival curves from Demographic and Health Surveys (DHS).

### Methodology

Two datasets were analyzed: 1) vital registration (VR) (assessed for 109 countries; median year: 2010; source: World Health Organization and Statistics Canada); 2) Demographic and Health Surveys (DHS) (assessed for 79 countries; median year: 1999; source: MEASURE DHS).

For countries with fewer than 50 neonatal deaths in the most recent VR year, 2-5 years of VR data were combined to get to 50 neonatal deaths. DHS surveys with fewer than 50 neonatal deaths (15 countries) were dropped. VR data with implausible proportions of deaths on day 0 (i.e. < 20 percent of newborn deaths, reported by 13 countries) or days 1-6 (e.g. 1 country reported no deaths) were also excluded, as were countries with lower-quality VR data (25 had < 80 percent VR coverage). The final input dataset included data from 121 countries with a combined total of 288,952 newborn deaths.

DHS day-of-death data were analyzed to develop and fit a probability-based survival curve from birth over the first month which gave proportions of deaths by day. Remarkably, a very consistent pattern across both high- and low-income countries, all regions and the two different data sources (VR and DHS) emerged. The final model, when tested using goodness-of-fit statistics, was robust. This curve was used to estimate the proportion of newborn deaths occurring on day 0 and days 0-6 (35 and 74 percent, respectively) which were then used to generate

the number and rate of first-day and first-week deaths for countries without high-quality VR data (as discussed below). It should be noted that sometimes in household surveys, deaths on the first day are recorded as the calendar day, or before sunset of that day, so are not the proper first 24-hour period. To adjust for potential day 0 and day 1 misclassification, the two days were combined. Then, using the model, a “corrected” estimate for the proportion of deaths on day 0 was determined.

For the 56 countries with high-quality VR data, the proportion of neonatal deaths occurring on day 0 and days 0-6 was calculated directly from the VR data and then applied to the number of neonatal deaths and live births in 2011 as estimated by the United Nations to determine risk of death, absolute number of deaths and share of newborn and under-5 deaths that occur during these time periods. The share of under-5 deaths that are newborn deaths was also calculated for each country.

For the remaining 130 countries, the proportion of neonatal deaths occurring on day 0 and days 0-6 as determined by the survival curve developed from DHS input data was applied to United Nations’ 2011 neonatal death and live birth data for each country to generate country-specific estimates for risk and number of deaths and to ensure estimates were for a consistent year.

This work was undertaken by a team of experts at the London School of Hygiene and Tropical Medicine, funded by Save the Children. A more detailed explanation of these methods and results will be included in the forthcoming publication: Shefali Oza, Simon Cousens and Joy Lawn. *The Risk of Dying on the Day of Birth: Estimates for 186 Countries*. Submitted manuscript, 2013.

## Equity Gap Analysis

The primary goal of this analysis was to estimate the reduction in the neonatal mortality rate (NMR, i.e. the probability of dying during the first 28 completed days of life, expressed per 1,000 live births) and neonatal deaths (deaths during the first 28 days of life) that would occur if the NMR for families in the lower four wealth quintiles (i.e. the poorest 80 percent of families) was equal to the NMR of the richest 20 percent of families in the same country. In other words, this analysis estimates the lifesaving impact of closing the “equity gap.” This analysis was an update of, and used similar methods to, the neonatal mortality equity gap analysis originally published in the *Lancet Neonatal Survival Series* in 2005, which had been used earlier by Victoria et al. to determine the impact of closing the equity gap for under-5 mortality.

## Methodology

Estimates were generated for 50 countries using Demographic and Health Survey data obtained from MEASURE DHS (through their STATcompiler program). The most recent DHS survey for each country was used and only countries with a survey 2000 or later and with at least 50 neonatal deaths in the five years preceding the survey were included in this analysis.

The key variables of interest from DHS included:

- NMR by wealth index. NMRs are calculated for the 10-year period preceding the survey, which is standard practice for DHS wealth quintile analyses. The wealth index has five categories (i.e. quintiles or groups of 20%), ranging from lowest (i.e. poorest) to highest (i.e. richest). The index is calculated based on household assets.
- Average NMR. This is the overall NMR across the five wealth quintiles and is calculated for the 10-year period preceding the survey.
- Total number of neonatal deaths for the five years preceding the survey.
- Early neonatal deaths by wealth index. The total number of neonatal deaths in the first week of life by wealth quintile for the five years preceding the survey.

Data for quintiles that had fewer than five early neonatal deaths were dropped. This occurred in only two countries – Peru and Jordan – and only in their highest wealth quintile. For these two countries, NMRs for the second-highest wealth quintile (the 4<sup>th</sup> quintile) was used as the counterfactual NMR and NMRs over the remaining four quintiles were averaged to give the overall average NMR.

The percent reduction in NMR that would occur if the equity gap were closed in a country was calculated by subtracting the NMR of the highest quintile from the overall NMR for that country, and then dividing this difference by the overall NMR. This is given by the following equation:

$$\% \text{ NMR reduction} = \frac{(\text{NMR}_{\text{average}} - \text{NMR}_{\text{highest quintile}})}{\text{NMR}_{\text{average}}} * 100$$

These calculated NMR reductions were then applied to the national number of neonatal deaths in 2011 (as estimated by the United Nations) to give the estimated number of neonatal deaths that could be averted in country if the equity gap were closed.

Source: Shefali Oza and Joy Lawn. *How Many Lives Would Be Saved by Eliminating the Equity Gap for Newborn Survival in 50 Countries?* Unpublished analysis, 2013.

