



Opportunities for Africa's Newborns

**Practical data, policy and programmatic
support for newborn care in Africa**



THE PARTNERSHIP
For Maternal, Newborn & Child Health
IMPROVING HEALTH. SAVING LIVES.

Each year at least 1.16 million newborns die in Sub-Saharan Africa. The African region has the highest rates of neonatal mortality in the world, and has shown the slowest progress so far in reducing neonatal deaths. However there is hope. In the past year the rate of policy change in African countries far exceeded expectations, providing opportunities to accelerate progress for maternal, newborn and child health.

SECTION I

Africa's newborns – counting them and making them count

SECTION I: An overview of neonatal deaths, and lives that could be saved in Africa in order to guide policy and programme priority setting. Where, when and why do African newborns die and how many could be saved?

SECTION II

The continuum of care for maternal, newborn and child health

SECTION II: A summary of the continuum of care through pre-pregnancy, pregnancy, childbirth and the postnatal period, highlighting current gaps in coverage of care and opportunities to address these gaps at all levels – family and community care, outreach services, and primary and referral care facilities.

SECTION III

Opportunities to deliver newborn care in existing programmes

SECTION III: An overview of the current situation for 9 key programmes related to newborn health. These overviews examine the opportunities, challenges and case studies related to strengthening and integrating newborn health along the continuum of care.

SECTION IV

Reaching every mother and baby in Africa with essential care

SECTION IV: Policy frameworks are now in place, but the gap remains between policy and action, especially for the poorest. What can we learn from countries who are progressing? Practical steps are provided for strengthening and integrating service provision to provide newborn care.

SECTION V

Information for action

SECTION V: A summary of relevant data for decision making for 46 countries in sub-Saharan Africa regarding maternal, newborn and child health status and policy.

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Message

Africa's newborns are Africa's future – our best opportunity



Each year in Africa...

- ▶ 30 million women become pregnant
- ▶ around 250,000 women die of pregnancy-related causes
- ▶ approximately 1 million babies are stillborn
- ▶ at least 1 million babies die in their first month of life; and about half a million die on their first day
- ▶ another 3.3 million African children will die before their fifth birthday
- ▶ 4 million low birthweight babies and others with neonatal complications may live, but not reach their full potential

Every country in Africa adds to a catalogue of loss composed of too many maternal, newborn, and child deaths. Yet this loss does not have to be inevitable. At least two thirds of newborns and a similar proportion of mothers and children could be saved with cost-effective interventions that already exist in the policies of most countries, but do not reach the poor. Strengthening newborn health is a win-win-win for mothers, babies, and children. The price is affordable at an extra US\$1.39 per person. Imagine if all the funds used for destruction and conflict in Africa were redirected to the health and survival of newborns.

There are new opportunities for Africa. The Economic Commission for Africa report and the repercussions of Live 8 and the 2005 G8 Summit have brought unprecedented external attention to the hope for development and change. Within Africa, leaders in governments, the African Union, and regional health agencies are gearing up strategic plans to achieve the Millennium Development Goals. Development partners are being held to account for their support to African countries in a new way.

There are also new opportunities for newborns. For the first time ever, global policy is taking into account the four million newborn deaths a year – more than AIDS and malaria deaths combined. In the past, newborns died unseen and uncounted, but now donors are beginning to recognise newborn health as a priority. Governments, communities, and families should also prioritise newborns, our most vulnerable members of society.

This book brings together many of the technical experts and leaders in maternal, newborn, and child health in Africa who are part of this new hope. As they have worked together on this publication, teamwork to save Africa's newborns has advanced. Now, reaching every woman, baby, and child in Africa with essential, life-saving interventions will depend on us, the users of this publication. We all have a role to play – as government officials to lead, as policymakers to guarantee essential interventions and equity, as partners and donors to support programmes, as health workers to provide high quality care, and as humans to advocate for more action for Africa's newborns, mothers, and children.

A handwritten signature in black ink, appearing to read 'G. Mongella', with a horizontal line underneath.

Honorable Ambassador Dr Gertrude I. Mongella
President, Pan African Parliament, African Union
www.panafricanparliament.org

Foreword

Improving the health and survival of Africa's newborns will advance the integration of child and maternal health, but not without partnership



Opportunities for Africa's Newborns represents a major milestone in the effort to save four million babies who die from preventable and treatable causes every year worldwide, particularly the 1.16 million newborns dying in Africa. Published under the Partnership for Maternal, Newborn & Child Health (PMNCH) and developed by a team of 60 authors, many of whom are African or working in Africa, this publication helps build momentum towards the integration of global efforts to save 11 million maternal, newborn, and child lives each year, promoting the continuum of care to save these lives.

The health of newborn babies has fallen between the cracks. Governments, international agencies, programme implementers, and donors have been more likely to address women's health, children's health or infectious diseases through separate, often competitive, "vertical" programmes. This has not helped countries build strong, integrated health systems. One specific side effect has been the void of newborn care in many key programmes.

The newborn is a critical bridge between mother and child care and central to the paradigm of the continuum of care linking mother, child, and newborn care. Childbirth and the first week of a baby's life are the time of highest and greatest risk for mothers and children. However, in Africa, less than half of all women deliver with a skilled attendant, and still fewer benefit from effective postnatal care. Gains from higher coverage of the essential interventions outlined in this publication will benefit both mothers and newborns--and reach far beyond the neonatal period to benefit infants and older children.

Opportunities for Africa's Newborns will advance the integration and scale up of interventions to reduce newborn deaths in Africa, where the rate of newborn mortality is highest in world. An average of 41 of every 1,000 babies die in the first month of life. The messages of this publication must be translated into appropriate action to change the current situation of neglect. It is of paramount importance that national governments lead this effort and that the international community plays a complementary role by mobilising the necessary additional resources at the right time. The big question is how to work together in effective partnership to accelerate action, strengthen underlying health services, and reach high and equitable coverage of essential interventions. Much can be achieved by better integration of programmes and harmonisation of donor activities, but additional funding will be required, especially in the poorest countries.

The health of mothers, newborns, and children represents the well-being of society. We must now work together and seize this opportunity to support national governments in operationalising programmes and advancing newborn health in the context of strengthening health systems that work for mothers, newborns, and children.

Dr Francisco Songane
Director, Partnership for Maternal, Newborn & Child Health
Geneva, Switzerland
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Introduction

This publication helps to bridge the gap between policy and action for maternal, newborn, and child health. It is a key resource for those in Africa and beyond.



In recent years the policy focus has increased for maternal, newborn and child health (MNCH) in Africa. The African Union now has three regional strategies in various stages of development:

- Road Map for reduction of maternal and newborn mortality (2004)
- Child Survival Framework (2005)
- Maputo Sexual and Reproductive Health and Rights Plan of Action (2006)

Each of these policy frameworks allow for national government adaptation and implementation in country with support from partners under the principles of the Paris declaration on aid effectiveness – “*One plan, One coordinating mechanism, One monitoring and evaluation mechanism.*” Already 35 countries have started the process of a national Road Map which was initiated through the MNCH Task Force in 2004. These policy frameworks represent a great advance, but they are only the first step on the road to lives saved through increased coverage of essential interventions. The time is short – there are only nine years left before the 2015 target for the Millennium Development Goals (MDGs). Africa can and must accelerate progress.

Opportunities for Africa's Newborns helps to bridge the gap between policy and action for MNCH. The newborn is at the nexus of the continuum of care – systematic attention to strengthening and scaling up newborn care within national plans and programmes will pay off in improved MNCH services. The publication includes the following:

Section I *spotlights newborn deaths in Africa, complemented by the profiles in Section V* which provide a basic situation analysis of maternal, newborn, and child health for 46 countries in Africa, including progress towards MDG 4, coverage along the continuum of care, equity assessment and tracking of health financing, providing data for decision making for MNCH policy and programmes.

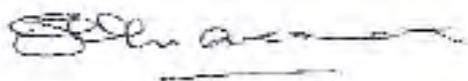
Section II outlines the continuum of care essential for crosslinking quality care of the individual girl, woman, baby, and child, and integrating MNCH programmes, providing the backbone of an effective health system. Many maternal and newborn deaths occur at home and are due to delays at home. Better linkages between families and facilities are also crucial.

Section III provides nine chapters detailing how key MNCH programmes along the continuum of care can be strengthened, highlighting immediate opportunities to link newborn health in these already existing programmes.

Section IV examines what we can learn from six countries that are making progress. Practical steps to accelerate action are outlined, linking to national planning. More investment is required, but also more effective use of existing opportunities and resources. Professional organisations have an important role to play since midwives, doctors, obstetricians, and paediatricians make up interface of skilled care. Delegating specific roles for community workers and mid-level cadres linked to teams has potential to accelerate progress. Improving supervision and tracking progress is crucial for quality of care; so is attention to reliable supply of commodities.

The **accompanying CD** provides the key programme planning and implementation guides as well additional materials and data.

This publication is a key resource for many in Africa and beyond, and should catalyse progress towards universal coverage, and with special focus on reaching the poor. We must move beyond business as usual to something more: more government leadership, more partnership, more harmonised planning, more investment, more staff, more training, more supervision, more commodities, and more accountability.



Professor E. Oluwole Akande
Chair, African Regional Maternal, Newborn and Child Health
(MNCH) Task Force

Opportunities for Africa's Newborns

Every year in sub-Saharan Africa 1.16 million babies die in the first month of life, and another million babies are stillborn. Recently, several large African countries have made progress in reducing *child* mortality, providing new hope for reaching Millennium Development Goal (MDG) 4 to reduce under-five mortality by two thirds between 1990 and 2015. So far there has been limited progress in reducing deaths in the first month and especially the first week of life in Africa. Up to half a million African babies die on the day they are born. Meeting MDG 4 for child survival in Africa depends on more attention and action to also reduce *newborn* mortality (read more in Section I).

According to a new analysis presented in this publication, two thirds of newborn deaths in Africa could be avoided – 800,000 lives saved each year – if essential interventions already in policy reached 90 percent of African mothers and newborns. Existing programmes present many opportunities to strengthen or integrate newborn care (read more in Section II).

Strengthening essential maternal, newborn and child health (MNCH) packages along the continuum of care as follows: (read more in Section III)

- Care for girls and women before pregnancy (chapter 1)
- Antenatal care (chapter 2)
- Childbirth care (chapter 3)
- Postnatal and newborn care (chapter 4)
- Integrated Management of Childhood Illness (IMCI) (chapter 5)
- Nutrition and breastfeeding promotion (chapter 6)

Integrating with other key programmes:

- Prevention of Mother to Child Transmission of HIV (PMTCT) programmes (chapter 7)
- Malaria control programmes (chapter 8)
- Immunisation programmes (chapter 9)

Improving linkages between households and health care:

- Empowering families and communities – increasing demand
- Ensuring quality of care in facilities – improving supply
- Encouraging innovative and effective strategies especially to reach the under served

Investment to save newborn lives also saves mothers and children (read more page 25). In the year 2004, sub Saharan African countries spent an estimated US\$0.58 cents per capita on the running costs of essential MNCH packages. In many African countries, especially in West Africa, the majority is taken from

the pockets of poor families. It would cost an additional US\$1.39 per capita per year to provide 90 percent of women and babies in sub-Saharan Africa with all the essential health packages. A total additional cost of approximately US\$1 billion per year would be required to scale up services across the continent. This estimate includes the cost of human resources, supplies and equipment, and facility maintenance but does not include major new building costs. Only 30 percent of this total price tag is for newborn-specific interventions, so the majority of the investment has direct benefits for mothers and older children.

Poor countries are making progress – good news from Africa!

Some countries have reduced newborn and under-five mortality. Six countries – Eritrea, Malawi, Burkina Faso, Madagascar, Tanzania, and Uganda have achieved neonatal mortality rates between 24 and 32 per 1,000 live births, despite a gross national income per capita under US\$400 per year. Several of these countries have also reduced maternal mortality. The experiences of these countries provide valuable examples of leadership, district-based management, focus on scaling up of essential interventions and approaches to protect poor families from escalating health care costs. Several African governments have recently abolished user fees for MNCH services or for life saving interventions such as emergency caesarean sections.



Key findings **The fate of African newborns, mothers and children is closely linked**

WHO?	WHEN?	WHY?
<p>Each year in Africa, 30 million women become pregnant, and 18 million give birth at home without skilled care.</p> <p>Each day in Africa:</p> <ul style="list-style-type: none"> • 700 women die of pregnancy-related causes. • 3,100 newborns die, and another 2,400 are stillborn. • 9,600 children die after their first month of life and before their fifth birthday. • 1 in every 4 child deaths (under five years) in Africa is a newborn baby. 	<p>Birth, the first day and the first week of life are critical: risk of death peaks and coverage of care drops – half of African women and their babies do not receive skilled care during childbirth and fewer receive effective postnatal care. This is also the crucial time for other interventions, especially prevention of mother-to-child transmission of HIV and initiation of breastfeeding.</p>	<p>The top three causes of newborn death are infections, prematurity, and asphyxia. Low birthweight underlies the majority of newborn deaths and links to maternal health, nutrition and infections such as malaria and HIV.</p>

A healthy newborn will change the future

Evidence based interventions to save newborn lives

Packages along the continuum of care	Care for girls and women before pregnancy	<ul style="list-style-type: none"> • Education with equal opportunities for girls • Nutrition promotion especially in girls and adolescents • Prevention of female genital mutilation • Prevention and management of HIV and sexually transmitted infections (STI) • Family planning
	Care during pregnancy	<ul style="list-style-type: none"> • Focused antenatal care (ANC) including <ul style="list-style-type: none"> – At least 2 doses of tetanus toxoid vaccination (TT2+) – Management of syphilis/STIs – Management of pre-eclampsia – Intermittent preventive treatment for malaria in pregnancy (IPTp) and insecticide treated bednets (ITN) – Prevention of mother-to-child transmission of HIV • Birth and emergency preparedness at home, demand for care
	Childbirth care	<ul style="list-style-type: none"> • Skilled attendance at birth • Emergency obstetric care • Improved linking of home and health facility • Companion of the woman's choice at birth • Where there is no skilled attendant, support for clean childbirth practices and essential newborn care (drying the baby, warmth, cleanliness and early exclusive breastfeeding) at home
	Postnatal care	<ul style="list-style-type: none"> • Routine postnatal care (PNC) for early identification and referral for illness as well as preventive care: <ul style="list-style-type: none"> – For the mother: Promotion of healthy behaviours, danger sign recognition and family planning – For the baby: Promotion of healthy behaviours – hygiene, warmth, breastfeeding, danger sign recognition and provision of eye prophylaxis and immunisations according to local policy • Extra care for small babies or babies with other problems (e.g. mothers with HIV/AIDS)
	Integrated management of childhood illness (IMCI)	<ul style="list-style-type: none"> • Management and care of low birthweight (LBW) babies including Kangaroo Mother Care (KMC) • Emergency newborn care for illness especially sepsis
Cross cutting programmes	Nutrition and breastfeeding promotion	<ul style="list-style-type: none"> • Nutrition promotion especially in girls and adolescents • Maternal nutrition during pregnancy • Early and exclusive breastfeeding for babies
	Prevention of mother-to-child transmission of HIV (PMTCT)	<ul style="list-style-type: none"> • Prevention of HIV and STIs and avoiding unintended pregnancy amongst women who are HIV infected • PMTCT through antiretroviral therapy and safer infant feeding practices
	Malaria control	<ul style="list-style-type: none"> • Intermittent preventive treatment for malaria in pregnancy (IPTp) and insecticide treated bednets (ITN) for malaria
	Immunisation	<ul style="list-style-type: none"> • Tetanus Toxoid vaccination (at least 2 doses) for pregnant women

Key findings **The fate of African newborns, mothers and children is closely linked**

ARE WE MOVING TOWARDS THE GOALS?	SOLUTIONS FOR NEWBORN DEATHS?	THE COST?
<p>The Millennium Development Goals (MDGs) have galvanized much attention but action is not happening fast enough in Africa. Addressing newborn health is a catalyst for improving maternal and child health and accelerating progress towards MDG 4 (child survival), MDG 5 (maternal health) and MDG 6 (HIV/AIDS, tuberculosis and malaria).</p>	<p>Two thirds of newborn deaths could be prevented with high coverage of essential maternal newborn and child health (MNCH) packages already in policy, as long as some specific newborn care aspects are strengthened. More than 2,000 newborn lives can be saved every day. A continuum of care linking maternal, newborn and child health interventions through the lifecycle and between health service delivery levels is the way forward.</p>	<p>The cost is affordable – an additional US\$1.39 per capita, and two thirds of this goes toward general MNCH care. Investing in newborn care also benefits mothers and older children.</p>

Key opportunities in policy and programmes to save newborn lives

- Promote delay of first pregnancy until after 18 years and spacing of each pregnancy until at least 24 months after the last birth
- Prevent and manage HIV and STIs especially among adolescent girls
- Increase the quality of ANC ensuring women receive four visits and all the evidence based interventions that are part of focused ANC
- Promote improved care for women in the home and look for opportunities to actively involve women and communities in analysing and meeting MNCH needs
- Increase availability of skilled care during childbirth and ensure skilled attendants are competent in essential newborn care and resuscitation
- Include emergency neonatal care when scaling up emergency obstetric care
- Promote better linkages between home and facility (e.g. emergency transportation schemes)
- Develop a global consensus regarding a PNC package
- Undertake operations research in Africa to test models of PNC, including care at the community level in order to accelerate scaling up
- Adapt IMCI case management algorithms to address newborn illness and implement this at scale
- Ensure hospitals can provide care of LBW babies including KMC and support for feeding
- Strengthen community practices for newborn health
- Address anaemia in pregnancy through iron and folate supplementation, hookworm treatment and malaria prevention
- Review and strengthen policy and programmes to support early and exclusive breastfeeding, adapting the *Global Strategy for Infant and Young Child Feeding*
- Increase coverage of PMTCT and improve integration of PMTCT, especially with ANC and PNC
- Use opportunities presented by expanding HIV programmes to strengthen MNCH services (e.g. tracking of women and babies especially in the postnatal period, better laboratory and supply management)
- Increase coverage of ITN and IPTp to address malaria during pregnancy
- Use the current momentum of malaria programmes to strengthen MNCH services (e.g. laboratory, supplies and social mobilisation)
- Accelerate the elimination of maternal and neonatal tetanus
- Use the solid management and wide reach of immunisation programmes to strengthen MNCH services (e.g. social mobilisation, linked interventions, and monitoring)



Actions

for POLICY makers in Africa

The opportunities and gaps for MNCH are different in every country, but the following themes are evident among the countries making MNCH gains:

Accountable leadership: Countries making an effort to reduce newborn mortality can credit accountable leadership and good stewardship as important factors in setting direction and in maintaining attention and action. Good leadership maximises teamwork and the use of resources within a country, state or organisation, and it also attracts investment from outside sources with more opportunities for harmonisation.

Bridging national policy and district action: Almost all of the countries that are making progress have poverty reduction strategy papers and health sector reform plans. Too often there is a gap between strategic planning at the national level and action in districts. Policy makers in Tanzania, for example, have recognised this challenge, and have delegated responsibility to district management teams which allocate the local budget according to the burden of disease, resulting in more effective spending on child survival and steady increases in coverage of essential interventions.

Community and family empowerment: Much of the care for mothers and their newborns and children occurs at home. Women and families are not merely bystanders. If empowered, they can be part of the solution to save lives and promote healthy behaviours, including seeking skilled care in childbirth and danger sign recognition and care seeking. Creative community solutions, such as emergency transport and pre-payment schemes can be effective.

Demonstrated commitment to:

- *Making policy* that supports increasing coverage of MNCH essential interventions and packages. The African Road Map for reducing maternal and newborn mortality and the WHO/UNICEF/World Bank regional child survival framework present opportunities to accelerate progress for MDGs 4 (child survival) and 5 (maternal health) in every country in Africa, and contribute to the attainment of MDG 6 on reduction of malaria and HIV/AIDS. However this requires consistent, high level focus in 5 and 10 year plans.
- *Mobilising resources* and increasing investment in health, as per the Abuja target for government health spending. In addition, specific attention is required to protect the poor, particularly from the potentially catastrophic costs of obstetric emergencies.
- *Maximising human resources* including the use of community workers where appropriate.
- *Measuring progress* and linking data to decision making. This involves considering equity in service delivery as well as accountability and public ownership.

Actions

for PROGRAMME managers and professionals in Africa

Successful plans that lead to action require both good policy and good politics. Effective planning involves two parallel and interdependent processes as follows:

A *participatory political process* identifies and engages key stakeholders, including representatives of women and community groups. This process promotes an enabling policy environment, with in ownership of a plan and increases the likelihood of raising the resources needed for implementation.

A *systematic management and prioritisation process* allows for effective allocation of scarce resources. This can be applied through the following four steps:

Step 1. Conduct a situation analysis for newborn health in the context of MNCH.

Step 2. Develop, adopt and finance a national plan embedded in existing national policy, which involves phased approaches to maximise lives saved now as well as overall health systems strengthening over time.

Step 3. Implement interventions and strengthen the health system, with particular attention to human resources. For example, Africa needs an additional 180,000 midwives in the next 10 years to scale up skilled care during childbirth. Comprehensive human resource plans need to focus not only on training but also on retaining and sustaining existing staff.

Step 4. Monitor process and evaluate outcomes, costs and financial inputs. If newborn deaths are significantly underestimated now, assessment of progress may be misleading. The quality of data, frequency of data collection and the use of data for decision making is crucial. In addition to counting deaths, tracking of the coverage of essential interventions and financial inputs are crucial.

Actions

for PARTNERS to help accelerate progress in Africa

Partnership is integral to effective action. Partners have an essential role to play in saving lives through the following principles:

Principle 1. Increase funding for essential MNCH interventions. These interventions, which save mothers, babies and children, are highly cost effective. Investment is the responsibility of rich and poor countries, international donors and leaders within countries. An increase in funding by the order of 3 to 5 fold is required.

Principle 2. Keep governments in the driving seat and support national priorities, along with the principles of the Paris Declaration: one plan, one coordinating mechanism, and one monitoring system to decrease the management and reporting load.

Principle 3. Improve partner harmonisation. Donor convergence allows for flexibility and better decision making at the country level. This is the founding principle of the Partnership for Maternal Newborn & Child Health (PMNCH).

Africa's newborns are Africa's future

Until recently, newborn deaths in Africa have gone uncounted. New attention to Africa's newborns – the most vulnerable members of society – provides opportunities to accelerate action to reduce newborn deaths but also to strengthen MNCH services and integrate more effectively with existing programmes.

Increasing the coverage of essential interventions to 90 percent could save the lives of up to 800,000 newborns in Africa every year. The cost is very affordable at an extra US\$1.39 per capita and this investment would also save the lives of many mothers and children.

Honourable Ambassador Dr. Mongella, the president of the Pan African Parliament has said: *“Now reaching every woman, baby and child in Africa with essential care will depend on us, the users of this publication. We all have a role to play as government officials to lead, as policy makers to guarantee essential interventions and equity, as partners and donors to support programmes, as health workers to provide high quality care, and as humans to advocate for more action for Africa's newborns, mothers and children.”*



Call for action to save Africa's newborns

Call for action at the national level

- ▶ By the end of 2007, produce and publish a plan of action to reach national neonatal survival targets, linked to the Road Map for the reduction of maternal and newborn mortality and other relevant strategies for reproductive health and child survival. This plan should be based on situation analyses, with a baseline and target neonatal mortality rate (NMR), with a foundation of evidence based interventions and specific strategies that reach the poorest families.
- ▶ Finance the implementation of the plan of action by identifying and mobilising internal resources, seeking external support where necessary, and ensuring the poor are not missed in scale up efforts.
- ▶ Implement the plan within maternal health and child health programmes, with defined targets and timelines, phasing progress towards universal coverage of essential interventions.
- ▶ Monitor progress and publish results regularly. Link to existing monitoring processes such as health sector reviews, with the involvement of civil society. Count every newborn and make every newborn count.

Call for action at the international level

- ▶ Include NMR as an indicator for MDG 4, with a target of 50 percent reduction between 2000 and 2015. Publish national NMR data in global reports on an annual basis.
- ▶ Leverage resources to meet the additional needs identified by countries in order to achieve high coverage of interventions.
- ▶ Advocate for partner and donor convergence at country level, as promoted by the Partnership for Maternal Newborn & Child Health (PMNCH), in order to increase efficiency and reduce the reporting load on national governments.
- ▶ Invest in health systems research to answer the “how” questions for saving newborn lives, with special focus on previously overlooked areas such as stillbirths, and non-fatal outcomes around the time of birth.

Acronyms

AIDS	Acquired immune deficiency syndrome	MDG	Millennium Development Goal
ANC	Antenatal care	MICS	Multiple Indicator Cluster Surveys
CHW	Community health worker	MMR	Maternal mortality ratio
DHS	Demographic and Health Survey	MNCH	Maternal, newborn and child health
EmOC	Emergency obstetric care	NMR	Neonatal mortality rate
FGM	Female genital mutilation	PMNCH	Partnership for Maternal, Newborn and Child Health
HIV	Human immunodeficiency virus	PMTCT	Prevention of mother-to-child transmission of HIV
IMCI	Integrated Management of Childhood Illness	PNC	Postnatal care
IMR	Infant mortality rate	U5MR	Under-five mortality rate
IPTp	Intermittent preventive treatment for malaria in pregnancy	UNFPA	United Nations Population Fund
ITN	Insecticide treated bednet	UNICEF	United Nations Children's Fund
KMC	Kangaroo Mother Care	USAID	United States Agency for International Development
LBW	Low birthweight	WHO	World Health Organization

Language for counting mothers, newborns and children

Mothers

Maternal mortality ratio is the number of maternal deaths from pregnancy-related causes per 100,000 live births.

Stillbirths

Stillbirth rate is the annual number of babies born dead after 28 weeks of gestation (late fetal deaths) per 1,000 total births.

Newborns

Neonatal mortality rate is the number of neonatal deaths (deaths in the first 28 days of life) per 1,000 live births.

Early neonatal deaths are those that occur in the first week of life.

Late neonatal deaths are deaths occurring between the second and fourth weeks, i.e. from days 7 to 28.

Newborn refers to the newborn baby and does not have a specific time period definition, but is often assumed to refer to the first month of life.

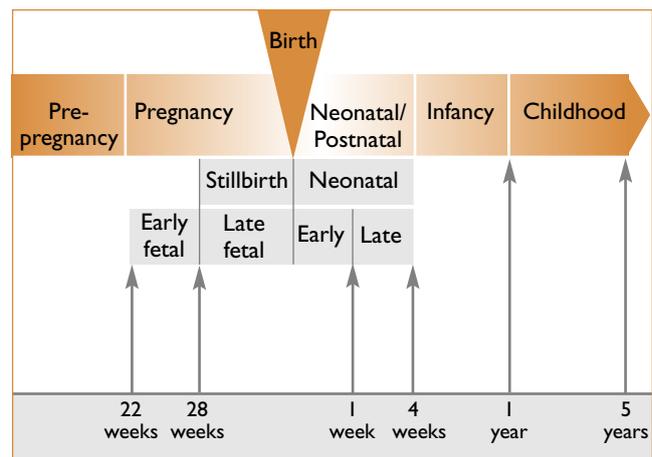
Small babies

Low birthweight refers to babies born with a birthweight of less than 2,500 grams. This can be due to:

- *Poor growth in utero* – babies who are born after the full number of weeks of gestation (37 to 42 weeks gestation, or term births) but are smaller than expected (small for gestational age). This may be due to a number of causes, including small maternal size, obstetric causes (such as twins or multiple pregnancy, hypertension in pregnancy), infections, poor maternal nutrition or overwork.
- *Preterm or born too early* – babies who are born before the normal 37 weeks of gestation. Preterm babies generally have a much higher risk of death than babies born at full term who are of normal size, and a risk that is 3 to 10 times higher than full term babies who were growth restricted.
- *Some babies are both preterm and have poor growth in utero* – this applies to many twins or other multiple births. Malaria in pregnancy can cause preterm birth or growth restriction in utero, or both.

Children

Under-five mortality rate is the annual number of children who die between birth and five years of age per 1,000 live births.



Time periods

The *postnatal* period is the time after birth and includes both mother and baby. The exact time period is not well defined but in this book we will assume that it is 6 weeks after birth. The *postpartum* period describes the same time, but refers specifically to the mother. The term *perinatal* can be confusing as it may refer to a variety of time periods depending on the definition used. *Perinatal* is also used to refer to some, but not all causes of neonatal deaths in the *International Classification of Diseases*; not including sepsis, pneumonias or congenital abnormalities. Hence this publication will avoid the use of the word *perinatal* and will refer to the actual time period, outcome (e.g., stillbirth or neonatal death), or specific cause of death.

Detailed definitions and notes on the definitions, data sources and limitations can be found in the data notes on page 226.

Africa's newborns— counting them and making them count

Joy Lawn, Pyande Mongi, Simon Cousens

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

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



Africa's uncounted newborn deaths

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

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

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

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

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

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

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

Progress towards MDG 4 in Africa – newborn survival is key

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

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

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

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

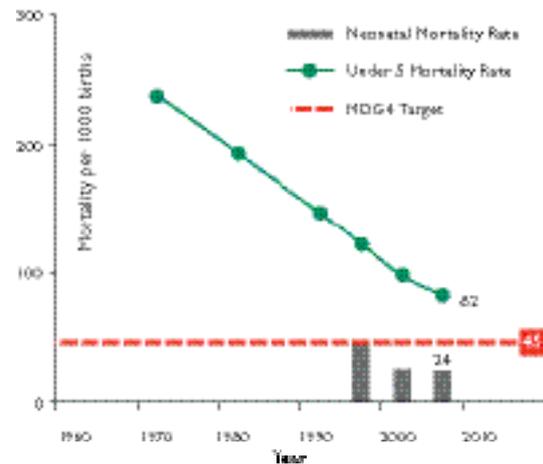
MDG 4 - new hope in Africa?

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

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

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

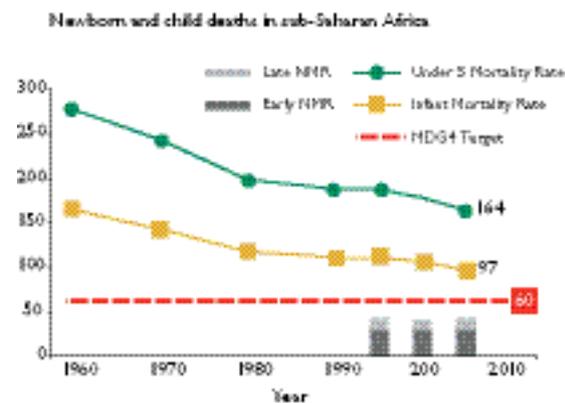
FIGURE I.2 Progress towards MDG 4 in Eritrea



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

See Eritrea country profile (page 189)

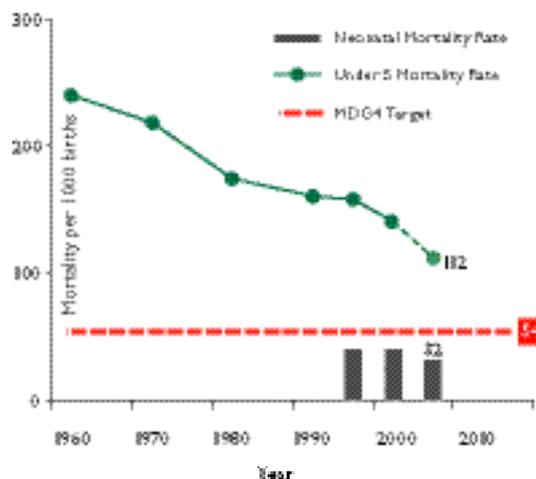
FIGURE I.1 Progress towards MDG 4 to save the lives of children in Africa – more attention is needed to reduce neonatal deaths



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

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

FIGURE I.3 Progress towards MDG 4 in Tanzania



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

See Tanzania country profile (page 216)

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

WHERE in Africa do newborns die?

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

The highest risk countries

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

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

The lowest risk countries

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

The countries with the most newborn deaths

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

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

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

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

Within countries, where do babies die?

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

Newborn deaths and poverty

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

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

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

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

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

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

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

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

* Also in the 10 African countries with the highest NMR

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

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

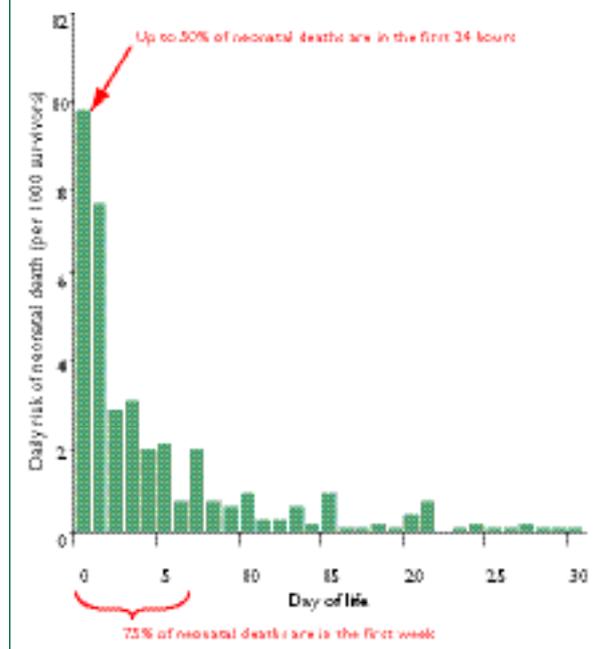
WHEN do African newborns die?

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

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

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

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



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

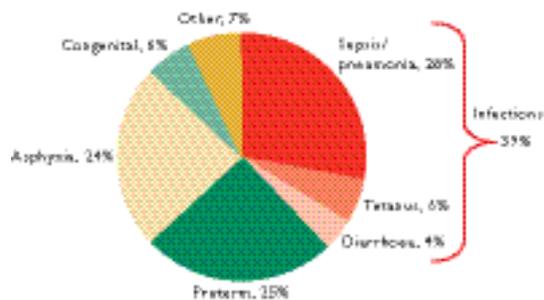
Yet birth and the first few days of life is the very point along the continuum of care when coverage of interventions is lowest. Section II in this publication examines the continuum of care and gives the regional average for coverage of packages along the continuum. The 46 country profiles demonstrate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

WHY do African newborns die?

Direct causes of newborn deaths

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

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



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

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

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

Small babies – big risk of death

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

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

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

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

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

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

Are baby girls or boys more likely to die?

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

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

Mothers and babies are especially vulnerable during childbirth

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

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

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

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

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

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

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

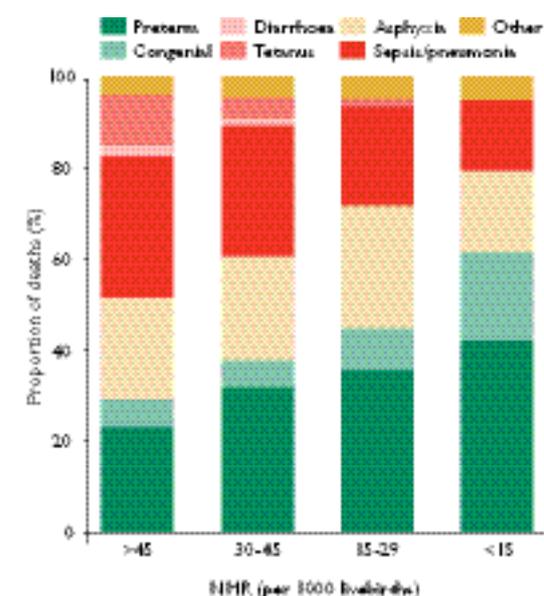
The three major causes of neonatal death are the same for all high mortality settings. However, the relative proportions of these three causes vary between and even within countries (Figure I.6). In settings with very high NMR (greater than 45 neonatal deaths per 1,000 live births), around half of the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

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

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

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

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



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

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

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

Preterm birth complications – 290,000 deaths a year in sub-Saharan Africa
At least half of newborn deaths in Africa are in preterm babies. The direct cause of death is only attributed as preterm, however, if the death is in a severely preterm baby or results from complications specific to preterm birth. For example, if a moderately preterm baby has an infection and dies, the death is most appropriately attributed to infection – thus, many babies recorded as dying from infection are also preterm. Although severely preterm babies require intensive care to survive, most preterm babies who die are moderately preterm, and the majority could be saved by providing extra attention to the same care that all babies need: warmth, feeding, hygiene, and early identification of illness (Table I.4). Kangaroo mother care (KMC), involves caring for small, particularly preterm babies by having them strapped skin-to-skin to the mother’s front. KMC is simple, effective, and empowers mothers and can be introduced in most facilities in Africa where care for small babies is provided. In addition, extra care of small babies at home care with skin-to-skin care and more support for breastfeeding has potential, though this has not yet been systematically studied in Africa. Preventing certain causes of preterm birth is also an effective strategy. This is feasible through control of malaria in pregnancy and identification and treatment of sexually transmitted infections (STIs), since HIV/AIDS and malaria in pregnancy interact and greatly increase the risk of preterm birth. (See Section III chapters 2,7,8)

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

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

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

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

TABLE I.4 Solutions and lives saved according to

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

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

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

Source: New analysis for 46 countries in Africa using input data for 2004 and applying published methods.^{24,26} See data notes for more details, page 226. Note that the total lives saved include all causes of death, so the total given is more than the sum of lives saved from the three main causes.

Beyond survival – delivering health for the next generation

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

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

the most common causes of newborn deaths

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

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

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

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

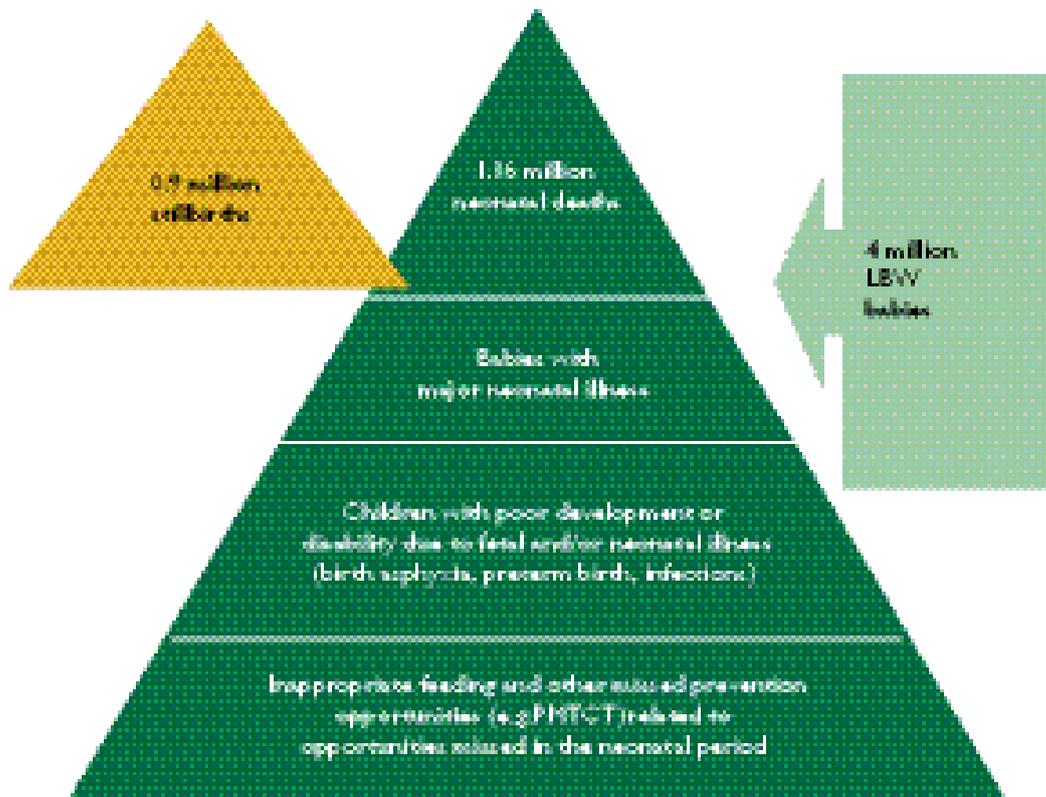
interventions during this important time period affect multiple outcomes for the mother and baby as well as having long term individual and societal potential.

Newborns are Africa's future

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

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

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



Make every newborn count – Information for action

Better use of existing information for action

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

Improve future information for action

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

Counting in policy and programmes

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

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

Accountability in society

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

Counting investment

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



More information

- *The Lancet* newborn survival series
- *The Lancet* child survival series
- *The Lancet* maternal survival series
- WHO. World Health Report 2005: make every mother and child count. Geneva, Switzerland: World Health Organization; 2005.
- UNICEF. State of the World's Children 2006. New York: United Nations Children's Fund; 2005.
- WHO. Neonatal and perinatal mortality: regional, country and global estimates. Geneva, Switzerland: World Health Organization; 2006.
- Save the Children. State of the World's Mothers 2006: Saving the lives of mothers and newborns. Washington, DC: Save the Children; 2006.
- Lawn JE, Zupan J, Begkoyian G, Knippenberg R. Newborn Survival. In: Jamison D, Measham A, editors. Disease Control Priorities. 2 ed. The World Bank and the National Institutes of Health; 2005.
- Guide for Situation analysis for newborn health in the context of MNCH. SNL and WHO for the Healthy Newborn Partnership. 2006 version [draft]





The maternal, newborn, and child health continuum of care

Joseph de Graft-Johnson, Kate Kerber, Anne Tinker, Susan Otchere, Indira Narayanan, Rumishael Shoo, Doyin Oluwole, Joy Lawn

Mothers, newborns, and children are inseparably linked in life and in health care needs. In the past, maternal and child health policy and programmes tended to address the mother and child separately, resulting in gaps in care which especially affect newborn babies. How can these gaps be addressed, especially during birth and the first days of life, when most mothers and newborns die, and at home, where most newborn deaths in Africa occur?

Policy and programme attention is shifting towards a maternal, newborn, and child health (MNCH) continuum of care. Instead of competing calls for mother or child, the focus is on universal coverage of effective interventions, integrating care throughout the lifecycle and building a comprehensive and responsive health system. The MNCH continuum of care can be achieved through a combination of well defined policies and strategies to improve home care practices and health care services throughout the lifecycle, building on existing programmes and packages. What is the current coverage of MNCH essential packages along the continuum of care, and how can these be strengthened to increase coverage, equity, and quality of care? Which interventions within the continuum of care would save newborn lives? Are there specific opportunities that could be seized?



The continuum of care – reaching mothers and babies at the crucial time and place

In Africa, most maternal and newborn deaths occur during childbirth and in the first few days of life, and many of these deaths happen at home, particularly for the 1.16 million African newborns dying each year.¹ This Section introduces the continuum of care, which has been identified as a core principle and framework to underpin strategies to save the lives of mothers and babies and promote overall health.² The continuum of care has two dimensions: firstly the *time* of care giving, and secondly the *place* and approach of care giving.

The gap in care around the time of birth, when the risks are highest for mother and baby. During birth and the first few days of life, over half of all maternal³ and newborn¹ deaths occur in addition to intrapartum stillbirths. Although more mothers and newborns die during this time period than at any other time, coverage of care is at its lowest, and quality of care may also be low.

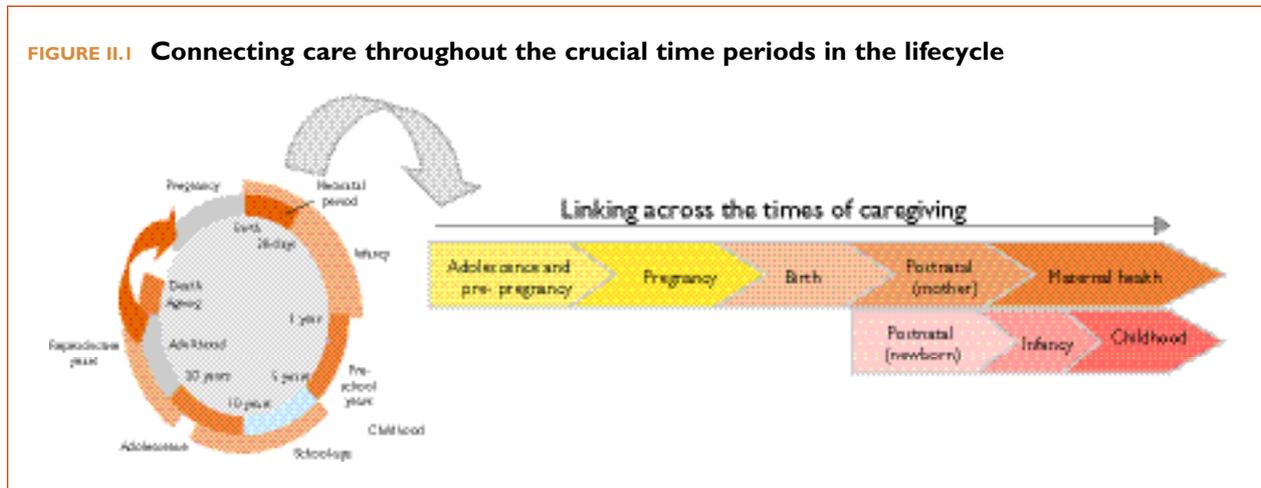
An effective continuum of care connects essential maternal, newborn, and child health (MNCH) packages, throughout adolescence, pregnancy, childbirth, postnatal and newborn periods and into childhood, building upon their natural interactions throughout the lifecycle (Figure II.1). For example, better conditions for adolescent girls, including access to family planning services, can contribute to a wanted pregnancy at the right time; good care during pregnancy increases the chances of a safe birth; and skilled care at and immediately after birth reduces the risk of death or disability for both the mother and the baby. The effect in each time period depends on the foundation set in the preceding time period, ensuring a more comprehensive health care experience for each woman and child.² At the public health level, linking these packages and integrating service delivery results in more lives saved at less cost – a more integrated and efficient health system.⁴ Integration along the continuum also

promotes opportunities to link with other important programmes along the continuum of care, such as nutrition promotion, in addition to more “vertical” programmes, such as prevention of mother-to-child transmission (PMTCT) of HIV, malaria control, and immunisation programmes.