## Lives Saved Analysis for 4 Low-Cost Products

The intent of this analysis was to use LiST (Lives Saved Tool) to determine how many newborn lives could be saved in the 75 countries with the greatest burden of maternal, newborn and child deaths (see [www.countdown2015mnch.org](http://www.countdown2015mnch.org) for full list of countries) with universal coverage of the four lifesaving commodities identified by the UN Commission on Lifesaving Commodities for Maternal and Child Health: injectable antibiotics, antenatal corticosteroids (ACS), chlorhexidine and resuscitation equipment. However, as chlorhexidine had not yet been included in LiST at the time of this analysis, estimates could only be run for the other three commodities. The table below lists the three commodities, their usage, the label in LiST, the cause of death(s) each commodity addresses and the related effect size for reducing these deaths, as well as the assumption(s) for scale-up.

Coverage data for all interventions were taken from what was preloaded into the most up-to-date LiST projections for the 75 countries as provided by Johns Hopkins

as of January 2013. The baseline year for the analysis was 2011 (mortality data published in September 2012) with an endline target of 2015.

As outlined in the table, injectable antibiotics were increased to 99 percent of those who are not covered by full supportive care, whereas the two facility-based interventions (ACS, resuscitation) were increased to all births taking place in health facilities. These two analyses were done in LiST.

In addition to this LiST analysis, a secondary analysis was conducted in Excel to estimate the total number of lives that could be saved with universal coverage (99 percent) of ACS and neonatal resuscitation. It is these results, along with the estimated impact of 99 percent coverage of injectable antibiotics, which are presented in the LiST infographic and accompanying discussion on page 42.

Source: Mary Kinney and Joy Lawn. *Lives Saved Analysis for Newborn Care Commodities*. Unpublished analysis, 2013.

### COMMODITIES AND LINKED INTERVENTIONS IN LiST

COMMODITY	USAGE	COVERAGE INDICATOR IN LiST	CAUSE OF DEATH - EFFECTIVENESS OF INTERVENTION	ASSUMPTIONS FOR SCALE UP
Injectable antibiotics	Newborn Sepsis	Injectable antibiotics	Sepsis - 65% Pneumonia - 75%	99% increase for those uncovered
Antenatal Corticosteroid (ACS)	Respiratory Distress Syndrome for preterm babies	Antenatal corticosteroids for preterm labor	Prematurity - 53% for facility births (SBA), BEmOC and CEmOC	Level of facility births
Resuscitation equipment	Newborn Asphyxia	Neonatal resuscitation	Intrapartum-related – 20% for assisted delivery at home (SBA) and 30% for facility births (SBA), BEmOC and CEmOC  Prematurity - 5% for assisted delivery at home (SBA) and 10% for facility births (SBA), BEmOC and CEmOC	Level of facility births



# Endnotes

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- <sup>195</sup> Simon Lewin. et al. "Lay Health Workers in Primary and Community Health Care for Maternal and Child Health and the Management of Infectious Diseases." *Cochrane Database of Systematic Reviews*.
- <sup>196</sup> Ibid.
- <sup>197</sup> The Helping Babies Breathe (HBB) Development Alliance is a public-private partnership of the American Academy of Pediatrics (AAP), United States Agency for International Development (USAID), the National Institute of Child Health and Human Development (NICHD), Save the Children, Laerdal Global Health, Johnson & Johnson, Latter-day Saint Charities, Catholic Medical Missions, Earth Institute/ Columbia University, International Pediatric Association and USAID implementing partners.
- <sup>198</sup> The category "developed" nations includes all countries not classified by UNICEF, for statistical purposes only, as "developing," so countries in all regions of Europe, including Central and Eastern European countries as well as the Baltic States, plus Northern America, Australia, New Zealand and Japan. This country set is consistent with the "developed regions" MDG grouping. Source: UNICEF. *The State of the World's Children 2012*. p.124
- <sup>199</sup> Calculations are based on prevailing rates of fertility (UNFPA, *State of World Population 2012*) and under-5 mortality (IGME, 2012)
- <sup>200</sup> UNICEF Global Databases (Accessed April 6, 2013)
- <sup>201</sup> IGME. *Levels and Trends in Child Mortality: Report 2012*.
- <sup>202</sup> UNICEF. *The State of the World's Children 2012*.
- <sup>203</sup> IGME. *Levels and Trends in Child Mortality: Report 2012*.

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Back Cover – Colin Crowley Bangladesh. *6-day-old Popi and her mother Sheuli visit a clinic for their first post-natal check-up.*



Bangladesh

Every year, more than 1 million newborn babies die on their first day of life – making the day of birth the most dangerous day for babies nearly everywhere. The majority of these deaths occur in developing countries where mothers lack access to basic health services and also face great risk of death in pregnancy and childbirth.

*State of the World's Mothers 2013* presents a first-ever *Birth Day Risk Index* examining data from 186 countries to show where babies are at the greatest risk of death on the day they are born. The report also highlights four low-cost, underused solutions that have great potential to save lives if they are made available to every mother and baby who needs them.

*State of the World's Mothers 2013* also presents the annual *Mothers' Index*. Using the latest data on health, education, economic resources and political participation, the *Index* ranks 176 countries – both in the industrialized and developing world – to show where mothers fare best and where they face the greatest hardships.

*State of the World's Mothers 2013* concludes that every child deserves a healthy start in life. Investments in newborn survival are not only the right thing to do, they will also pay for themselves, by helping to lay the foundation for a healthier and more prosperous world.



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