The gap in care at the place where it is most needed.

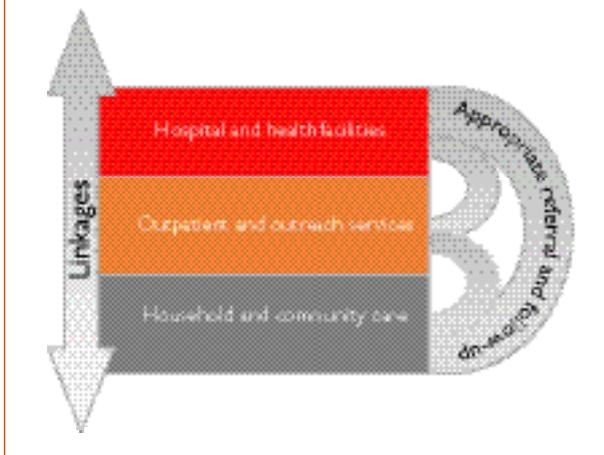
In most African countries, maternal, newborn, and child deaths occur at home, often because they are affected by delays in reaching the care they need. Babies are especially vulnerable to these delays in receiving care – a baby with birth asphyxia, sepsis, or complications of preterm birth can die within hours or even minutes if appropriate care is not provided. Opportunities for strengthening care in the household may be missed because families are not informed or not empowered to act on healthy choices, or the socioeconomic conditions in which they live impede healthy choices. Long distances, delays in accessing care, financial considerations and, at times, poor quality care in the health facility all contribute to poor MNCH outcomes. Poor communication and weak referral links between community and facility can further limit the care provided to those who need it most.

An effective continuum of care strengthens the links between the home and the first level facility and the hospital, assuring the appropriate care is available in each place (Figure II.2). This is the second dimension of a continuum of care. Strategies involve improving the skills of health workers, strengthening health system supports, and improving household and community practices and community actions for health. This approach also brings care closer to the home through outreach services and promotes referral by strengthening access to and improving the quality of services at peripheral and district level facilities.⁷ Combining effective care in health facilities, healthy behaviours at home and early care seeking for illness will have the biggest impact on mother, newborn and child health.



Source: Adapted from references^{5,6}

FIGURE II.2 Connecting places and approaches of care giving



Source: Adapted from reference⁶

These two dimensions of the MNCH continuum of care are now guiding the design of effective programmes; firstly, by providing continuity of care throughout the lifecycle, from adolescence through pregnancy and childbirth and continuing on to postnatal care and into childhood. Secondly, by addressing care as a seamless continuum that spans the home, health centre and hospital.^{2,7,8} What may seem like a new concept is in fact the integration of many previous approaches including a revitalisation of the lifecycle approach promoted in the 1990s, and linking the primary health care concept of the 1970s, with the original vision for health system reform of the 1980s where the community was seen as a crucial part of a holistic health system. While the continuum of care is not a new concept, the approaches for how to operationalise it in programmes are evolving and will change as more experience is gained.

The rest of this section will examine the MNCH packages in the continuum of care, with an emphasis on essential interventions within these packages that can save newborn lives. In order to strengthen the continuum of care, a strategic approach is required to review the coverage and quality of care throughout the lifecycle and at each level of care, highlighting the need for effective linkages between communities and facilities. Can some interventions be delivered at different levels of care to reach more women, babies and children? High and equitable coverage of essential care will require a supportive policy environment in which measures are taken to improve access to care and financial protection, enforce legal and regulatory measures to protect the rights of women and children, and strengthen partnerships as well as expand and rehabilitate the workforce.⁹ Action steps to a strategy for strengthening the continuum of care and case studies of country experience with scaling up services will be detailed further in Section IV.

Saving newborn lives through a continuum of care

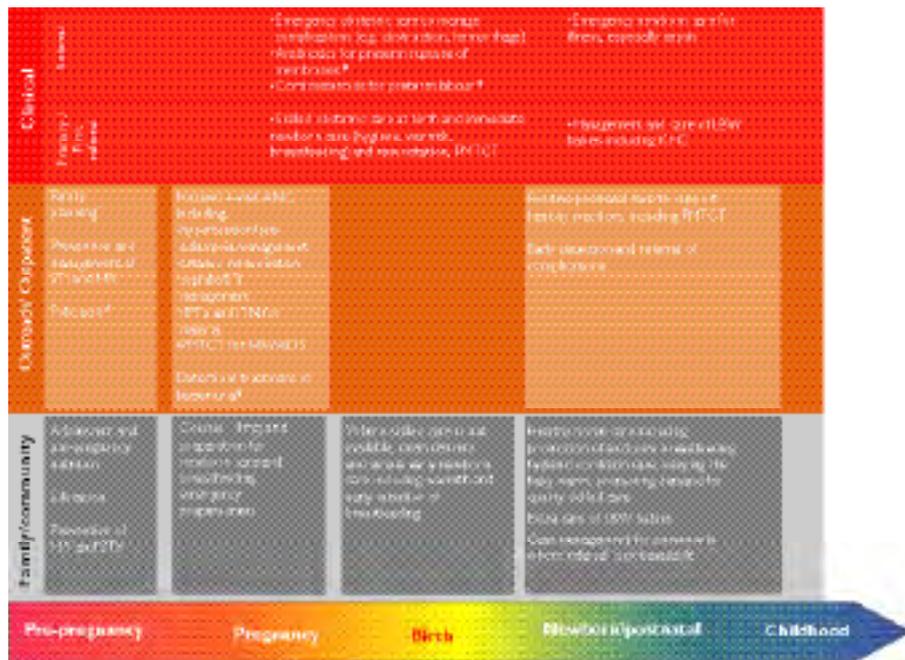
Newborn health is a sensitive marker of a functional continuum of care because the health of babies relies on good linkages between maternal and child health programmes, and minimising delays in care for complications during childbirth and for the baby with illness. As described in the *World Health Report 2005*, the critical challenge for MNCH is not in procuring expensive equipment and technology, but in setting up the health care system with continuity of care during pregnancy, skilled care at birth, and care given to the mother and newborn at home.² Recent analyses in *The Lancet* series on child survival¹⁰ and on newborn survival¹¹ and maternal health¹² have advanced the evidence base for essential interventions that save the lives of mothers, babies and children. *The Lancet* newborn survival series listed 16 interventions proven to reduce newborn deaths, none of which requires high-tech intensive care. All of these interventions are highly cost effective and when delivered in packages within the continuum of care, they are among the most cost effective interventions available in international health.^{11,13}

The reality of limited resources in health systems requires integrated packages of evidence based interventions for each time period of the lifecycle and by different service delivery modes.¹⁴ Figure II.3 provides an overview of evidence based interventions to reduce newborn deaths and disability, presented within packages that are already part of the health system in most countries. This figure includes interventions for which there is evidence, though not all are necessarily reflected in global public health policy. It is worthwhile to note as well that certain interventions, such as extra care for low birthweight (LBW) babies, can be adapted at all levels of the health system. Though the focus here is on the newborn, almost all of these interventions also benefit mothers and older children.

How many newborn lives can be saved by high coverage of essential interventions, and what would this cost?

According to a new analysis done for this publication, based on methodology used in *The Lancet* newborn survival series,¹¹ up to 67 percent of sub-Saharan Africa's newborn deaths could be prevented with high coverage of care. (For more information on the inputs used in this analysis, see data notes on page 226) While Section I described the potential for saving the lives of babies dying from the major causes of death if more mothers and babies could access care, Figure II.4 illustrates the two interrelated continuums of care and the estimated additional newborn lives that could be saved if all essential newborn health packages reached 90 percent of women and babies. Up to 390,000 additional newborn

FIGURE II.3 Interventions that reduce newborn deaths within the continuum of care



Source: Adapted from references.^{11;14;18;19}

*. Evidence published since the Lancet newborn survival series shows a mortality and morbidity reduction from birth spacing^{15;16}

+. A new Cochrane review shows significant benefit of insecticide treated materials for neonatal outcomes¹⁷

#. Additional interventions which are more complex to implement and become more cost-effective with a stronger health system and lower neonatal mortality rate

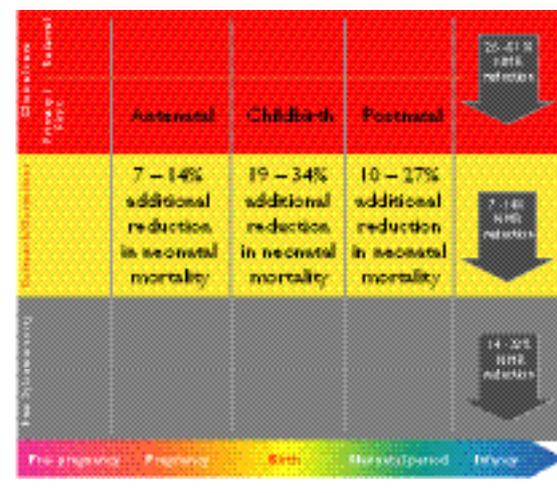
Acronyms:
KMC=Kangaroo Mother Care,
ANC=antenatal care,
IPTp=intermittent preventive treatment in pregnancy for malaria,
ITN=insecticide treated bednets,
LBW=low birthweight

lives can be saved through high coverage of skilled childbirth care, and 310,000 through postnatal care. Antenatal care (ANC) with high coverage including a focused package of interventions can save up to an additional 160,000 newborn lives. While ANC has a lower impact on maternal and newborn mortality compared to care during childbirth and postnatal care (PNC), this does not mean it should be a lower priority. The low additional impact can be explained because current coverage in most sub-Saharan African countries is already higher in comparison to other packages, so the gap in coverage from current levels to 90 percent coverage is much less.¹⁴ In addition, the benefits from ANC are much greater than mortality reduction alone. ANC is a crucial entry point into formal health care services, and the effective programmes offered through ANC will increase the impact and effectiveness of care during childbirth and PNC.

The number of lives that can be saved also varies according to level of care. Skilled clinical care, including obstetric care and facility-based care of sick newborns, has the highest impact, effecting up to a 51 percent reduction in the neonatal mortality rate (NMR), and saving up to an additional 590,000 lives. High coverage of outreach and outpatient care through antenatal care would save up to 160,000 more babies. With simple home behaviours including birth preparedness, breastfeeding, keeping the baby warm, and hygiene an additional 104,000 lives can be saved. Scaling up facility-based clinical care of mothers and babies is crucial – but it is not a fast process. In the meantime, much can be achieved at community level while building towards strong, integrated maternal, newborn, and child health (MNCH) services.

Methodology developed for *The Lancet* child survival²⁰ and used in the newborn survival series¹¹ has been used to estimate the cost of delivering essential newborn interventions. The costing approach considered the time, drugs, supervision, and amortised cost of facilities (based on the WHO CHOICE model²¹) required to provide these packages, but did not include the cost of building new facilities or of training large numbers of new midwives, doctors, and community workers. (See data notes on page 226 for more information) African countries are already spending on average US\$0.58 cents

FIGURE II.4 How and when to save the most newborn lives: Estimated additional newborn deaths prevented if essential newborn health interventions reached 90 percent of women and babies



Source: Adapted from references.^{11;14;18;19} See data notes on page 226 for more information on the impact analysis used in this publication.



per capita on the full package of these interventions. To deliver ANC and PNC at 90 percent coverage, only an additional US\$0.20 and US\$0.29 per capita respectively, is required. Childbirth care, with the greatest potential impact to save lives, is understandably the most costly of the three packages, at an additional US\$0.76 per capita. A total additional cost of US\$1 billion is required to provide 90 percent of women and babies with all the essential packages, for a total per capita cost of US\$1.39. The majority of the total price tag supports packages and interventions that would also benefit mothers and children and reduce long term disability, improving overall health.^{22,23} In addition to financial considerations, guidelines specifying necessary skills, human resources, and essential materials and infrastructure are required for effective scaling up to save newborn lives.²⁴ (See Section IV)

How can estimates of lives saved and costs required to scale up help us strengthen linkages during critical time periods and integrate service delivery at facility and community level? What gaps in care must be addressed in order to reach the unreach? The remainder of this section will provide an overview of the current coverage of newborn care in programmes as well as opportunities for strengthening and integrating services along the two dimensions of the continuum of care – time of care, and place of care.

Systematically building a continuum of care over time

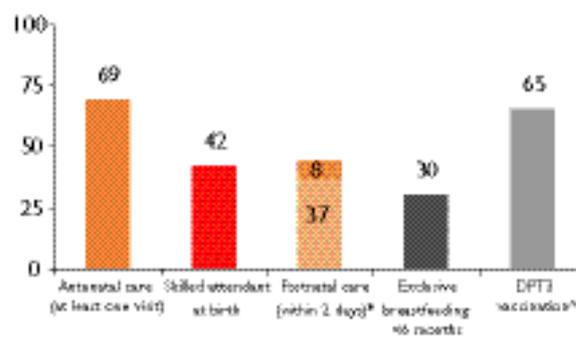
There are conflicting demands for health investment at the national level in all countries. MNCH, as the backbone of the health system requires substantial investment, yet often gets leftovers from the bigger “vertical” programmes.

In the past, MNCH programmes have made choices that excluded some building blocks of the continuum of care.²⁵ For example, programmes focused only on training traditional birth attendants and not on establishing links with the health services or on improving the quality of the health services, while others focused exclusively on improving health service interventions, neglecting women and community involvement in care. There is no need for a “choice” between community care and clinical care – both are needed. The facility is necessary to provide services, and the community is necessary for healthy home behaviours and demand for care. In the same way there is no need for a “choice” between ANC, childbirth care and PNC. Instead of competing calls for various packages or programmes, the continuum of care focuses attention on high coverage of effective MNCH interventions and integration – a win-win for mothers, babies, and children and for health system strengthening. To achieve the greatest reduction in deaths and improvement in health, all of these packages must reach women and children at the appropriate level and time period.

Hence the goal is to get all essential MNCH packages to high quality and high coverage rather than choosing between these packages. The pace at which each package can be improved and scaled up will be country specific and determined by the inputs and resources that are required for building the necessary human resource capacity and health system supports. As coverage of essential interventions increases, quality increases and mortality decreases, the cost-effectiveness ratio for more complex interventions changes, making it justifiable and feasible to incorporate more complex interventions.

Although most MNCH packages have been well described for decades, many have low levels of coverage in Africa, with the exception of the 69 percent of pregnant women who attend at least one ANC visit. (Figure II.5) Only 42 percent of women on average have access to a skilled attendant during birth and though only limited data are available, a small proportion have access to PNC within the first week after childbirth.²⁶ Inequity increases at this crucial time, when the richest 20 percent of women in these countries are three times more likely to give birth with a skilled attendant compared to the poorest 20 percent of women. (Box II.1) Key behaviours starting in the early postnatal period, such as breastfeeding, are also low. In Africa, less than one third of babies younger than 6 months of age are exclusively breastfed. Although this behaviour is highly effective, it requires promotion and support, particularly in settings with high HIV prevalence. There are opportunities to use the higher level of contact with the health care system during pregnancy and childhood to increase coverage of childbirth care and PNC and so on along the continuum. Opportunities also exist for closing the gap in access to MNCH services between the rich and poor.

FIGURE II.5 Percent coverage of essential interventions along the continuum of care in sub-Saharan Africa



*Postnatal care: The usual Demographic and Health Survey (DHS) definition of PNC assumes that all facility births have received postnatal care. The data for PNC here is for women whose most recent birth was outside a health facility (63% of all births) and received a postnatal check up within 2 days using data from DHS 1998-2005. See data notes on page 226 for more details.

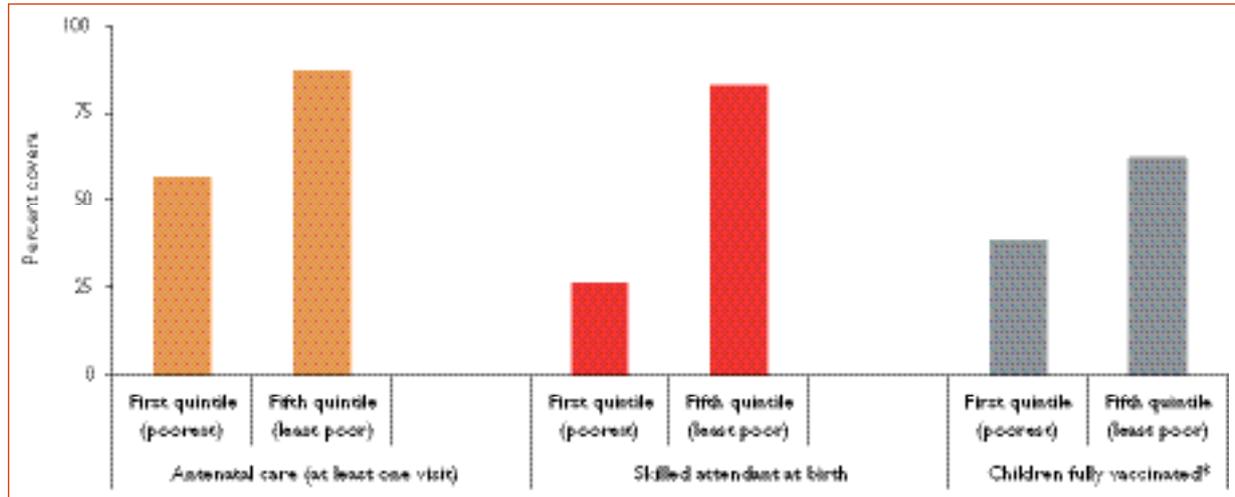
†DPT3 refers to percentage of infants receiving three doses of diphtheria, pertussis and tetanus vaccine.

Sources: ANC, skilled attendant at birth, exclusive breastfeeding <6 months, DPT3 vaccination from reference²⁶ and DHS data released since. PNC from DHS 1998-2005. The country profiles provide more information regarding coverage and equity along the continuum of care for each country.

BOX II.1 Can the continuum of care reach even the poorest mothers and babies?

The widely accepted definition of health service equity suggests that access to services should correspond to the need for those services.²⁷ However, coverage of essential interventions is often lowest where lives are at greatest risk. There is a large gap between the rich and the poor in both access to services and quality of services received. Data from a variety of sources indicate significant disparities in MNCH services between rich and poor, between urban and rural, and in some cases, by ethnicity.

Coverage along the continuum of care for the poorest and the richest quintile in 30 African countries



*Children fully vaccinated refers to the percentage of children age 12–23 months who received BCG, three doses of DPT, three doses of polio (excluding the dose given shortly after birth), and measles at any time before the DHS survey.

Source: Analysis of DHS data, based on 30 DHS datasets from sub-Saharan Africa, 1994-2005

Services and interventions that are not as complex to deliver and those that come with fewer out of pocket costs tend to have less disparity between rich and poor. For example, on average there is a three-fold disparity in use of skilled attendants at birth for the richest 20 percent of African women compared to the poorest, while for children fully vaccinated the difference is less than two-fold, and the disparity in access to at least one antenatal care visit is less again. Place of childbirth is strongly linked to socioeconomic status, because wealthier families are able to afford the direct and indirect costs associated with birth in a facility. This corresponds to maternal, newborn, and child mortality rates that are much higher among the poor.²⁸ When new interventions are introduced to health systems, the rich usually have more opportunity to take advantage of them and there is a risk of increasing inequity.²⁹ Scaling up services along the continuum of care must come with protection from the factors that exclude marginalised women and their babies from accessing care when they need it the most. (See Section IV)

Low coverage but many opportunities to improve a continuum of care: packages and programmes throughout the lifecycle

A brief outline of the current situation is provided below for essential packages and linked programmes along the MNCH continuum of care. The nine chapters in Section III will discuss the coverage and current trends in more detail, as well as present specific opportunities, challenges, case studies, and practical steps to strengthen and integrate newborn care.

Pre-pregnancy care (See Section III chapter 1)

The well-being of women and girls is closely tied to the

education, nutrition, and health services they receive throughout the lifecycle. Early onset of sexual activity combined with adolescent and unwanted pregnancies have serious consequences for the health of women and their babies. Many African girls are under-fed and under-educated, and experience gender-based violence and female genital mutilation from a young age. These girls often marry young, have limited access to health services, and limited power to make decisions including to determine the number and spacing of their children. Women who would prefer to postpone or avoid pregnancy and who do not use contraceptives are said to have an “unmet need” for family planning. Only 15 percent of married or in-union women in sub-Saharan

Africa use modern methods of family planning and 63 percent of women have an unmet need.^{30,31} Effective contraception is a cost effective intervention that saves lives and improves child health, but it is out of reach for many African women.

Antenatal care (See Section III chapters 2, 7 and 8)

Coverage of at least one antenatal visit is relatively high in sub-Saharan Africa at 69 percent, compared to South Asia at 54 percent.²⁶ This presents an opportunity to strengthen MNCH through delivery of essential interventions during routine antenatal visits. In sub-Saharan Africa, newborn deaths from tetanus have been cut in half during the 1990s, partially because of increased tetanus toxoid vaccination. This progress is clear and supported by strong communications and supply networks. Some of the opportunities for integrating essential interventions into ANC services are missed, however, due to missing information and inadequate supply chains. Identifying and treating pregnant women with syphilis is one such example. It is protocol in most countries to test women for syphilis, but necessary supplies are often unavailable.³² Two other examples of interventions for newborn health that are well suited for delivery in ANC are PMTCT services for HIV/AIDS and malaria prevention through promotion of insecticide treated bednets (ITN) and intermittent preventive treatment in pregnancy (IPTp). Birth and emergency preparedness are also important components of antenatal care.

While coverage of at least one ANC visit is high, coverage of four-visit focused care is much lower than one visit and is not routinely tracked. However, it is important to capture this information because the effectiveness of certain interventions such as iron folic acid supplementation, tetanus toxoid immunisation, syphilis testing and treatment, counselling on maternal and infant nutrition, and IPTp rely on more than one antenatal visit.

Childbirth care (See Section III chapter 3)

The availability and quality of skilled care at birth and immediately after birth is a major determinant of the survival and health of both mothers and babies. Each year 18 million African women give birth at home with no skilled care and with weak transport systems to get to a health facility if complications arise. The average coverage of birth with a skilled attendant has barely changed in the African region in the last decade. Emergency obstetric care (EmOC) is required by about 15 percent of pregnant women but coverage is low. A series of surveys in more than twenty African countries suggests that less than a third of the pregnant women who need it receive EmOC.

Postnatal care (See Section III chapter 4)

Good care during the postnatal period both at home and with strong links to referral facilities is crucial for reducing maternal and newborn deaths and can help support the initiation of key healthy behaviours, which

can have lasting beneficial effects. According to DHS data for 21 sub-Saharan African countries, only 13 percent of women who give birth at home receive PNC for themselves and their baby within three days. Even when using the DHS assumption that all women who give birth in a facility receive PNC, less than half of women and newborns receive care during this crucial time period. Data to inform programmes and strategies for this service are severely lacking, and the definition of a postnatal package and monitoring indicators for postnatal care do not have international consensus. Information about the quality of PNC available is limited by the assumption that all babies born in a health facility also receive postnatal care as well as issues such as when and where PNC should take place and who should provide the care.

Early and exclusive breastfeeding (See Section III chapter 6)

Early initiation of breastfeeding and exclusive breastfeeding until 6 months not only influences survival after the first month of life, but it also has a direct impact on newborn health.³³ Optimal breastfeeding is one of the most achievable essential nutrition actions and requires support for behaviour change at the household and the health facility level. However, understanding and employing optimal feeding practices often depends on access to PNC services in the critical time period after childbirth. Only 30 percent of babies less than 6 months of age in sub-Saharan Africa are exclusively breastfed and only about 42 percent begin breastfeeding within one hour of birth.²⁶ Breastfeeding practices can be improved, but the bottleneck of information dissemination at key times as well as barriers to the provision of needed support must be overcome.

Integrated Management of Childhood Illness (See Section III chapter 5)

The IMCI strategy is designed to reduce child morbidity and mortality in developing countries by improving case management skills of health workers, strengthening the health system and supporting families and communities to take better care of sick children. IMCI provides a major opportunity for integration of newborn services within health facilities. Over 40 countries in sub-Saharan Africa are in various stages of introducing and implementing IMCI, at least 20 countries have an overall IMCI strategic plan and 14 countries have coverage of over 50 percent. IMCI provides a major opportunity for integration of newborn care at scale. While the current WHO recommended IMCI protocols do not include management of the sick newborn during the first week of life, a number of African countries, such as Malawi and Ethiopia, have begun the adaptation process.

Immunisation programmes (See Section III chapter 9)

The Expanded Programme on Immunisation (EPI) aims to increase coverage of vaccines routinely provided to mothers and children. The programme involves strong management, but it remains accessible by using relatively simple to deliver technology. The result is higher coverage

rates with lower inequity: 76 percent of one year olds are immunised against BCG and 65 percent have had three doses of DPT.²⁶ While primarily reaching infants and older children, EPI could also have a positive impact on neonatal survival. Efforts to eliminate maternal and neonatal tetanus directly affect neonatal mortality, and EPI, as a large vertical programme with extensive infrastructure, presents a number of entry points for interventions to improve newborn survival. Nearly 60 percent of African newborns are born protected against tetanus,²⁶ and as of January 2006, seven countries in the region had eliminated maternal and neonatal tetanus.³⁴ There is room for integration of additional newborn health interventions and EPI social mobilisation efforts can be used to create demand for services, and targeted strategic, technical and financial support for newborn care.

BOX II.2 Key principles in linking care from the household to hospital and back

- Home behaviours: Work with women, families and community members to strengthen the care provided in the home, to make decisions about care seeking and to be actively involved in the design, implementation and evaluation of MNCH programmes (including emergency transport and financial plans) as well as negotiate and implement healthy behaviours
- Health system strengthening: Commit resources and effort to strengthening the health system
- Home and health facility partnerships: Strengthen communication between women, families, community leaders, health workers, programme managers, non-governmental organisations, donors, local government, and the Ministry of Health to strengthen and monitor service provision and be accountable to improve quality of care
- Home and health facility linkages: Use community mobilisation and other approaches to ensure communication linkages (e.g. radios, mobile phones) and functioning referral systems (e.g. stretcher teams, transport cooperatives, maternity waiting homes).
- Promote local accountability for addressing gaps in care (e.g. women in labour who die on the way to hospital) and for sharing successes (e.g. community maternal/newborn audit meetings attended by health care personnel)

Source: Adapted from reference^{7,35}

Connecting the household to hospital continuum of care: bringing care closer to families and families closer to care

The “place” dimension of the continuum of care approach requires linking home and community interventions to quality outreach and clinical services at primary health facilities that in turn have strong connections to a district hospital. Establishing or strengthening these ties could promote interactive dialogue that results in increased utilisation of services. These linkages will also ensure that women and newborns with complications are referred in a timely manner and receive appropriate care to improve their survival rate. (See Box II.2).

Opportunities through homes and communities

The home and community is the beginning of the MNCH dimension of the continuum relating to location of care. There is a growing evidence base for interventions that are feasible at the community level throughout the lifecycle.³⁶ Supporting the woman to take better care of herself and her baby and involving the family and community in care and health-related decisions is particularly important for maternal and newborn survival because the majority of births and deaths in Africa happen at home. Even when childbirth takes place at health facilities, many mothers and babies are discharged early, sometimes within a few hours. Also, decisions to initiate care or adopt preventive practices are strongly influenced by families and communities. Empowering women, families and communities to improve their own health is a crucial cornerstone of development.

Many key newborn care practices may be integrated with ongoing maternal health, child health, family planning, nutrition promotion and malaria and HIV/AIDS programmes that already exist at the community level. Health education and behaviour change communication is one strategy utilising counselling, individual and group discussions as well as community mobilisation and action. Various channels can be used to effect behaviour change for improved maternal and newborn care including mass media, group discussions, village meetings, songs, walks, theatre, and sports events. Another medium for integrating MNCH messages is the social marketing of specific products such as contraceptives, ITNs, or clean birth kits. Appropriate MNCH messages have been disseminated in leaflets, radio broadcasts, package inserts, and billboards used for the promotion and sale of social marketing products. A variety of tools, including counselling cards, group facilitation guides, flipcharts, pamphlets, community registers, mapping charts and associated training manuals, exist to support family and community interventions. Adaptation to local language and context improves the integration and effectiveness of



these messages. In the MIRA-Makwanpur study in Nepal,³⁷ adapted from experience in Bolivia,³⁸ MNCH household practices were strengthened through interpersonal communication and use of participatory women's groups. This approach is now being adapted and tested in Malawi (Box II.3). Improved coordination and participatory approaches to undertake joint designing and

planning of programmes with community members has also been shown to be effective.

Strategies to improve home care practices are most effective when they include a mix of approaches that include individual counselling and dialogue, community education and mobilisation, improved links between the

BOX II.2 Woman power – adapting and testing community-based solutions from Asia to Africa

In rural Nepal almost all women give birth at home and maternal and neonatal mortality rates are high. The MIRA (Mother and Infant Research Activities) -Makwanpur Project was a community-based intervention that sought community solutions for maternal and newborn health using existing women's groups. Female facilitators met with women's groups approximately once a month for 10 sessions over the course of a year. The groups identified local MNCH problems and used a participatory process to formulate strategies including games and interactive materials. Health system strengthening through renovations and training in the local clinic and referral centre was also undertaken. Neonatal mortality decreased by 30 percent over four years. Though the study was not designed to reduce maternal mortality and the numbers of maternal deaths were small, significant decreases were seen in the intervention group (69 maternal deaths per 100,000 live births) when compared to the control group (341 maternal deaths per 100,000 live births). Women in the intervention groups were more likely to receive antenatal care, give birth in a facility and use a trained attendant and hygienic care than women in the control group. These results demonstrate that birth outcomes and healthy behaviours in a poor rural population can be greatly improved through a low-cost, potentially sustainable, scalable, participatory intervention with women's groups.

A pilot study called MaiMwana is underway to adapt and test this approach in Malawi – MaiMwana means 'mother and child' in Chichewa, one of Malawi's official languages. This randomised control study involves a population of almost 150,000. While assessing the impact of two community-based health promotion interventions, MaiMwana seeks to strengthen decentralised community management of newborns and improve health service delivery through cost-effective and sustainable interventions. Given the high HIV prevalence, as well as empowering women's groups to solve problems related to maternal and newborn deaths, Prevention of Mother to Child Transmission of HIV/AIDS is also being addressed in the groups and through health system strengthening.

Source: Adapted from references^{37,39}

community and the health services, and improving the access to and the quality of health services. A wide variety of community resource persons may be involved – what effective programmes have in common is well trained and supervised community workers who are a part of a system in which referral pathways are operational and quality care is available at the health facility.

Some community-based interventions may require or be enhanced by home visits (e.g. home postnatal care, breastfeeding) or may necessitate the availability of a community health worker should emergencies occur (e.g. where it is policy, community-based case management of acute respiratory infections and timely referral). Some of the possible community interventions are adaptations of formal clinical care delivered at community level because of the lack of accessible formal health care services. When given the appropriate knowledge and skills, community health workers (CHW) have proven their ability to detect

and manage selected newborn and childhood illnesses such as pneumonia⁴⁰ or sepsis. Preliminary results from one study in Shivgarh, India indicate a 50 percent reduction in neonatal mortality through improved essential newborn care practices without any curative care for illness.⁴¹ Another study in rural India showed a 62 percent reduction in neonatal mortality when CHW provided home-based care for the newborn, including resuscitation for birth asphyxia and treatment of sepsis with antibiotics.⁴² A key characteristic of this trial was the intensive training of the community health workers as well as continued follow up on a monthly basis from dedicated project staff. While this model can not be readily applied in large-scale programme settings, it provides useful lessons for the support that community health workers can provide to improve good home care practices and recognise sick newborns for timely referral to a more skilled health worker.

Policy makers and programme planners need to assess their own local situations and consider conducting operations research to ascertain the feasibility of introducing home-based care at scale in their countries, as supervision and sustainability may be challenging (For more information on scaling up, see Section IV). Currently the majority of operations research is being conducted in south Asia, and there is a need for similar research to take place in sub-Saharan Africa which is specific to home-based care. Few African countries have a national strategy that fosters sustained community participation through health policy, programme design, implementation, and monitoring and evaluation. Community-based activities using best practices or evidence-based approaches are often conducted as part of ongoing donor supported projects that stop or slow down when the project ends.

Opportunities through outreach and outpatient services

Care at the level of outreach and outpatient service delivery improves the survival of women and babies by forming the link between households and district hospitals, often serving as the first point of entry in the health care system. This service delivery level brings community development and services such as family planning, antenatal and postnatal services closer to the home. Most countries in Africa also provide outreach or

mobile services in an effort to expand coverage in underserved areas. Staff from fixed peripheral and district facilities provide selected services at pre-arranged sites within the community, providing a mix of mostly antenatal and child health, with particular focus on growth monitoring and immunisation services. The Accelerated Child Survival and Development (ACSD) programme is one example of a successful outreach approach that involves a wide partnership of actors offering cost-effective health interventions (Box II.4). Outreach services present opportunities for integration by adding early basic postnatal care for the mother and newborn.

Outreach ANC services can counsel pregnant women to move closer to facilities before the onset of labour. This might require encouraging women to move to a relative's house in a city to be close to the facility as soon as the first contractions start or promoting maternity waiting homes near a hospital. These maternity waiting homes, often operated by local non-governmental organisations, are places where a pregnant woman, along with a companion, can wait for the time of first contractions. There are now several examples of such homes in Malawi, Mozambique, Nigeria, and Zimbabwe, among others. The overall result is that it is easier, safer, less expensive, and less traumatic for a woman to travel to such a facility in anticipation of the birth than when she has to be moved in the midst of a complication. (See Section III chapter 3)

BOX II.4 Accelerated child survival and development programme (ACSD)

West Africa is the region of the world with the highest maternal, neonatal and child mortality rates. A large scale collaboration across 100 districts within 11 countries in West Africa began in 2002 with the aim of a phased approach to scaling up essential child health interventions. Partnership is key – funded by the Canadian government and initiated by UNICEF, ACSD involves the expertise and partnership of multiple players, including governments and health ministries, WHO, the World Bank, non-governmental organisations, NGOs and local community leaders.

Through ACSD effective interventions for children and pregnant women are bundled in an integrated, cost-effective package including immunisation of children and pregnant women, micronutrient supplementation, breastfeeding promotion, supply of oral rehydration solution for diarrhoea and bednets for protecting children and women from malaria. The next phase will expand to more countries and higher coverage, and additional interventions to address newborn outcomes will be included. The approach focuses on extending health coverage to underserved communities and using community outreach efforts to deliver services and commodities closer to families. Outreach services are also accompanied by programmes to educate families in home-based healthcare practices for their children.

So far evaluations have shown increases in coverage, particularly of commodity linked interventions such as ITNs, but mortality impact evaluations are not yet available. UNICEF estimates that child deaths will have dropped by an average of 20 percent across the 16 districts where the programme was fully implemented and by 10 percent where it was partially applied.

Source: Reference⁴³

Opportunities through health facilities – primary health centres and referral hospitals

At the top of the health care system is the district hospital, serving as a referral facility, which should deliver a core package of services with a prescribed set of staff, accompanying equipment and supplies.¹⁹ To save newborn lives, district hospitals should be equipped to provide emergency obstetric care to manage complications and emergency newborn care for all major newborn complications including birth asphyxia, preterm and very LBW babies, and sepsis. Improving management of birth asphyxia, infections and complications of preterm birth in the hospital could save up to 330,000 newborn lives. As well as increasing coverage, quality improvement is crucial. Audit for maternal and newborn deaths and stillbirths is an important tool which when linked to action results in lives saved.^{44,45} Box II.5 provides an

example from Uganda of a partnership approach to improving care in a rural district.

At the primary care level, peripheral facilities and staff should be prepared to assist uncomplicated births and offer basic emergency obstetric and immediate newborn care such as hygiene, warmth, support for optimal feeding practices and resuscitation where needed. In addition, these facilities should be able to manage sick newborns and LBW babies and refer where appropriate. Providing extra care for these babies in the facility, in particular, Kangaroo Mother Care (KMC), and additional support for feeding, is critical to save lives and promote healthy development. Health workers with midwifery skills can safely perform lifesaving procedures, including manual removal of the placenta, vacuum extraction, and diagnosis and management of the sick newborn. This fact has led some countries to revise national policies so that the staff in peripheral facilities can perform these procedures.

BOX II.5 Partnership in action to improve obstetric care in Uganda

Kiboga is a rural district in Uganda and the Save the Mothers Uganda–Canada Project between professional obstetric and gynaecological communities in Uganda and Canada is one example of scaling up care at the health facility level with innovative partnership solutions. An initial situational analysis revealed that most births happened at home, and complications were first treated at home, with home remedies. This demonstration project aimed to increase the availability and utilisation of essential obstetric services in the district of Kiboga in Uganda. The multi-disciplinary project team in Kiboga consisted of a variety of health and community officials: an obstetrician, trained medical officers, midwives, nurses and community advocates. Local midwives saw the importance of including traditional birth attendants (TBAs) in efforts to reduce maternal and neonatal mortality and morbidity and expressed a desire to improve their relationships with TBAs. TBAs were encouraged to bring the women for antenatal care and at the minimum, facilitate access to EmOC services at the time of complications.

The main interventions included:

- Strengthening the skills of medical staff, including midwives with regard to basic and comprehensive EmOC
- Upgrading the district's health facilities with regard to the essential equipment, supplies and medication needed for EmOC
- Reducing social and cultural barriers to maternal care, particularly through working with TBAs
- Improving communication and transportation for women in need of EmOC from one service level to the next
- Evaluating the initiative's interventions with regard to their feasibility, impact and cost effectiveness

After 24 months of the project, Kiboga district has one comprehensive essential obstetrical care facility, thus meeting the minimum recommended number. The opening of six district maternity units in the district each staffed by midwives, has helped to improve the geographical distribution of facilities offering at least four of the six basic essential obstetrical care services. There was an impressive increase in the number of women with obstetric complications being treated from 4 percent in 1998, to 47 percent in the year 2000.

Source: Reference⁴⁶

Challenges to scaling up within the continuum of care

While opportunities exist within the continuum of care, so do challenges. This is especially evident when it comes to reaching poor, rural, and remote populations who have the highest risks and yet the least access to care. Barriers to care extend beyond the health service and include issues such as financial and transport constraints. These and other obstacles to scaling up are summarised in Table II.1 for each service delivery mode – family/community, outpatient/outreach and clinical care. The focus is on the most common constraints affecting MNCH care, particularly newborn care. The underlying causes of these obstacles and examples of operational strategies to address the constraints are also summarized.

Human resource limitations, especially the lack of skilled attendants, are a crucial constraint.²⁴ Additionally, funding for MNCH is inadequate given the size of the problem, the costs of solutions, and the benefits to women, babies, children and the health and development of nations. These and other health system challenges will be discussed in more detail in Section IV.

While challenges at the facility level must be addressed, the fact that the majority of births and newborn deaths happen at home in Africa means that successful community partnerships, social mobilisation, and health education and behaviour change communication is also required to save lives. Sociocultural determinants such as lack of gender equity in particular and the low status of women in households and communities also hinder women's ability to seek care or take action when a complication occurs.

Conclusion

Accelerated progress to scale up key packages in the continuum of care is necessary for the countries of sub-Saharan Africa to achieve Millennium Development Goals (MDG) 4 and 5. Essential services must reach more families, especially the poor. New attention on saving newborn lives in order to meet MDG 4 also provides an opportunity to accelerate progress towards MDG 5 as many interventions for the newborn link to care for the mother. The focus has begun to move from vertical programmes towards an integrated continuum of care to address the needs of women, newborns and children. Interventions, both preventive and curative, should prioritise the most critical *time* – birth and the first few days of life, and the *place* where care is most needed – at home or close to home with strong links to facility-based care. Supporting newborn health does not involve calling for a new vertical programming effort, but for strengthening and integrating existing services to make them more efficient and responsive to the needs of mothers, newborns and children. Reviewing newborn care and examining the continuum of care approach

TABLE II.1 Obstacles to reaching the poor with newborn health services through family/community, outreach, and clinical services

Obstacles	
Home, family, and community level	Social determinants of health, barriers to health service use, inadequate information regarding healthy home behaviours and care seeking
	Inadequate supply of affordable household commodities for health
	Lack of community workers, and/or lack of effective linkages to the health system
Outreach and outpatient services	Low quality of care
	Erratic supply of essential commodities and diagnostics
	Low demand for care, late use and poor compliance
Clinical care (primary and referral level)	Lack of skilled personnel, particularly in hard to serve areas
	Poor quality of care in public and private sector
	Delayed use of services and poor compliance with treatment
	Affordability barriers for the poor

Source: Adapted from reference¹³
More details on operational strategies and examples are given in Section IV



Underlying causes	Operational strategies
<p>Poverty; lack mechanisms for community participation; irrelevant or inappropriate messages; poor dissemination strategies; harmful cultural practices; lack of legal framework for gender equality and status of women</p>	<p>Review policies related to family and community support for MNCH Strengthen existing community groups for community mobilisation for MNCH Develop specific messages and use multi-channel distribution, address cultural practices Consider local transport schemes and emergency loan plans Promote inter-sectoral collaboration (e.g. through sanitation, education, etc.)</p>
<p>Access and transport to communities Cost of commodities; deficient markets; lack of legal framework for retail of commodities</p>	<p>Strengthen logistics including community based distribution Develop social marketing (e.g. ITNs, clean birth kits) and legal frameworks Subsidise commodities if appropriate</p>
<p>Inconsistent policies for primary health care Poorly defined roles and training, lack of supervision Relying on volunteerism, lack of remuneration or other rewards</p>	<p>Revitalise existing community health workers roles to prioritise high impact activities and include remuneration or other rewards, and review relevant policies Design effective training packages, provide ongoing supervision and refresher training Link to the health system</p>
<p>Lack of standards for care; existing global guidelines not known/adapted/ promoted at national level; poor supervision and absenteeism; social and cultural differences between service and community</p>	<p>Promote evidence based guidelines/standards Strengthen in-service and pre-service training Supervision and incentives, not necessarily financial Women and community perspective included in improving quality of care</p>
<p>Poor management of supply chain Transport and cold chain failures</p>	<p>Develop essential commodity policies Strengthen skills of supply management team Consider use of appropriate technology</p>
<p>Lack of information, negative experiences with health system, distance and cost.</p>	<p>Health education Improved links with the communities Community dialogue and mobilisation Community involvement in programme design and in quality improvement Monitor and follow up drop-outs, especially for PMTCT and immunisation</p>
<p>Inadequate human resource policies; low numbers trained, low pay, disincentives to work in rural areas; skilled staff limited to urban areas; absenteeism; “brain drain”</p>	<p>Human resource plan including training, deployment, retention, team skill mix, regulation of informal and qualified health workers Consider performance based payment Hardship allowances for rural postings if appropriate</p>
<p>Lack of or unknown standards for care; low sense of urgency for emergencies; training often not skills based; low accountability and motivation of health staff; lack of basic supplies and drugs</p>	<p>Adapt and implement clinical guidelines Strengthen in-service and pre-service training, supervision, quality assurance Clinical audits and mortality audits for mothers, newborns and stillbirths Improve supply and drug logistics including essential laboratory services</p>
<p>Delays in recognition of illness, decision making, and lack of transportation; social and cultural gap between health staff and patients, especially poor</p>	<p>Use a mix of strategies as appropriate, including: birth and emergency preparedness, transport schemes, finance schemes maternity waiting homes Harness telecom technology for timely response</p>
<p>Low income/resources, lack of social security systems Corrupt practices by public sector providers High cost of private sector care</p>	<p>Protect the poor with a mix of approaches including: user fee protection, community funds and loans, subsidised care, conditional cash transfers, health insurance, voucher based reimbursements for providers, ensure accountability of health system</p>

provides an opportunity for countries to identify and address critical gaps that hinder the provision of quality MNCH services in national policies, organisational structure, training, programme strategies, and monitoring and evaluation.

Many opportunities exist for strengthening maternal, newborn and child health services at the various levels of the health care system before and during pregnancy, throughout the antenatal, childbirth, and postnatal periods, and into childhood. MNCH services can be integrated with ongoing initiatives such as nutrition and breastfeeding promotion, HIV/AIDS programmes, malaria prevention programmes, and immunisation programmes, among others. There is an open window for significant change for newborns in Africa that will have a positive impact on the health system overall. However, without strong commitment from governments, professional organisations, donors, private sector interests, and civil society, integration – let alone implementation – is unlikely. The nine chapters that follow in Section III will discuss in more detail the practical aspects of strengthening and integrating existing programmes in the continuum of care, and Section IV will cover the crosscutting health systems issues and the practicalities of investment and integrated scale up.



More information

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Opportunities

to deliver newborn care in existing programmes

This Section provides an overview of opportunities for strengthening essential maternal, newborn and child health (MNCH) packages along the continuum of care:

CHAPTER 1. Care for girls and women before pregnancy

CHAPTER 2. Antenatal care

CHAPTER 3. Childbirth care

CHAPTER 4. Postnatal care

CHAPTER 5. Integrated management of Childhood Illness (IMCI)

CHAPTER 6. Nutrition and breastfeeding promotion

Three chapters discuss opportunities to integrate MNCH with other key programmes

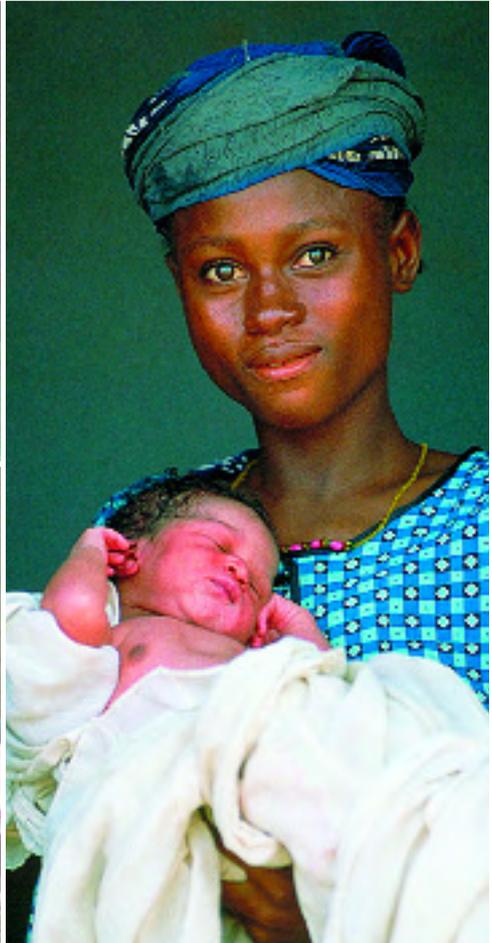
CHAPTER 7. Prevention of mother-to-child transmission of HIV (PMTCT) programmes

CHAPTER 8. Malaria control programmes

CHAPTER 9. Immunisation programmes

Each chapter in this Section contains an overview of the current situation for the package/programme, opportunities and gaps, case studies, next steps, as well as a list of key programme resources and reference materials for MNCH.





Care for girls and women before pregnancy

Maureen Norton, Trish MacDonald, Winnie Mwebesa, Luwei Pearson

Poor nutrition, harmful practices such as early marriage and female genital mutilation (FGM), and unequal access to education contribute to the ill-health of women and their newborns and children throughout the lifecycle. Every year, millions of adolescent girls in Africa become pregnant. Becoming pregnant too early and too often carries a significant increased risk of complications and death for mothers, unborn babies and newborns, and is also associated with higher risk of sexually transmitted infections (STIs) and HIV/AIDS.

In a region where early childbearing and high fertility are the norm, education and counselling on the need to space the next pregnancy at least 24 months after the last birth, is especially relevant. Dual protection which safeguards against unwanted pregnancies and STIs including HIV is critical in the African context. Newborn health and survival requires empowerment and health promotion throughout the lifecycle, including nutrition and education, prevention of FGM as well as healthy timing and spacing of pregnancies. How can a more comprehensive focus on the wellbeing of girls and women advance maternal, newborn, and child health in Africa? What are the challenges and how can these be addressed?



Problem

The wellbeing of women and girls is closely tied to the nutrition, education and health services they receive throughout the lifecycle. When girls are undervalued, underfed, undereducated, and have pregnancies too early and too often, the effects on girls and women are pronounced. Less obvious are the effects on the health and survival of their children.

Effects on young girls and women: Education offers opportunities to advance in life, and gain self esteem but millions of African girls do not attend school. Prevention of unwanted pregnancy and sexually transmitted infections (STI) requires self esteem and negotiation skills as well as contraceptives which provide dual protection – that is, protection against pregnancy and also against STIs, especially HIV/AIDS.¹ In Africa, for every boy newly infected with HIV, there are between three and six girls newly infected.²

Many African women experience gender-based violence even at a young age. Female genital mutilation (FGM), often referred to as ‘female circumcision’, is a procedure involving partial or total removal of the external female genitalia, or other injury to the female genital organs for cultural, religious or other non-therapeutic reasons. FGM is usually performed on young girls who are 10 years old and younger. Not only is FGM a contravention of the rights of women, new evidence demonstrates that FGM has deleterious effects on the health of women and their infants: women who have been subject to FGM are significantly more likely to have complications during childbirth.³ Girls under 14 years old are at highest risk. FGM is indirectly related to another health tragedy – obstetric fistula – which affects 100,000 young girls – most of them in Africa.

Millions of adolescent girls under the age of 18 become pregnant every year in Africa. High adolescent pregnancy rates reflect early age at marriage, but also low use of contraceptives. Children who give birth to children tend to be isolated and lack access to health services and education.⁴ One Latin American study of adolescent pregnancy found that, after adjustment for 16 major confounding factors, adolescents aged 15 years or younger had higher risks of death during childbirth and anaemia compared with women aged 20 to 24 years. Moreover, all adolescents have a higher risk of obstructed labour requiring assisted birth, episiotomy, postpartum hemorrhage, and serious infections.⁵

Effects on newborns: Pregnancies that occur too early, too close together, or too late in a woman’s life are linked to higher risks of stillbirth and newborn death. High pregnancy rates among adolescents help explain why sub-Saharan Africa has the highest mortality rates for young mothers and their babies. Adolescent girls have a higher risk of their babies being born preterm, and small for gestational age.⁵ FGM is also associated with substantially increased risks for the baby during birth.³

Effects on children: Good nutrition begins during pregnancy and must be maintained in newborns and children. If another pregnancy occurs too soon, a mother may stop breastfeeding the first baby early, putting the baby at risk. When women become pregnant sooner than planned, older children may not receive needed services (e.g. immunisation) or prompt care when illness occurs.

This chapter provides an overview of health promotion and empowerment throughout the lifecycle including a discussion of the current situation in Africa regarding nutrition and education for girls, and prevention of harmful practices, such as FGM. Then we outline the benefits of healthy timing and spacing of pregnancies, especially for young girls. Opportunities to strengthen pre-pregnancy care are highlighted, particularly given the high proportion of girls whose pregnancies are unplanned and women who would prefer to space their pregnancies by at least two years, yet fail to do so. Practical actions are suggested to improve the health of girls and women, which also benefit babies.

Health promotion and empowerment throughout the lifecycle, especially for adolescent girls

Ensure essential nutrition for girls and women

Good nutrition in early childhood and throughout adolescence sets the stage for healthy reproduction. Undernutrition has intergenerational effects – girls who are small are more likely to have small babies (Figure III.1.1).⁶ The major causes of low birthweight (LBW) are preterm birth and growth restriction in utero. In Africa infections such as malaria have a major effect despite well-documented solutions. Undernutrition of girls and



pregnant women is also important, especially where famines or seasonal food insecurity are common.⁷ African women may continue to work hard in the fields late into pregnancy, increasing the risk of poor fetal growth and of preterm birth. Improving nutrition in pregnancy involves addressing social norms and eating taboos as well as health promotion.

The first two years of life are a crucial window to break the vicious cycle of undernutrition. After birth, early and exclusive breastfeeding for six months followed by the introduction of complementary feeding is essential to improve the health and survival of newborns and children. More information on essential nutrition actions is provided in Section III chapter 6.

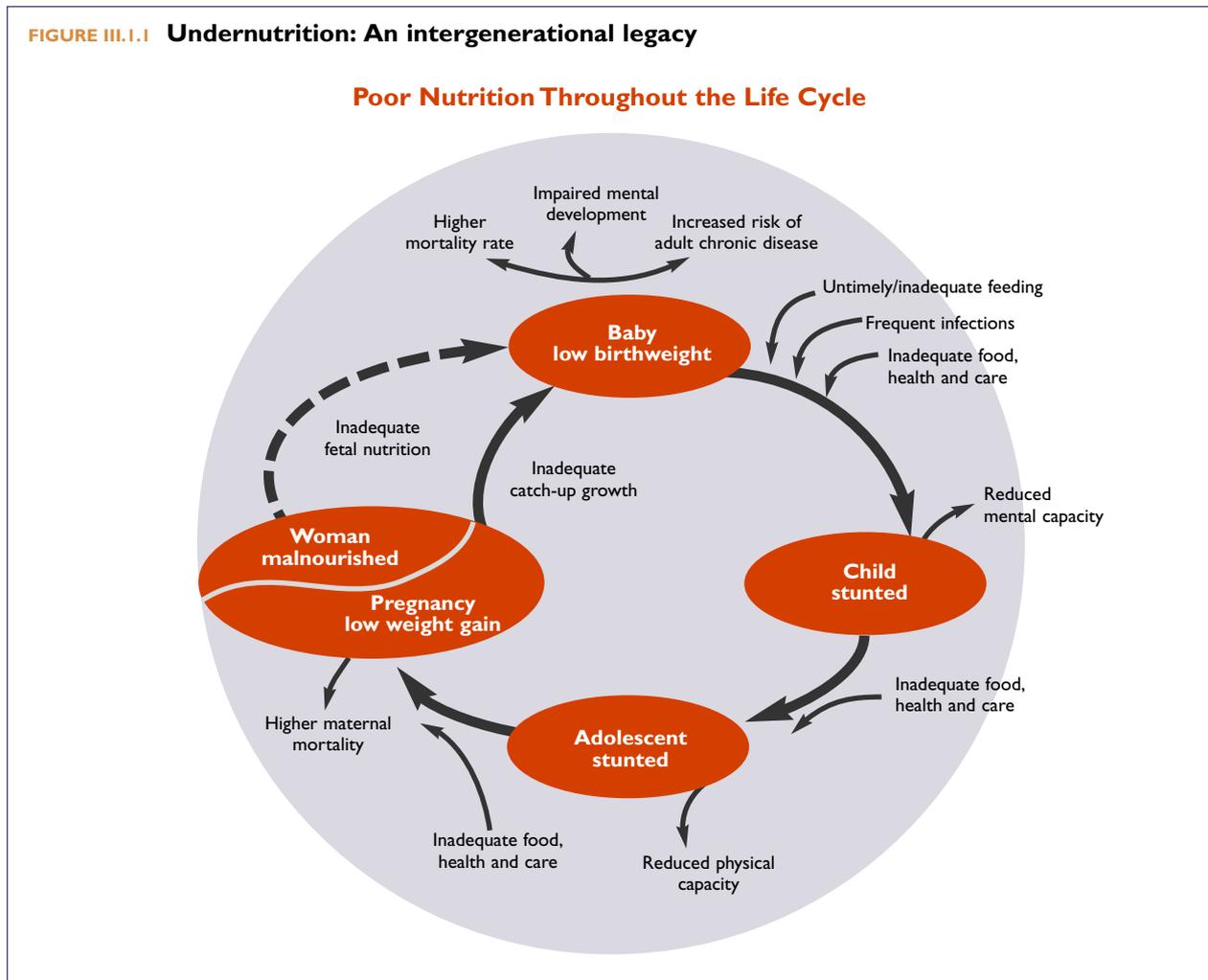
Educate all children, especially girls

Education offers opportunities to acquire knowledge and skills and enhances life prospects. Poverty and gender inequalities, however, prevent millions of girls from attending school. The Millennium Development Goals for universal education (MDG 2) and for gender equality (MDG 3) track gender gaps in education. Globally

gender gaps in primary education are closing, but in Africa there are still more boys in school than girls. Only 49 percent of girls complete primary school, and only 30 percent are enrolled in secondary education in sub-Saharan Africa.⁸ The benefits of education extend throughout the lifecycle. Educated women are more likely to seek skilled medical care during pregnancy and childbirth and societies with more educated girls have lower neonatal mortality rates (Figure III.1.2). At an individual level, after controlling for confounding factors, having an educated mother reduces a child's risk of dying.⁹ Yet education is out of reach for many, especially the poor.

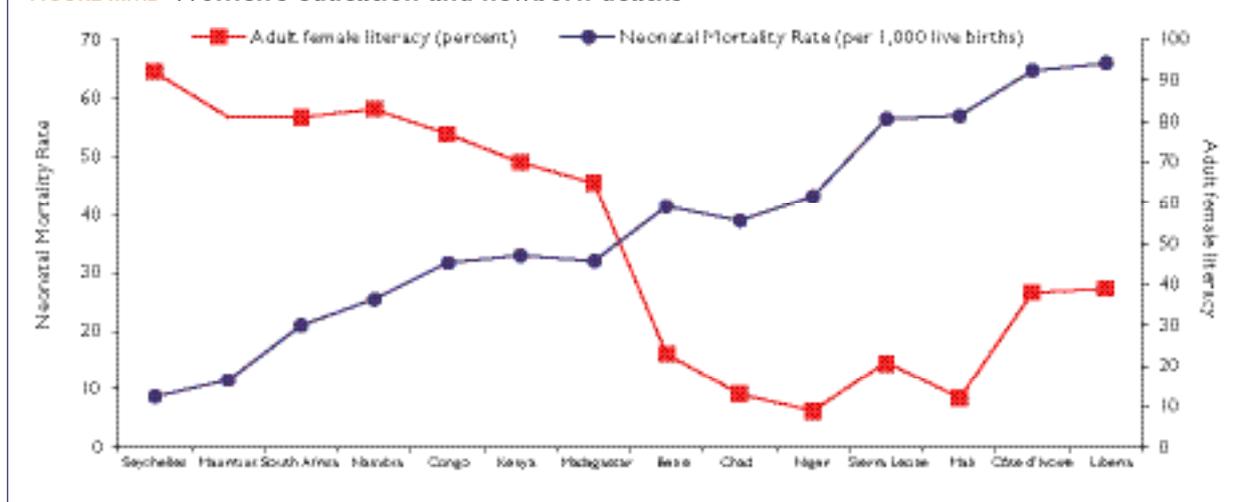
Poverty does not have to be a barrier to educating girls. Kenya's annual gross national income (GNI) per capita is only US\$460, but there are almost as many girls as boys enrolled in primary school, and enrolment of girls in secondary school is steadily increasing. The national government encouraged this progress by introducing free primary education in 2003, and is currently working on additional reforms that focus on access and completion for girls. Access to education is also widening for girls in Cameroon, a country with an annual GNI per capita of

FIGURE III.1.1 Undernutrition: An intergenerational legacy



Source: Adapted from reference the ACC/SCN-appointed Commission on the Nutrition Challenges of the 21st Century.

FIGURE III.1.2 Women's education and newborn deaths



Source: Adapted from reference¹⁰, data from references^{11,12}, and recent Demographic and Health Surveys. See notes on data sources on page 226.

only US\$800. The country has seen a 15 percent increase in girls' enrolment in primary school since 1990 and has implemented a nationwide initiative to improve learning environments and increase access to education.²

Empower girls and women and address social norms and policies

Lasting change for girls in Africa will require more than improving nutrition and access to education and health services. Community involvement and empowerment is a prerequisite for health.¹³ Empowerment of girls and women involves expanding their assets and capability to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives. Many African families live in conditions of deprivation where women and their newborns are especially vulnerable. Empowerment strategies should focus on enabling marginalised groups to seek changes in conditions which are harmful to women and their families, and to gain access to social resources that promote health.¹⁴

Multi-sectoral approaches that have empowered girls and young women include educational and income generating activities that engage non-health actors like political and religious leaders, and men. Ensuring that the rights as set out in the *International Convention of the Rights of the Child* are respected may require specific changes in local laws. Communities in Ethiopia are successfully raising the age of marriage and enforcing this through legal action (Box III.1.1). Health advocates in Egypt are working with religious leaders and other non-health groups to help families understand the risks of early and annual childbearing (Box III.1.3). Some communities are successfully changing social norms regarding harmful practices such as domestic violence, transactional sex, and coerced sex, particularly in societies where HIV/AIDS has resulted in increased reporting of gender-based violence.

Ensure girls are protected from female genital mutilation

FGM is a common practice in some African countries: over 100 million women and girls worldwide are estimated to have experienced FGM. The different types of female genital mutilation practiced today include:

- Type I (FGM I) – excision of the prepuce, with or without excision of the clitoris
- Type II (FGM II) – excision of the clitoris with partial or total excision of the labia minora
- Type III (FGM III) – excision of part or all of the external genitalia and stitching/narrowing of the vaginal opening (infibulation)

Although practices vary from country to country, FGM is generally performed on girls under 10 years of age and carries substantial health risks. Women who have been subjected to the most serious form of FGM will have on average 30 percent more caesarean sections compared with those who have not had any FGM.³ Among women with FGM III, there is a 70 percent increase in postpartum haemorrhage compared to those women without FGM. With respect to newborn outcomes, researchers found there was an increased need to resuscitate babies whose mother had had FGM (66 percent higher in women with FGM III). The stillbirth and early neonatal death rate for babies is also higher for infants born to mothers with FGM: 32 percent higher in those with FGM II, and 55 percent higher in those with FGM III. In Africa, an estimated 10 to 20 additional babies die per 1,000 deliveries as a result of FGM.³ The researchers note that the effect of FGM on longer-term maternal outcomes such as postpartum infections, fistulae, and later neonatal and infant mortality could not be investigated as the study outcomes were restricted to those that occurred while the women were still in the hospital after childbirth.³

BOX III.1.1 Early marriage in Ethiopia

In the Amhara region of Ethiopia, half of all girls are married before the age of 15. Many are betrothed even earlier and sent to live with their future husband's family by the age of nine or ten. Early marriage is one of many harmful practices that are particularly prevalent in rural areas, along with female genital mutilation, abduction, and unattended births. The effects of early marriage are devastating. Girls who marry at such a young age suffer major disadvantages physically, emotionally, economically, and socially. Involvement with community and church leaders, empowering girls through school clubs and legal enforcement such as annulment of early marriages can lead to change.

Source: Reference¹⁵



Few countries in Africa have been able to reduce the prevalence of FGM, despite bans on the procedure in many countries.⁸ Many societies and governments find it difficult to enforce these bans as FGM is closely tied to a woman's social identity and marriage prospects. However, some countries are making progress. In Senegal, for example, more than 1,600 villages have ended FGM, representing more than 30 percent of the practicing population. In the meantime, opportunities exist for reducing suffering from FGM and managing FGM complications:

- *Birth and emergency preparedness through antenatal care (ANC).* Provide counselling to women with FGM on increased risk of prolonged labour and the need to deliver in a health facility, particularly for first births (Section III chapter 2). Women who are at greater risk of complications due to FGM can be brought closer to skilled and emergency care, for example, by relocating to maternity waiting homes near the time of birth. ANC and care during childbirth provide opportunities to initiate discussions with the mother regarding avoiding FGM for her own baby, if it is a girl.
- *Training for skilled care at birth and ensuring supplies and equipment are available.* Health facilities and health care providers should be proficient to provide counselling and services to women with FGM at the time of childbirth. This includes having an episiotomy kit ready and using a partograph to monitor labour. Staff should be able to repair tears, treat infections, and counsel on family planning and birth spacing. For more on these opportunities, see Section III chapter 3.

Prevent and treat sexually transmitted infections, especially among adolescents

Throughout Africa, the sexual and reproductive health of girls is often compromised at a young age. The average age of sexual debut among girls in Africa is increasing, but still, about 20 percent of girls under 15 and 77 percent of girls under 20 become sexually active – the highest percentages of any region in the developing

world.⁸ Not only is the health of young girls compromised by unplanned pregnancy, it is also disproportionately affected by STIs, including HIV. In addition, gender-based sexual violence results all too frequently in STIs, HIV, and pregnancy. STIs can lead to numerous health problems for women and their unborn children, including pelvic inflammatory disease, infertility, stillbirth, and LBW. STIs also increase the risk of acquiring and transmitting HIV (Section III chapter 7).

Adolescent girls and young, first-time mothers have different health needs and face unique risks. However, this is not an issue that only concerns young women. Adolescent sexual health programmes must reach out to girls *and* to boys to empower them both to make healthy choices. Girls should be equipped with information about how to have a wanted pregnancy at the right time, avoid STIs and HIV/AIDS and have a healthy pregnancy and safe birth, and how young mothers can care for their babies and themselves. Boys must also be involved, and understand the risks and responsibilities of their choices.

Healthy timing and spacing of pregnancy

Sub-Saharan Africa is the region with the highest total fertility rate (an average of 5.5 children born to a woman during her lifetime), the highest population growth rate (2.4 percent) and the lowest contraceptive use rate (23 percent).¹² Three unhealthy behaviours are reflected in these data: too early, too many, and too closely spaced pregnancies.

Too early – children having children

The world's highest adolescent pregnancy rates are found in sub-Saharan Africa, where one in every four girls has given birth by age 18.¹⁷ Babies born to young mothers are more likely to die. High adolescent pregnancy rates also reflect early age at marriage. In Chad, Mali, Guinea, and Niger, the median age at marriage is less than 17 years. In the Amhara region of Ethiopia, 50 percent of girls are married before the age of 15 (Box III.1.1).¹⁵



Both married and unmarried adolescents experience unplanned and unwanted pregnancies, even in countries where early marriage and childbearing are the norm (Figure III.1.3). Married mothers aged 15-19 years who report that their pregnancies were unplanned vary from under 15 percent in Niger and Nigeria to a high of over 50 percent in Ghana.¹⁸ The majority of unmarried adolescents reported their pregnancy as unplanned (60 to 90 percent).

Too many and too close

Only about five percent of African women who have just given birth want another birth within two years.¹⁹ Despite their desire to space pregnancies in a healthy way, many women are unable to obtain contraceptive services soon after birth which contributes to high fertility rates and ill health for themselves and their children.¹⁷

Experts at a 2005 WHO technical consultation on birth spacing recommended a birth-to-pregnancy interval after a live birth of at least 24 months before another pregnancy is attempted.²⁰ This recommendation draws from a meta-analysis demonstrating that when compared

to birth-to-pregnancy intervals of 18 to 23 months, pregnancies occurring less than 18 months after the last birth, and especially within six months after the last birth, or longer than 59 months, are associated with a significantly increased risk of babies born with LBW. These LBW babies include those born preterm and those born small for gestational age.²¹ LBW, and particularly LBW due to preterm birth is associated with increased newborn death (Box III.1.2).

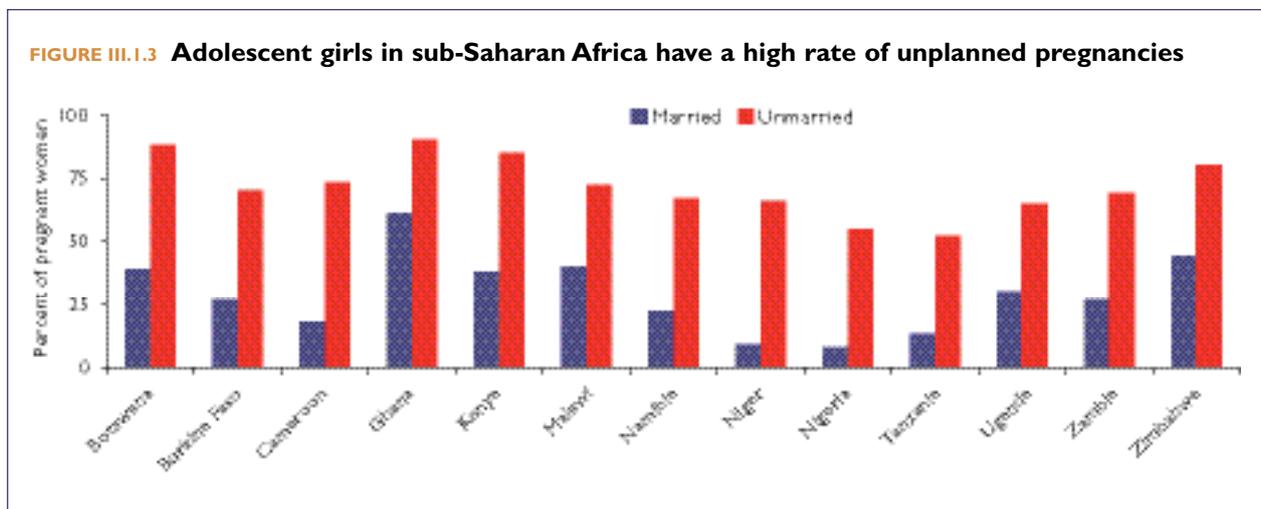
After a miscarriage or induced abortion, pregnancy intervals shorter than six months are associated with significant increased risk of low and very low birthweight, preterm and very preterm birth, small infant size for gestational age, maternal anaemia, and premature rupture of membranes.²²

Opportunities for promoting healthy timing and spacing of pregnancy

Many girls have unwanted pregnancies and many women have pregnancies closer together than their stated preference, and yet contraceptive use is low. It is clear that Africa has a high level of unmet need for family planning services. Current consensus is that the following healthy behaviours would save the lives of women, babies and children and improve health:

Delay first pregnancy until after 18 years of age.^{24;25}

High adolescent pregnancy rates are the norm in many African countries, but in some countries, adolescent pregnancy rates are low. For example, only 10 percent of teens in Comoros and Rwanda have ever been pregnant. Eritrea and Uganda have achieved significant declines in adolescent pregnancy, 9 and 11 percent respectively, since 1995. Programmes are reaching out to help newly married girls delay first births and to provide an entry point into the formal health system for girls who do become pregnant (Box III.1.1).



Source: Adapted from reference¹⁸

BOX III.1.2 WHO Report of a technical consultation on birth spacing: Pregnancies at least 24 months after the last birth reduce the risk of maternal, newborn, and infant deaths

What was known already? For at least a century the harmful effects of pregnancies too close together have been recognised. In the 1980s advances were made when researchers began to take account of other associated characteristics such as maternal age, poverty and education. Yet, specific guidance had been lacking and programmes continued to provide different messages regarding ideal spacing after birth. Publications by the World Health Organization (WHO) and other international organisations recommended waiting at least two to three years between pregnancies to reduce infant and child mortality and to benefit maternal health; however, recent studies supported by the United States Agency for International Development (USAID) have suggested that birth intervals of three to five years might be more advantageous. Programmes asked for more precise information and guidance on recommended spacing.

What new information do we have? Several studies and analyses have recently been published, including a meta-analysis of 131 studies (seven from Africa)²¹ and an analysis of 17 Demographic and Health Surveys (DHS), of which seven were from sub-Saharan African countries.²³ One of the problems in comparing studies is the difference in intervals assessed in different studies, for example, birth-to-birth, pregnancy-to-birth, or pregnancy-to-pregnancy. For more on the definitions of these intervals, see the end of this chapter. In addition, some of the evaluated outcomes differ.

To summarise the findings of the data considered at the WHO technical meeting, birth-to-pregnancy intervals of six months or shorter are associated with higher risk of maternal mortality. Birth-to-pregnancy intervals of around 18 months or shorter are associated with significantly higher risk of neonatal and infant mortality, low birthweight, small size for gestational age, and preterm birth. The studies provided evidence that there may also be some risk associated with intervals 18-27 months but it is unclear which intervals within this range. Gaps in the research have been identified and further work is in progress.

What does this mean for programmes? The consensus from the meeting was that couples should be advised to wait at least 24 months after a live birth and six months after an induced abortion or miscarriage before attempting the next pregnancy. Health risks and benefits in addition to other personal circumstances and preferences should be considered in discussion on the optimal spacing for each individual and couple. The consensus was reached to support programmes in providing clear postnatal information to women and families on spacing, assuring consistency with the message to breastfeed for at least 24 months.

What questions remain? Additional data analysis is underway to refine this recommendation further and clearly define the optimum spacing interval. In addition, more research and documentation of programmes aimed at supporting women and couples to achieve their desired spacing intervals was also identified as a priority.

Source: Adapted from reference²⁰

After a live birth, wait at least 24 months before attempting the next pregnancy to reduce risk to mothers and babies. Recommendations for birth-to-pregnancy intervals have been harmonised at the global level with the WHO *Report of a Technical Consultation on Birth Spacing*.²⁰ Reaching women with a range of effective family planning methods, particularly during the postnatal period, can assist women in spacing births at healthy intervals. Innovative and multi-sectoral approaches for educating women and girls about the

benefits of birth spacing are urgently needed. The Tahseen project in Upper Egypt is one example where various actors were mobilised to help women and families make healthy decisions about pregnancy (Box III.1.3).

After a miscarriage or induced abortion, wait at least six months before becoming pregnant to reduce risks for mother and baby.²⁰ It is common obstetric practice to advise a waiting time of three months after a miscarriage, yet one Latin American study suggests that pregnancy intervals shorter than six months after

BOX III.1.3 The Tahseen Project in Upper Egypt: Birth spacing education for families and influential social networks helps increase use of family planning and MNCH services

The Tahseen USAID-funded project in Upper Egypt, demonstrates that the use of family planning can be increased even in a short period. Project activities included counselling women and their families on the benefits of healthy birth spacing – how improved timing and spacing of pregnancies is an effective intervention for women and children. The project, which covered a population of 1.5 million, used a multi-sectoral approach that mobilised religious and political leaders to spread messages about the importance of healthy birth spacing. Evaluation through a household survey showed substantial improvements including the following:

- Knowledge of healthy timing and spacing of pregnancy increased significantly in all five communities – for married women of reproductive age from 19 percent to 95 percent, and similar percentages for young women who have had few pregnancies
- Use of family planning clinic services increased – from 6,200 clients per quarter to 14,000 clients per quarter
- Use of contraceptives increased for all married women of reproductive age from 50 to 80 percent and from 38 to 73 percent among young women who have had few pregnancies

Source: USAID, Extending Service Delivery (ESD) Pathfinder Tahseen Project Survey, 2005.

miscarriage or abortion are high risk.²² This recommendation is based on one study, using hospital records for 258,108 women delivering single babies whose previous pregnancy ended in miscarriage or induced abortion. Because this study was the only one available on this scale, it was considered important to use these data, with some qualifications. Abortion events in the study included a mixture of safe and unsafe abortion and spontaneous pregnancy loss (miscarriage), and the relative proportions of each of these were unknown. Thus, the results may not be generalisable to other regions with different legal contexts. Additional research in other settings is recommended to clarify these findings.²⁰

Birth spacing for HIV-positive women.

Births too close together and HIV/AIDS both increase risks of adverse pregnancy outcomes. For HIV-positive women who wish to become pregnant, counselling on timing of pregnancy to reduce the risk of adverse pregnancy outcomes is important. For women who do wish to avoid or delay childbearing, family planning is a highly cost effective strategy to prevent HIV transmission.²⁶ One study found that the one-year incident pregnancy rate among HIV-positive women participating in a voluntary testing and counselling program was 22 percent before family planning was offered and plummeted to 9 percent after services were introduced.²⁷ In a study of programmes in 14 countries, Stover and colleagues found that preventing unplanned pregnancies can sharply decrease the number of HIV infections in infants at relatively low cost. The number of infections averted each year rose from 37,000 to 71,000

when family planning services were added. The cost of adding these services was only about US\$660 per HIV infection averted, far lower than the cost of caring for an HIV-positive infant.²⁸ (See Section III chapter 7 for more on programmes on the prevention of mother-to-child transmission of HIV/AIDS)

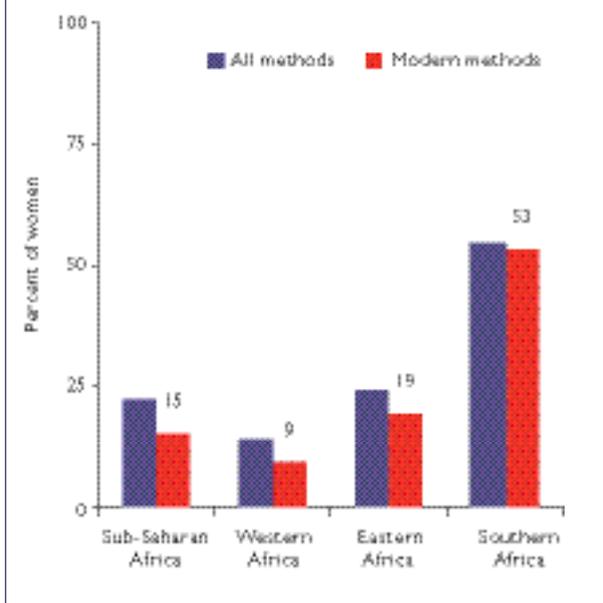
Challenges to strengthening care before and between pregnancies

Meeting need for family planning and contraceptives.

Unmet need for family planning – women of childbearing age who would prefer to avoid or postpone childbearing but are not using any method of contraception – is particularly high in Africa. An estimated 63 percent of women are estimated to have an unmet need for family planning.⁸ Sixteen percent of all women in Africa have an unmet need for spacing – this also represents 65 percent of all unmet need for family planning. However only 35 percent of single, sexually active women aged 15-19 are using modern contraceptives, while only 45 percent of those aged 20-24 do so.¹⁷ The prevalence of contraceptive use in Africa ranges from a low of nine percent in Western African countries to 53 percent in Southern Africa (Figure III.1.4).

Given the high number of women who wish to delay or space pregnancies, there is a need to increase the availability of family planning services by providing access to a range of reliable contraceptive methods, particularly for women. Contributing factors to low contraceptive

FIGURE III.1.4 Less than a third of married or in-union African women use modern contraception



Source: Adapted from reference¹⁶

prevalence use include lack of access to quality family planning services; limited or mistaken information about contraceptives and side effects; and personal, family, and community opposition to use of contraception.

It is critical to reach girls and women early with appropriate and consistent messages and at crucial moments in the continuum of care. In the African context with a high burden of HIV, dual protection against both pregnancies and STIs is of high importance. This involves using two methods – one to prevent pregnancy (such as oral contraceptives, injectables, or implants) and one to prevent STIs (a male or female condom).¹

There are a range of opportunities to link care before and between pregnancies to MNCH programmes at the home and community, outreach, and facility levels (Box III.1.4).

Within the opportunities to improve pre-pregnancy care, there are specific challenges to overcome in terms of both supply and demand.

Supply of information and services. In the history of international health, much of the literature for quality improvement and strengthening supply logistics came from both family planning and immunisation programmes. There is a wealth of information, yet many countries, especially in poor and rural areas, still struggle with regular supply of quality services. Training curricula are often silent on birth spacing, FGM, pre-pregnancy health, and the role these play in health outcomes for women and babies. They are equally silent on how to

counsel and provide reproductive health and family planning services to adolescents, and how to use behaviour change strategies to work with women, families and communities to address traditional practices that are harmful to women and their babies. Some specific challenges include:

- *Legal framework and national policies on equal rights for girls and women.* These include establishing a legal minimum age for marriage, guaranteeing the rights of women independently to buy, sell and own property and other resources and ensuring that rape and sexual violence can be prosecuted.
- *Provision of accessible services, especially for adolescents.* Youth-friendly reproductive health and family planning services are often not available or accessible to adolescents, including those who are not married. Youth often feel embarrassed to visit a clinic that their mother and younger siblings attend and are concerned about providers maintaining confidentiality. In addition, adolescents seeking reproductive health or family planning advice and services often face stigma from health providers or are subjected to unnecessary clinical procedures that discourage use of services.⁴ User fees may also be an important obstacle.²⁹
- *Reliable supply of a range of contraceptives.* Limited contraceptive options coupled with frequent stock shortages often leads to low contraceptive use and higher discontinuation rates. There is a saying in family planning programmes – “No product, no programme”. Factors contributing to limited supplies include poorly managed logistics systems and low funding. The choice of contraceptive methods for women may be restricted; for example, often only birth spacing methods are available for women who may otherwise consider sterilisation. Health care providers require essential supplies to meet the family planning needs of all women, including a broad range of contraceptive methods in order to promote dual protection. These include:
 - Temporary methods such as oral contraceptives, barrier (condom) and other non-hormonal methods



BOX III.1.4 Good news for women is good news for babies: Promoting healthy, wanted pregnancies through existing MNCH programmes

Pre-pregnancy care: Empower girls, families and communities to delay marriage until the girl is fully-grown and delay first pregnancy until 18 years of age. Provide adolescent-friendly family planning and sexually transmitted infections (STI) services.

Antenatal care: Discuss fertility intentions for spacing or limiting; educate about healthy birth-to-pregnancy intervals and counsel to wait at least two years before trying to become pregnant again; counsel about breastfeeding, the lactational amenorrhea method and the timing of return to fertility; counsel and refer for voluntary counselling and testing for HIV and prevention of mother-to-child transmission as needed. Identify women with female genital mutilation (FGM), especially type III and provide extra counselling regarding birth planning, emergency preparedness, and the importance of a facility birth (Section III chapter 2).

Postnatal care: Initiate and ensure that breastfeeding is well established; provide support for early and exclusive breastfeeding; counsel about STI and HIV prevention. Counsel on the lactational amenorrhea method and consideration of dual protection; STI and HIV prevention; and waiting at least two years before trying to become pregnant again (Section III chapter 4).

Post-abortion care: Counsel each woman who has experienced an induced abortion or miscarriage about the return to fertility and risk of future pregnancy. Recommend that women wait six months before trying to become pregnant again. If contraception is desired, ensure access to a range of reliable contraceptive methods.

Child care and immunisation visits: Screen mothers who bring their children for care and assess the mother's family planning needs, educate about healthy spacing of next pregnancy, counsel to wait two years before trying to get pregnant, and provide or refer for family planning counselling and services. Also promote the education, health, and good nutrition of all children, including the girls. This is also an entry point for counselling regarding prevention of FGM (Section III chapter 5 and 9).

- Options for breastfeeding women, including the lactational amenorrhea method
- Emergency contraception
- Permanent methods where desired such as male or female sterilisation
- *Integration with other MNCH services.* Opportunities for linking healthy timing and spacing of pregnancy counselling and education with immunisation, ANC, safe motherhood, PNC, male reproductive and other health programs are often missed. PNC is a particularly important opportunity to promote healthy birth spacing (Section III chapter 4).

Demand for family planning services. Family planning counselling often focuses solely on the choice, use, and side effects of contraceptive methods, with less attention paid to informing families about healthy birth spacing intervals or options for limiting family size, and the important role they play in the health of the mother, newborn, and older siblings.⁴ Demand for family planning services is strongly influenced by the place of women in society. Longstanding norms and beliefs about the role of women should be addressed to improve the health of women and their babies overall.

Practical steps to strengthen care of girls and women before pregnancy

A strategy to overcome the challenges mentioned above requires a mix of approaches addressing social norms regarding women, FGM, and family planning and also improving supply and quality of services and better integrating these with MNCH services. The Continental Policy Framework for Sexual and Reproductive Health and Rights for Africa (2007-2010) has been signed by the Ministers of Health in the African Union and provides policy and political commitment and an opportunity to accelerate progress.

- *Examine laws, policies, social norms and practices to promote the rights and health of girls and women.* It will require more than service provision alone to adequately address education, nutrition, and health for girls throughout the lifecycle. The first step is to ensure that national laws and policies protect the health and equal rights of girls and women. Work within communities, including religious and other influential leaders, families, community groups, as well as with non-governmental organisations to examine current beliefs



and practices. Educate community members on the beneficial effects of changing harmful practices and adopting new behaviours. It is important to address existing social norms, especially those concerning practices that affect young women and barriers to adopting healthy behaviours.

It is important that men have the opportunity to participate in discussions to examine their various roles as partners and fathers. Men are able to influence and maintain existing cultural practices and can provide leadership in adopting new behaviours such as early marriage, STI and HIV transmission, the timing and spacing of the births of their children, and supporting the health, education, and development of their partners and daughters.

- *Integrate key messages into school curricula and other counselling and behaviour change communication programmes and use multi-sectoral behaviour change communication strategies.* Addressing issues in a variety of settings not only begins to educate children, but opens dialogue within the larger family and community context, especially with influential leaders who will be instrumental in fostering positive health behaviours. This is an opportunity to introduce topics such as the benefits of delaying the age of sexual debut and marriage, dual protection, delaying the first pregnancy until the age of 18, spacing pregnancies at least two years apart, and supporting empowerment, such as opportunities for girls to earn an income.

Communications strategies that incorporate various media and link with non-health activities (religious, educational, microfinance) as well as participatory activities, social networks, women's groups, and individual counselling can positively influence the enabling environment. They can promote and build broad support for the adoption of healthy behaviours. Strategies that target young married women, their husbands, and engaged couples have been successful in increasing access to and use of health services.³⁰

- Improve service delivery and find more effective ways of reaching women with an unmet need for family planning services. Community-based distribution programmes, outreach services, and mobile clinics can be used to expand access to family planning services. Equally important is ensuring that providers have appropriate skills and knowledge for the provision of client-centred family planning services. This includes adequate interpersonal communication skills to help all clients make informed decisions regarding their contraceptive options, including clear guidelines on which methods can be safely used by women in the postnatal period. Providers also need access to information education and communication materials, essential supplies, equipment, and support necessary to meet the family planning needs of all women, including a broad range of contraceptive methods.

In many African countries, community-based distributors and agents have been an effective means of reaching rural communities. They engage in discussions with individuals, families, and the community about healthy behaviours in addition to providing contraceptives and other commodities that facilitate the adoption of healthy behaviours. Their role could be expanded to link with other MNCH services and in turn be able to provide family planning services more effectively within the MNCH continuum of care.

- *Develop innovative approaches to provide family planning, STI and pregnancy services for adolescents.* Adolescents need programmes to enable them to practice self-care, and access family planning, STI and maternal and child health services. In addition, pregnant adolescents may need financial support for health care and diet, shelter and services if excluded from home and help to return to school or training as well as counseling over options for adoption, or termination of pregnancy, where legal.²⁵
- *Improve information for decision making.* Use existing data better to guide decision making and to meet unmet need for family planning in specific groups, and to reach populations that are under served.

Conclusion

The importance and inter-relation of education, nutrition, and good health, including reproductive health, throughout the lifecycle cannot be overstated. Adolescent pregnancy is both a cause and effect of limited education for girls. The demand from girls and women for solutions to prevent unwanted pregnancy is clear. Evidence points to specific activities that would save many lives:

- Preventing FGM to reduce complications in childbirth.
- Delaying the first pregnancy until after the age of 18 years
- Spacing the next pregnancy after a live birth by at least 24 months
- Waiting six months after an abortion or miscarriage before becoming pregnant again
- Promoting dual protection – for prevention of both pregnancy and HIV

Neither new technologies nor new cadres of health workers are the priority. What is needed now is leadership from African governments and health professionals, consistent policy and funding from global partners and the active engagement of women and men in Africa's communities to move towards a continent where families are able to delay and space pregnancies as desired. This will save the lives of women, babies, children and promote development in Africa.

Priority actions for strengthening care for girls and women before pregnancy

- Examine laws, policies, social norms and practices to promote the rights and health of girls and women
- Use multi-sectoral behaviour change communication strategies to promote the adoption of healthy behaviours, particularly among young married girls and their husbands
- Integrate key messages into school curricula and other counselling and behaviour change communication programmes and use multi-sectoral behaviour change communication strategies.
- Improve service delivery of family planning through training and supervision, education and communication materials, and essential supplies, including a range of contraceptive methods
- Increase availability and quality of family planning services at other MNCH contact points: child health consultations, curative contacts, ANC, and PNC
- Ensure providers have the appropriate skills and knowledge for the provision of client-centred services, especially youth friendly services
- Expand access through community distribution programmes, outreach services, and mobile clinics, link community-based distributors and health agents into MNCH programmes
- Develop innovative approaches to provide family planning, STI and pregnancy services for adolescents
- Improve information for decision making and use this information to audit and strengthen programmes

Terms used and more information on the data and studies

Birth-to-Pregnancy Interval: The time period between the start of the index pregnancy and the preceding live birth.

Birth-to-Birth Interval: The time period between the index live birth and the preceding live birth.

Abortion/Miscarriage-Pregnancy Interval: The time period between the day of the abortion/miscarriage and the first day of the last menstrual period for the index pregnancy.

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Antenatal Care

Ornella Lincetto, Seipati Mothebesoane-Ahoh, Patricia Gomez, Stephen Munjanja

Antenatal care (ANC) coverage is a success story in Africa, since over two-thirds of pregnant women (69 percent) have at least one ANC contact. However, to achieve the full life-saving potential that ANC promises for women and babies, four visits providing essential evidence based interventions – a package often called focused antenatal care – are required. Essential interventions in ANC include identification and management of obstetric complications such as pre-eclampsia, tetanus toxoid immunisation, intermittent preventive treatment for malaria during pregnancy (IPTp), and identification and management of infections including HIV, syphilis and other sexually transmitted infections (STIs). ANC is also an opportunity to promote the use of skilled attendance at birth and healthy behaviours such as breastfeeding, early postnatal care, and planning for optimal pregnancy spacing.

Many of these opportunities continue to be missed, even though over two-thirds of pregnant women receive at least one antenatal visit. How can we strengthen ANC to provide the priority interventions, especially given Africa’s current critical shortage of human resources for health? Are there particular barriers or challenges to increasing coverage and quality that could be overcome? How can the multiple programmes that rely on ANC – malaria, HIV/AIDS, tetanus elimination, control of STIs – be integrated and strengthen the “vehicle” of ANC, rather than adding to the current overload?



Problem

Good care during pregnancy is important for the health of the mother and the development of the unborn baby. Pregnancy is a crucial time to promote healthy behaviours and parenting skills. Good ANC links the woman and her family with the formal health system, increases the chance of using a skilled attendant at birth and contributes to good health through the life cycle. Inadequate care during this time breaks a critical link in the continuum of care, and effects both women and babies:

Effects on mothers: It has been estimated that 25 percent of maternal deaths occur during pregnancy, with variability between countries depending on the prevalence of unsafe abortion, violence, and disease in the area.¹ Between a third and a half of maternal deaths are due to causes such as hypertension (pre-eclampsia and eclampsia) and antepartum haemorrhage, which are directly related to inadequate care during pregnancy.² In a study conducted in six west African countries, a third of all pregnant women experienced illness during pregnancy, of whom three percent required hospitalisation.³ Certain pre-existing conditions become more severe during pregnancy. Malaria, HIV/AIDS, anaemia and malnutrition are associated with increased maternal and newborn complications as well as death where the prevalence of these conditions is high. New evidence suggests that women who have been subject to female genital mutilation are significantly more likely to have complications during childbirth, so these women need to be identified during ANC.⁴ Gender-based violence and exposure to workplace hazards are additional and often underestimated public health problems. Rates of depression may be at least as high, if not higher, in late pregnancy as during the postnatal period.⁵ Some African societies believe that grieving for a stillborn child is unacceptable, making the death of a baby during the last trimester of pregnancy even harder to process and accept.

Effects on babies: In sub-Saharan Africa, an estimated 900,000 babies die as stillbirths during the last twelve weeks of pregnancy. It is estimated that babies who die before the onset of labour, or antepartum stillbirths, account for two-thirds of all stillbirths in countries where the mortality rate is greater than 22 per 1,000 births – nearly all African countries.^{6,7} Antepartum stillbirths have a number of causes, including maternal infections – notably syphilis – and pregnancy complications, but systematic global estimates for causes of antepartum stillbirths are not available.⁸ Newborns are affected by problems during pregnancy including preterm birth and restricted fetal growth, as well as other factors affecting the baby's development such as congenital infections and fetal alcohol syndrome.

The social, family, and community context and beliefs affect health during pregnancy either positively or negatively. Some cultures promote special foods and rest for pregnant women, but in others, pregnancy is not to be acknowledged. In these cases, women continue to work hard, and nutritional taboos may deprive them of essential nutrients, adding to nutritional deficiencies, particularly iron, protein, and certain vitamins. In one tribe in Nigeria, pregnant women cannot say they are pregnant, and if they feel unwell, they have to say that they have “swallowed a cockroach.”

This chapter will outline the ANC package, highlighting the shift to a four-visit model of focused antenatal care for the majority of women. We describe the current coverage and trends in Africa and explore opportunities to strengthen antenatal care at the health facility, through outreach and in the community. Finally, we suggest practical actions to help address key challenges in providing quality care to mothers and babies during the critical time of pregnancy and integrating the multiple interventions and programmes targeting this time period.

The package

Preventing problems for mothers and babies depends on an operational continuum of care with accessible, high quality care before and during pregnancy, childbirth, and the postnatal period. It also depends on the support available to help pregnant women reach services, particularly when complications occur.⁹ An important

element in this continuum of care is effective ANC. The goal of the ANC package is to prepare for birth and parenthood as well as prevent, detect, alleviate, or manage the three types of health problems during pregnancy that affect mothers and babies:

- complications of pregnancy itself
- pre-existing conditions that worsen during pregnancy
- effects of unhealthy lifestyles



and not all developed complications; at the same time, some low risk women did develop complications, particularly during childbirth. Focused or goal oriented ANC services provide specific evidence-based interventions for all women, carried out at certain critical times in the pregnancy. The essential elements of this package are outlined in Box III.2.1.^{13:14}

ANC also provides women and their families with appropriate information and advice for a healthy pregnancy, safe childbirth, and postnatal recovery, including care of the newborn, promotion of early, exclusive breastfeeding, and assistance with deciding on future pregnancies in order to improve pregnancy outcomes. An effective ANC package depends on competent health care providers in a functioning health system with referral services and adequate supplies and laboratory support.

ANC improves the survival and health of babies directly by reducing stillbirths and neonatal deaths and indirectly by providing an entry point for health contacts with the woman at a key point in the continuum of care. A new analysis done for this publication using previously published methodology¹⁰ suggests that if 90 percent of women received ANC, up to 14 percent, or 160,000 more newborn lives, could be saved in Africa. (See data notes on page 226 for more details) Compared with other components of maternal, newborn, and child health (MNCH) packages such as childbirth and postnatal care, the additional lives saved is fewer, partly because ANC already has relatively high coverage and saves many lives already, so the gap between current coverage and full coverage is smaller. However, the benefits of ANC are greater than mortality reduction alone, and given the relatively low cost of ANC, this package is among the most cost effective of any public health package.^{10:11}

ANC indirectly saves the lives of mothers and babies by promoting and establishing good health before childbirth and the early postnatal period – the time periods of highest risk. ANC often presents the first contact opportunity for a woman to connect with health services, thus offering an entry point for integrated care, promoting healthy home practices, influencing care-seeking behaviours, and linking women with pregnancy complications to a referral system. Women are more likely to give birth with a skilled attendant if they have had at least one ANC visit.¹²

Which ANC? While research has demonstrated the benefits of ANC through improved health of mothers and babies, the exact components of ANC and what to do at what time have been matters of debate. In recent years, there has been a shift in thinking from the high risk approach to focused ANC. The high risk approach intended to classify pregnant women as “low risk” or “high risk” based on predetermined criteria and involved many ANC visits. This approach was hard to implement effectively since many women had at least one risk factor,

BOX III.2.1 The essential elements of a focused approach to antenatal care

- Identification and surveillance of the pregnant woman and her expected child
- Recognition and management of pregnancy-related complications, particularly pre-eclampsia
- Recognition and treatment of underlying or concurrent illness
- Screening for conditions and diseases such as anaemia, STIs (particularly syphilis), HIV infection, mental health problems, and/or symptoms of stress or domestic violence
- Preventive measures, including tetanus toxoid immunisation, de-worming, iron and folic acid, intermittent preventive treatment of malaria in pregnancy (IPTp), insecticide treated bednets (ITN)
- Advice and support to the woman and her family for developing healthy home behaviours and a birth and emergency preparedness plan to:
 - o Increase awareness of maternal and newborn health needs and self care during pregnancy and the postnatal period, including the need for social support during and after pregnancy
 - o Promote healthy behaviours in the home, including healthy lifestyles and diet, safety and injury prevention, and support and care in the home, such as advice and adherence support for preventive interventions like iron supplementation, condom use, and use of ITN
 - o Support care seeking behaviour, including recognition of danger signs for the woman and the newborn as well as transport and funding plans in case of emergencies
 - o Help the pregnant woman and her partner prepare emotionally and physically for birth and care of their baby, particularly preparing for early and exclusive breastfeeding and essential newborn care and considering the role of a supportive companion at birth
 - o Promote postnatal family planning/birth spacing

Source: Adapted from references^{15:16}

How many visits? A recent multi-country randomised control trial led by the WHO¹⁷ and a systematic review¹³ showed that essential interventions can be provided over four visits at specified intervals, at least for healthy women with no underlying medical problems.¹⁸ The result of this review has prompted WHO to define a new model of ANC based on four goal-oriented visits.^{13;14;17} This model has been further defined by what is done in each visit, and is often called *focused antenatal care*. The optimum number of ANC visits for limited resource settings depends not only on effectiveness, but also on costs and other barriers to ANC access and supply. A recent study from southern Tanzania found that health workers spent an average of 46 minutes providing focused ANC to a first time client, and 36 minutes for a revisiting client. This was thirty minutes more on average than the current practice and poses challenges for service delivery.¹⁹

When? For many of the essential interventions in ANC, it is crucial to have early identification of underlying conditions – for example, prevention of congenital syphilis, control of anaemia, and prevention of malaria complications. Hence the first ANC visit should be as early as possible in pregnancy, preferably in the first trimester. The last visit should be at around 37 weeks or near the expected date of birth to ensure that appropriate advice and care have been provided to prevent and manage problems such as multiple births (e.g. twins), postmaturity (e.g. birth after 42 weeks of pregnancy, which carries an increased risk of fetal death), and abnormal positions of the baby (e.g. breech, where the baby's head is not the presenting part at birth).

What? The first assessment in ANC is to distinguish pregnant women who require standard care, such as the four-visit model, from those requiring special attention and more visits. Depending on the setting, approximately 25-30 percent of women will have specific risk factors which require more attention. These women need more than four visits. Table III.2.1 contains an overview of the interventions at each ANC visit based on the four-visit model as applied in focused ANC. Most of the interventions recommended in the table are supported by scientific evidence, are low cost, and can be implemented in first level facilities in all countries in Africa. The research model used urine dipsticks to check for bacteriuria at every visit, but this intervention is currently not included in WHO *Pregnancy, Childbirth, Postpartum, and Newborn Care: a guide to essential practice*, which presents recommendations applicable at the first level of care.²⁰ In referral hospitals or settings with additional capacity, however, this intervention may be considered because of the effect on reducing preterm birth and neonatal sepsis.¹⁰

Records held by women: A number of studies have shown the benefits of home-based ANC records, including the plan for birth and emergency preparedness.^{21;22} Women who hold their own records are

more likely to keep follow up appointments, ask questions about their health, and feel in control of their pregnancy. In designing their own ANC records, countries should ensure that all essential information is readily available to the caregiver. A prototype form is included in the new WHO model of ANC, together with the relevant information for implementing quality ANC services.¹⁷ In most sub-Saharan African countries, the ANC record is part of a complete pregnancy record that covers childbirth and postnatal care as well as family planning.

The role of the community: Family and community involvement is crucial for healthy home behaviours during pregnancy and has been shown to be a major determinant of use of ANC services. Establishing links between the community and the facility can increase utilisation of services, including ANC, and impact maternal and neonatal mortality as well as stillbirths.²³ The male partner or the mother or mother in law should be welcome to attend an ANC session with the woman. Their support can help the woman follow the ANC recommendations, encourage shared decision making, and improve the health for both mother and newborn. Unsupported pregnant women, especially adolescents, need services that are specifically targeted to their needs. Service providers should do all they can to seek out women unable or unwilling to attend a clinic and take the services to them. Community health workers (CHW) can play a key role by identifying all pregnant women in the community and provide counselling on healthy lifestyles, birth planning, complication readiness, and the need for ANC and skilled care at birth. This helps create links between the community and the healthcare system, and reinforcing these health messages can take some of the burden off service providers in ANC clinics.





TABLE III.2.1 Focused antenatal care (ANC): The four-visit ANC model outlined in WHO clinical guidelines

Goals	First visit 8-12 weeks	Second visit 24-26 weeks	Third visit 32 weeks	Fourth visit 36-38 weeks
	Confirm pregnancy and EDD, classify women for basic ANC (four visits) or more specialized care. Screen, treat and give preventive measures. Develop a birth and emergency plan. Advise and counsel.	Assess maternal and fetal well-being. Exclude PIH and anaemia. Give preventive measures. Review and modify birth and emergency plan. Advise and counsel.	Assess maternal and fetal well-being. Exclude PIH, anaemia, multiple pregnancies. Give preventive measures. Review and modify birth and emergency plan. Advise and counsel.	Assess maternal and fetal well-being. Exclude PIH, anaemia, multiple pregnancy, malpresentation. Give preventive measures. Review and modify birth and emergency plan. Advise and counsel.

Activities

Rapid assessment and management for emergency signs, give appropriate treatment, and refer to hospital if needed

History (ask, check records)	Assess significant symptoms. Take psychosocial, medical and obstetric history. Confirm pregnancy and calculate EDD. Classify all women (in some cases after test results)	Assess significant symptoms. Check record for previous complications and treatments during the pregnancy. Re-classification if needed	Assess significant symptoms. Check record for previous complications and treatments during the pregnancy. Re-classification if needed	Assess significant symptoms. Check record for previous complications and treatments during the pregnancy. Re-classification if needed
Examination (look, listen, feel)	Complete general, and obstetrical examination, BP	Anaemia, BP, fetal growth, and movements	Anaemia, BP, fetal growth, multiple pregnancy	Anaemia, BP, fetal growth and movements, multiple pregnancy, malpresentation
Screening and tests	Haemoglobin Syphilis HIV Proteinuria Blood/Rh group* Bacteriuria*	Bacteriuria*	Bacteriuria*	Bacteriuria*
Treatments	Syphilis ARV if eligible Treat bacteriuria if indicated*	Anthelmintic**, ARV if eligible Treat bacteriuria if indicated*	ARV if eligible Treat bacteriuria if indicated*	ARV if eligible If breech, ECV or referral for ECV Treat bacteriuria if indicated*
Preventive measures	Tetanus toxoid Iron and folate+	Tetanus toxoid, Iron and folate IPTp ARV	Iron and folate IPTp ARV	Iron and folate ARV
Health education, advice, and counselling	Self-care, alcohol and tobacco use, nutrition, safe sex, rest, sleeping under ITN, birth and emergency plan	Birth and emergency plan, reinforcement of previous advice	Birth and emergency plan, infant feeding, postpartum/postnatal care, pregnancy spacing, reinforcement of previous advice	Birth and emergency plan, infant feeding, postpartum/postnatal care, pregnancy spacing, reinforcement of previous advice

Record all findings on a home-based record and/or an ANC record and plan for follow-up

Acronyms: (EDD=estimated date of delivery; BP=blood pressure; PIH=pregnancy induced hypertension; ARV=antiretroviral drugs for HIV/AIDS; ECV= external cephalic version; IPTp=intermittent preventive treatment for malaria during pregnancy; ITN=insecticide treated bednet)

*Additional intervention for use in referral centres but not recommended as routine for resource-limited settings

** Should not be given in first trimester, but if first visit occurs after 16 weeks, it can be given at first visit

+Should also be prescribed as treatment if anaemia is diagnosed



Coverage and trends

In terms of global coverage, ANC is a success story. Currently, 71 percent of women worldwide receive any ANC; in industrialised countries, more than 95 percent of pregnant women have access to ANC. In sub-Saharan Africa, 69 percent of pregnant women have at least one ANC visit, more than in South Asia, at 54 percent. Coverage for ANC is usually expressed as the proportion of women who have had at least one ANC visit. However, coverage of at least four ANC visits is lower at 44 percent, as shown on the country profiles. Trends indicate slower progress in sub-Saharan Africa than in other regions, with an increase in coverage of only four percent during the past decade.^{1,24}

Inequity in ANC persists. In Africa, 80 percent of women in the richest quintile have access to three or more ANC visits, while only 48 percent of the poorest women have the same level of access. A similar disparity exists between urban and rural women. Within the continuum of care, however, there is a smaller gap between the rich and the poor in ANC than in skilled attendance during childbirth, which is available to only 25 percent of the poorest women in sub-Saharan Africa, while reaching 81 percent of the richest.²⁵

Coverage of four or more ANC visits as well as the number of visits disaggregated by trimester is important to assess, because the effectiveness of certain ANC interventions such as tetanus vaccination, IPTp for malaria, and prevention of mother-to-child transmission (PMTCT) of HIV depend on repeated visits and the trimester in which they occur. In Africa, the proportion of pregnant women who attended the recommended four or more visits increased by six percent over 10 years. Similarly, the proportion of women who received ANC in the first six months of pregnancy increased by 10 percent over 10 years, faster than the increase of overall ANC coverage.²⁶

Measuring coverage alone does not provide information on quality of care, and poor quality in ANC clinics, correlated with poor service utilisation, is common in Africa. This is often related to an insufficient number of

skilled providers (particularly in rural and remote areas), lack of standards of care and protocols, few supplies and drugs, and poor attitudes of health providers. An assessment conducted in Tanzania found twice as many poorly qualified health workers in rural facilities than in urban facilities.²⁷ In addition, there is not wide consensus on the indicators for quality of ANC care. Possible indicators include assessment of the coverage of four or more ANC visits and measurement of the coverage of essential interventions delivered through ANC, with attention to missed opportunities – a gap between those attending and those receiving key interventions for example syphilis treatment. These are considered in more detail at the end of this chapter.

Barriers to the access and uptake of ANC are financial and cultural. Women and their families incur substantial opportunity costs when ANC requires travel and waiting long hours. Knowledge about community needs and behaviours as well as formal links with the community via gatekeepers, such as village health committees, is critical, especially for strengthening the household-to-hospital continuum. Replacing user fees with alternative financing mechanisms should be seen as an effective first step towards improving access to health care for pregnant mothers (Section IV). In South Africa, ANC consultations increased by 15 percent in the years following the removal of user fees on all primary health care services.²⁸

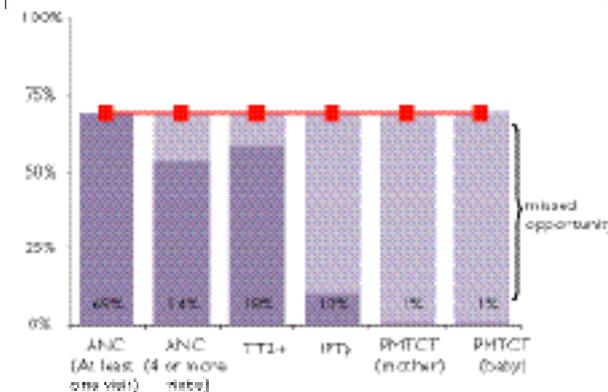
Opportunities to strengthen ANC to save mothers and newborns

The high coverage of ANC and repeated contacts between the woman and the health services offer many opportunities for providing evidence based interventions likely to affect maternal, fetal, and neonatal health and survival.

1. ANC represents an important entry point for different programmes and provision of integrated care.

Pregnancy often represents the first opportunity for a woman to establish contact with the health system. As Figure III.2.1 illustrates, there is a large gap between a single antenatal visit and optimum ANC, which would require follow up visits and several preventive interventions. Several conditions that are prevalent in Africa, such as malaria, STIs, maternal and neonatal tetanus, HIV, tuberculosis (TB), and some nutritional deficiencies, can be addressed during ANC care. If not effectively managed, most of these conditions interact during pregnancy and may worsen pregnancy outcomes, especially HIV and malaria (Section III.7, 8). Thus, ensuring the integration of ANC with other programmes can be particularly beneficial, both for the woman and her baby, who can receive better care, and for the health system, as missed opportunities and programme costs can be reduced.

FIGURE III.2.1 Missed opportunities to save lives and promote health through antenatal care in sub-Saharan Africa



Acronyms: ANC = antenatal care; TT2+ = two or more doses of tetanus toxoid vaccine given to pregnant women; IPTp = intermittent preventive treatment for malaria in pregnancy; PMTCT = prevention of mother-to-child transmission of HIV/AIDS
 Source: This figure is part of the profile for sub-Saharan Africa (See dates notes on page 226). Country-specific data is available on the 46 country profiles.

2. ANC offers an opportunity to develop a birth and emergency preparedness plan.

WHO recommends that all pregnant women have a written plan for dealing with birth and any unexpected adverse events, such as complications or emergencies that may occur during pregnancy, childbirth, or the immediate postnatal period. Women should discuss and review this plan with a skilled attendant at every ANC assessment and one month before the expected date of birth.^{16:17;20} A birth and emergency preparedness plan includes identification of the following elements: the desired place of birth; the preferred birth attendant; the location of the closest appropriate care facility; funds for birth-related and emergency expenses; a birth companion; support in looking after the home and children while the woman is away; transport to a health facility for the birth; transport in the case of an obstetric emergency; and identification of compatible blood donors in case of emergency. Although little evidence exists to show the direct correlation between birth preparedness and reducing morbidity or mortality for mothers and babies, small-scale studies show that there is considerable benefit to be gained from this intervention. For instance, the adoption of new practices associated with planning (such as setting aside money for the birth, transport arrangements, and the use of a birth plan) at family and community levels is encouraging. The presence of a person of the woman's choice to provide social support during childbirth has also been shown to have a positive effect.^{16:29}

3. ANC visits provide opportunities to promote lasting health, offering benefits that continue beyond the pregnancy period.

This includes birth preparedness, but also extends to cover health information and counselling for pregnant women, their families, and communities. Relevant information, education, and advice regarding appropriate nutrition and rest, promotion of early and exclusive breastfeeding and feeding options for HIV-positive women, smoking cessation, avoidance of alcohol and drugs, and parenting skills should be made available to the woman and family. Guidance on family planning and pregnancy spacing, seeking necessary care, and caring for the newborn baby are also important components of ANC.

These interventions integrate prevention and detection of some direct and indirect causes of maternal and newborn death that begin during pregnancy. Other key areas for integration are discussed in Box III.2.2. The effectiveness of ANC in reducing mortality depends on successful integration of services as well as addressing challenges such as the availability of a functioning referral system and emergency obstetric care services.



BOX III.2.2 Antenatal care is a vehicle for multiple interventions and programmes

Prevention of maternal and neonatal tetanus (Section III chapter 9) Tetanus kills an estimated 70,000 newborns in Africa every year (about six percent of all neonatal deaths) and is the cause of an unknown number of maternal deaths each year. In Africa, neonatal tetanus deaths have been halved during the 1990s, partly due to increased tetanus toxoid immunisation. Seven countries in sub-Saharan Africa have eliminated neonatal tetanus. ANC services provide an opportunity to vaccinate pregnant women with the recommended two doses of tetanus toxoid vaccination. Where ANC coverage is low, or misses certain populations mass immunisation of women of childbearing age is an alternative option.

Prevention and case management of maternal malaria (Section III chapter 8) In Africa, at least 25 million pregnancies are threatened by malaria each year, resulting in an estimated 2-15 percent of maternal anaemia. In areas of high and moderate (stable) malaria transmission, adult women acquire immunity, and most malaria infections in pregnant women are asymptomatic. Nevertheless, these asymptomatic infections of the placenta result in anaemia for the mother and contribute to low birthweight (LBW) and preterm birth, which lead to higher infant mortality and impaired development of the child. Maternal malaria infection accounts for almost 30 percent of all the causes of LBW that can be prevented during pregnancy.

In most settings, coverage of intermittent preventive treatment in pregnancy for malaria (IPTp) at 10 percent and insecticide treated bednets (ITN) at 5-23 percent are both significantly lower than coverage of at least one antenatal visit (see profile for sub-Saharan Africa). Hence ANC offers a “vehicle” to increase coverage of these key interventions. ITN and IPTp are more effective and cheaper than case management of malaria in pregnancy. However, women should be made aware of the danger signs of malaria, and ANC providers need the knowledge and skills to treat women with uncomplicated malaria and refer those with complicated malaria.

Prevention of maternal anaemia and malnutrition (Section III chapter 6) Anaemia affects nearly half of all pregnant women in the world and is a risk factor for maternal morbidity and mortality. For the mother, anaemia during pregnancy increases the risk of dying from haemorrhage, a leading cause of maternal death. Anaemia in pregnancy is also associated with an increased risk of stillbirth, LBW, prematurity, and neonatal death. In addition to health promotion activities, the strategies for control of anaemia in pregnancy include iron and folic acid supplementation, de-worming for intestinal infestations, malaria prevention, improved obstetric care, and management of severe anaemia. Antenatal services can integrate advice on nutrition including supplementation in settings with micronutrient deficiencies, and can encourage breastfeeding practices.

Prevention of Sexually Transmitted Infections (STIs) and Mother-to-Child Transmission of HIV (Section III chapter 7) Reproductive tract infections such as syphilis, gonorrhoea, and chlamydia can be identified and treated through ANC. Although estimates vary, at least 50 percent of women with acute syphilis suffer adverse pregnancy outcomes. The more recent the maternal infection, the more likely the infant will be affected. Most sub-Saharan African countries have high rates of syphilis infection. WHO recommends that all pregnant women should be screened for syphilis at the first ANC visit in the first trimester and again in childbirth. Women testing positive for syphilis should be treated and informed of the importance of being tested for HIV infection. Their partners should also be treated, and plans should be made to treat their babies after birth.

Syphilis control in pregnant women through universal antenatal screening and treatment of positive cases has been established as a feasible and cost effective intervention – syphilis complications are severe, yet therapy is cheap and effective. Nevertheless, many women attending ANC are not screened or treated for syphilis, resulting in avoidable stillbirths and neonatal deaths. One important constraint is the lack of

supplies for testing. Simple and effective screening tests for syphilis are now available, which can be used on site at even the lowest levels of service delivery.³⁰

ANC is the key entry point for prevention of mother-to-child transmission of HIV (PMTCT) services, though the missed opportunity between the two services is quite large, as shown on the country profiles in this publication and in Figure III.2.1. To increase the number of women who are tested, many countries have adopted the “opt-out system,” whereby all pregnant women are offered counselling and testing during ANC. Despite current low levels of coverage, strong political commitments, increased resources allocated to PMTCT, and increased focus on integrated care from the same provider all represent good opportunities for strengthening ANC, particularly birth preparedness, use of skilled attendants at birth, and information and counselling on infant feeding options.

Additional ANC interventions Other effective interventions that can be added to ANC require a higher level of health system complexity but have been shown to improve maternal and/or neonatal health and survival. These include calcium supplementation in settings with low calcium intake, treatment of bacteriuria, antenatal steroids for preterm labour, and antibiotics for prolonged rupture of membranes. These are becoming available in teaching hospitals and private ANC clinics.

Challenges

To respond to the needs of pregnant women, ANC must address multiple conditions directly or indirectly related to pregnancy, including malaria, nutrition deficiencies, STIs, HIV, and TB. ANC should also provide required information and advice on pregnancy, childbirth, and the postnatal period, including newborn care. The most effective way to do this is through integration of programmes and availability of health care providers with a wide range of skills. But integration is easier to say than to do and adding more interventions has implications for this programme which is often already overloaded and under funded (See Section IV).

While lack of infrastructure affects ANC less than other services along the continuum of care, ANC shares with other components overarching challenges that are influenced by supply and demand: general health system weaknesses and social, economic, and cultural barriers.

Supply factors

Many countries are struggling to achieve quality ANC provision, particularly in rural and peri-urban areas. Competition for staff and money as well as poor communication with other programmes or components (malaria, HIV, emergency obstetric care) can be found at different levels of the health system, particularly where policies are ill defined. National and sub-national level health budgets may be too small and heavily dependent on donor funding. As a relatively low-profile service, ANC may not receive enough funding. Low managerial capacity is common at district level, and poorer districts may face difficulties in raising the funds for conducting essential ANC activities or in attracting and retaining

staff in the absence of incentives. Additionally, lack of up-to-date standards and protocols, poorly defined roles among programmes or staff, and weak monitoring systems contribute to low quality ANC. Poor regulatory mechanisms or insufficient capacity to enforce regulations contribute to the difficulty in assessing quality of care in public and private ANC clinics. Establishing and sustaining a functional health system that can provide universal coverage of quality ANC (at least four visits at the correct times during pregnancy) is a challenge for many countries in Africa.

Human resources are a major challenge. Deployment of staff to rural areas can be a real difficulty, particularly where there are not economic or career incentives to deploy and retain staff in less favourable conditions. Staff may not have the required skills to provide all components of ANC or may not receive the support they need. ANC can be the platform to support special groups such as adolescents, female victims of domestic violence, and single mothers, among others, as these groups have a higher risk of stillbirth, preterm birth, low birthweight (LBW), and child abandonment and neglect. However, this is difficult for a lot of already overburdened ANC providers, who often struggle just to provide the basic health promotion messages with limited resources and heavy caseloads. A recent study found that providing focused ANC was thirty minutes more on average than the current practice. The time required for each focused ANC visit has implications for staffing levels and opportunity costs for both clinics and the women attending.¹⁹ Some practical steps to anticipate and avoid this overload are detailed below.

Shortage of supplies, drugs and basic equipment can compromise the quality of care, motivation of staff, and the utilisation of services. Weak health referral systems to support case management of complications of pregnancy inevitably reduces the overall impact of ANC.

Social, economic, and cultural barriers

ANC coverage is lower among women who need it the most: those who are poor, less educated, and living in rural areas. An important barrier is the inability to pay for ANC or the treatment prescribed in ANC, where user fees are in place and safety nets for the poor do not exist. Conflict or poor communication among formal health care providers, traditional birth attendants (TBA) and other CHWs may be the cause of low utilisation of ANC services in certain communities. As pregnancy is perceived as a natural process of life, women, families

and communities may underestimate the importance of ANC. In addition, many may simply lack knowledge about danger signs in pregnancy and will not know how to seek care when a complication occurs during pregnancy. Finally, a lack of awareness exists about the extent and impact of traditional household and community beliefs and customs, such as suboptimal maternal nutrition and infant feeding practices. The attitudes and behaviours of health care providers in ANC clinics compound this problem by failing to respect the privacy, confidentiality, and traditional beliefs of the women. This may negatively influence the use of ANC as well as MNCH services at large.

Box III.2.3 gives the example of Tanzania moving forward to strengthen ANC.

BOX III.2.3 Scaling up focused antenatal care within the health system in Tanzania

Tanzania, with support from partners has developed a national package of essential reproductive and child health interventions as a part of health sector reform to strengthen maternal and newborn health. One key component is focused antenatal care (ANC) such as intermittent preventive treatment for malaria in pregnancy (IPTp), nutritional counselling and supplementation, and screening and management of syphilis. Over 90 percent of pregnant women in Tanzania attend at least one antenatal visit, yet coverage drops for the essential interventions that can be delivered with more ANC visits and continuity of care. A number of partners are working together to address the multi-sectoral task of increasing availability and demand for focused ANC services. Three strategies used to reduce maternal and newborn morbidity and mortality are policy and advocacy, capacity building, and quality and performance improvement.

Policy and advocacy: A collaborative process was undertaken to develop and disseminate necessary guidelines outlining key reproductive and child health activities, necessary inputs to undertake these activities, and expected outputs for each level of the health services delivery system. These provided the foundation to define desired performance and quality targets. Registration forms used during ANC visits have been adapted, and in-service training and pre-service education curricula have been standardised to develop the ANC skills of a core group of trainers.

Capacity building: Capacity building was undertaken including development of educational materials and building the capacity of pre-service faculty and in-service trainers to update student and provider knowledge for the skills necessary to provide ANC services.

Quality and performance Improvement: Factors affecting performance were identified within facilities and by community partners in four Tanzanian districts early in 2001. These findings guided interdisciplinary teams of key stakeholders, including district and regional health management teams, to identify service gaps. Based on the gaps identified, priorities were agreed and targeted interventions implemented focusing on a range of performance factors such as supervision; knowledge and skills; motivation; and availability of key resources, supplies and equipment. Facilities meeting quality standards will ultimately receive accreditation, thereby generating greater community demand for their services. Ongoing in-service training and replication of this initiative will ensure sustainability and long-term results.

These activities are currently supported by the ACCESS program, led by JHPIEGO

Source: Adapted from reference³¹



Practical steps for strengthening antenatal care

Given the challenges outlined above, efforts to strengthen ANC in order to achieve better maternal and newborn health are listed below.

1. Establish or strengthen national policies

A national policy and locally adapted guidelines must be in place to protect the rights of all women, regardless of their socioeconomic status or place of residence, to access ANC services. There is a need for evidence-based guidelines at the national level detailing the essential minimum components of ANC, in line with the country epidemiological profile and country priorities and based on WHO guidelines and recommendations.

2. Strengthen the quality of ANC services

This includes promoting evidence based guidelines and standards for focused ANC:

- Training should be reviewed to incorporate focused antenatal care protocols and new competences (on-site RPR tests for syphilis, IPTp and ITN, ARVs, counselling skills, setting and auditing standards). Staff should rotate between services. The attitude and motivation of health care providers is crucial.
- Time for service delivery. In some countries where many women attend ANC more than four times, the visits saved by reverting to four visits would allow for longer, high quality content at each visit. In addition, some tasks could be delegated to other cadres, for example, paperwork and weighing could be delegated to more administrative staff, saving the time of more senior staff for skilled, higher impact tasks. Such delegation may require some policy changes. In addition, women's groups and CHW can be valuable in giving this counselling in the community, along with regular input, supervision, and appropriate referral services from skilled care providers at the health care facility level.
- Supplies and logistics are an important aspect of effective ANC, including regular availability of syphilis and HIV testing kits and essential drugs and equipment.
- Quality improvement approaches and tools help identify and overcome local constraints to providing client-orientated, effective ANC and ensure that women return after their first ANC visit.

3. Improve integration with other programmes

To maximise opportunities for pregnant women, ANC services should take advantage of existing programmes, especially those with outreach activities targeting women of childbearing age. This is especially important in settings where ANC coverage is low. National strategies for malaria, HIV, syphilis, and nutrition need to be better integrated into ANC.

4. Harmonise activities by multiple partners through effective partnership

A number of regional and national strategies offer opportunities to strengthen programmes in countries. Professional associations and non-governmental organisations involved with women and children should be sensitised on the importance of ANC within the continuum of care.

5. Reduce barriers to accessing care and reach out to women without access

Utilisation of ANC services should be encouraged by reducing barriers to access, such as user fees, limited opening hours, long travel distances and waiting times, and dehumanisation of care.

Strategies should be developed for empowering communities to overcome obstacles to care and reach the missing 30 percent of women not receiving ANC. These may include using community channels to identify pregnant women, targeting those more likely to be non-users, such as adolescents and women who are poor and single, and making the services more responsive to the needs of women.

6. Use data effectively to monitor and improve ANC coverage and quality

Data do exist, particularly from Demographic and Health Surveys, and health management information systems, but it is not always effectively used by policy makers and programmers to improve quality of care (See Section I). The country profiles in this publication indicate such missed opportunities in ANC as the gap between pregnant women receiving one and four ANC visits. Citing other missed opportunities, such as the gap in access to care between the rich and poor can supply evidence to advocate for more resources and improve care.



BOX III.2.4 Indicators for antenatal care

- Proportion of pregnant women who have at least one antenatal clinic visit[#]
- Proportion of pregnant women who have at least four ANC visits
- Tetanus protection at birth^{*}
- The percentage of pregnant women who receive IPTp for malaria according to the national protocol of IPTp
- Antiretroviral course for PMTCT of HIV^{*}
- Prevalence of syphilis in pregnant women[#]
- The proportion of pregnant women with a written birth and emergency plan by 37 weeks of pregnancy

^{*}Key newborn and child indicators in Countdown to 2015 Child Survival process

[#]Core WHO reproductive health indicators

For complete list of indicators, see Section IV.

Possible indicators to improve programmatic monitoring of ANC are highlighted in Box III.2.4 and include coverage of four or more ANC visits and coverage of key ANC interventions (tetanus vaccination, IPTp, testing and treatment for syphilis, and PMTCT, iron and folate supplementation, de-worming). Process indicators will vary with the specific programme but may include the competency of the staff to treat maternal complications and perform newborn resuscitation, availability of basic equipment, laboratory test, drugs and supplies, implementation of health promotion activities, clinic open hours, record keeping; respect of privacy and confidentiality, and implementation of infection control procedures. Process indicators should also assess the quality of communication, such as the proportion of pregnant women with a written birth and emergency plan by 37 weeks of pregnancy.

Conclusion

ANC in Africa has reached more than two thirds of pregnant women, with reported increases in the coverage of the recommended four ANC visits and increases in the coverage of a first trimester ANC visit. Multiple vertical programmes rely on ANC to deliver their interventions, representing both a challenge and an opportunity. As a critical link in the continuum of care, ANC offers tremendous opportunities to reach a large number of women and communities with effective clinical and health promotion interventions. However, inequity exists, and young, rural, poor, and less educated women may not benefit from ANC services or may drop out due to access barriers and low quality services. Efforts to strengthen ANC should focus on universal coverage by addressing financial and cultural barriers to reaching vulnerable groups, quality improvement to increase women's satisfaction and reduce drop out, and integration of programmes to maximise the contact between the woman and the health services.



Priority actions for strengthening antenatal care

- Improve quality of ANC services
 - Revise in-service and pre-service training for ANC providers to include the essential components and new competencies required
 - Improve supplies and logistics
- Develop linkages with other programmes, especially traditionally vertical interventions, such as malaria and HIV
- Harmonise activities through effective partnership
- Reduce barriers to accessing care and reach out to women not accessing care
- Make better use of data to monitor and improve ANC coverage and quality

Childbirth care

Luwei Pearson, Margareta Larsson, Vincent Fauveau, Judith Standley

Each year in Africa 30 million women become pregnant, and about 250,000 of them die from pregnancy-related causes. One third of nearly one million stillbirths occur during labour, and approximately 280,000 babies die of birth asphyxia soon after birth. These figures are closely linked. Skilled care at birth and immediately thereafter would save the lives of many mothers and babies and prevent countless complications. Yet almost 60 percent of African women give birth without a skilled attendant – 18 million a year at home – and during the last 10 years, the average coverage of births with a skilled attendant on the continent has not increased significantly. Two in three women who need emergency obstetric care do not receive it.

Scaling up skilled attendance and emergency obstetric care is fundamental to reaching Millennium Development Goal (MDG) 5 for maternal health, and scaling up care during childbirth will also contribute to MDG 4 for child survival. How can progress be accelerated? How can newborn care be strengthened while skilled care is scaled up? What can be done in the short term, medium term, and long term, bearing in mind that the poorest, most isolated women, who often experience birth complications, are last to receive skilled care during childbirth?



Problem

Newborn health and survival are closely linked to care the mother receives before and during pregnancy, childbirth, and the postnatal period. Throughout the continuum of care, the period with the highest risk of death and disability for both mothers and newborns is labour, birth, and the first few hours after birth. Complications and lack of care at this crucial time has consequences for mothers and babies.

Pregnant women – Each year in Africa, an estimated quarter of a million women die of problems related to pregnancy, while nearly half die around the time of childbirth and during the first week after birth, mainly of causes directly related to childbirth.¹ Bleeding, obstructed labour, eclampsia, and infections make up the largest causes of mothers' deaths, accounting for two thirds of maternal deaths in sub-Saharan Africa.² Haemorrhage alone accounts for one third of all maternal deaths in Africa, yet many of these deaths are preventable. Obstetric fistula resulting from obstructed labour is a long term complication suffered by as many as two million women. About 15 percent of all pregnant women have childbirth complications that require emergency obstetric care (EmOC), yet few are able to access such services. The costs of a caesarean section in some African countries can bankrupt the family.³

Stillbirths and newborns – Babies are vulnerable during childbirth, and intrapartum complications result in a much higher risk of death than pre-pregnancy or antenatal complications. At least 300,000 babies in Africa die as intrapartum stillbirths – dying during childbirth from childbirth complications such as obstructed labour. Among babies born alive, another 290,000 die from birth asphyxia, also primarily related to childbirth complications. Some of these deaths could be prevented by skilled care during pregnancy, childbirth, and the immediate postnatal period. For every baby who dies, an unknown number develop long term disabilities. Although most babies breathe spontaneously at birth, up to 10 percent of newborns require some assistance to initiate breathing, with less than one percent needing extensive resuscitation.⁴ Failure to breathe at birth may be due to preterm birth or to birth asphyxia. An estimated four million low birthweight (LBW) babies are born in Africa each year. These babies are particularly vulnerable and without extra care are more likely to die from avoidable causes, such as hypothermia (cold), hypoglycaemia (low blood sugar), or infections.

The ability of families and communities to recognise and access care quickly in case of an emergency determines the survival and health of both mother and baby. For some obstetric complications, particularly haemorrhage, the window of opportunity to respond and save the life of the mother may be measured in hours. For the baby, either in utero or just born, death can come even more quickly. Any delay may have fatal consequences (Box III.3.1).



BOX III.3.1 Deadly delays

Three delays in care seeking affect the survival of both mothers and newborns.

1. Delays in recognising problems and deciding to seek care
 - Complications not recognised as serious
 - Family members delay care seeking
 - Spiritual or cultural beliefs may reinforce delays or result in other treatments
2. Delays in transportation to reach appropriate care
 - Lack of transport and/or funds
 - Distance and travel time to reach health facilities
3. Delays in receiving appropriate care at the health facility
 - Lack of appropriately trained staff and negative attitudes of health workers
 - Lack of essential equipment, drugs and supplies

Source: Adapted from reference⁵

The first two delays reveal questions about seeking care at the family and community level. Are families equipped to make healthy choices? Can the family and community support women when transportation and emergency costs are necessary? In many cultures, a woman must receive permission and money from her husband or other family members to seek care when complications take place. Long distance, high cost, and poor quality of care also contribute to the first and second delays.

The third delay is related to health care providers, the facility, and the health system.⁵ In South Africa, data collected for the national perinatal problem identification programme, which now covers over one third of South Africa's births, show that while the majority of avoidable factors for stillbirths and neonatal deaths are related to poor maternal care during labour and the immediate postnatal period, about one third are due to delays at home and in transportation⁶ (Box III.3.2).

BOX III.3.2 Top 10 preventable delays associated with perinatal deaths in rural areas of South Africa, according to confidential enquiry of maternal death

1. Inadequate facilities and equipment in neonatal units and nurseries 4.9% of deaths
2. Non-existent or poor antenatal care 3.5%
3. Poor intrapartum fetal monitoring 3.2%
4. Patient delay in seeking medical attention during labour 2.4%
5. Prolonged second stage of labour with no intervention 1.4%
6. Inappropriate response to rupture of membranes 1.2%
7. Lack of transport from home to the health facility 1.2%
8. Poor progress in labour and incorrect use of partograph 0.9%
9. Delay in medical personnel calling for expert assistance 0.8%
10. Inadequate neonatal management plan 0.8%

Source: Adapted from reference⁷



This chapter will outline the package for care in childbirth, including skilled attendance at birth and emergency obstetric and newborn care. We then describe the current situation for childbirth care in Africa and explore opportunities to integrate and strengthen newborn interventions, suggesting practical steps to scale up skilled care and address key challenges, particularly the 18 million women who currently give birth without skilled care.

Package

New analysis presented throughout this publication suggests that high coverage of care during childbirth, including skilled maternal and immediate newborn care, EmOC, and additional interventions, such as antenatal steroids for preterm labour, could avert up to 34 percent of neonatal deaths. This means that out of Africa's 1.16 million newborn deaths, between 220,000 and 395,000 newborn lives could be saved if over 90 percent of women and babies received skilled childbirth care. The lives that can be saved are more than the newborns dying

from birth asphyxia, since skilled care also reduces deaths due to preterm birth complications and infections. In addition, countless maternal lives would be saved and intrapartum stillbirths prevented. (For more information on this analysis, see data notes on page 226) In industrialised countries, virtually all women have access to skilled care at birth and EmOC as well as emergency neonatal care. The reality in most African countries, however, falls far short of universal coverage of skilled care.

Skilled care, including essential newborn care for all births

The birth of a new baby is a natural process and an important and joyful social event both for the individual family and the wider community. Most women experience normal childbirth, and most babies are born healthy. Complications during childbirth, however, cannot be predicted. For this reason, all women and babies require access to childbirth care from skilled care providers.⁸ Timely recognition and management of complications during childbirth is important, as is avoiding unnecessary medical interventions.

The *who*, *where*, and *what* of skilled care during childbirth can be summarised as follows:

Who? Skilled care at birth is defined as care provided by a health worker with midwifery skills, also called a skilled attendant. Skilled attendants are accredited health professionals such as midwives, doctors, and nurses who have been educated and trained to proficiency in managing normal (uncomplicated) pregnancies, childbirth, and the immediate postnatal period and can identify, manage, and refer complications in women and newborns.⁹

Where? Childbirth should take place in a setting with the necessary equipment, supplies, drugs, and support of a functioning health system, including transport and referral facilities for emergencies. This is sometimes called an enabling environment. In countries with poor communication and transport networks, it is challenging for skilled attendants to provide effective childbirth care at home, and in most of Africa, skilled attendants are mainly based in health facilities.

What? Key interventions during labour and birth include:

- Routine infection prevention practices
- Monitoring of labour using a partograph as an effective tool for monitoring the progress of labour. The

partograph helps identify problems such as slow progress and prolonged labour (Box III.3.3)

- Active management of the third stage of labour
- Hygienic cutting and tying of the cord
- Resuscitation if needed
- Essential newborn care (warmth, early and exclusive breastfeeding, and cleanliness)
- Prevention of mother-to-child transmission (PMTCT) of HIV
- Increasing client satisfaction and comfort, for example providing privacy, limited vaginal exams, permitting free movement, food and drink intake, encouraging use of a social companion at birth, and establishing a supportive relationship

Immediate newborn care includes assessing the baby, recording the birth weight, and providing eye care to prevent gonococcal eye infections where this is local policy. Resuscitation should be started if the baby does not breathe within 30 seconds after birth. Recent reviews have concluded that adequate ventilation with a bag and mask (“ambubag”) device and room air is just as efficient as oxygen for initial resuscitation.

BOX III.3.3 When a piece of paper can save a life: using the partograph to monitor labour

When the partograph has been used to manage labour, research has shown improvements in fetal and newborn survival as well as significant reductions in unnecessary interventions. Data and experience across Africa suggest that although the partograph is a well-known intervention, it is often not used or not used correctly. There are varying reasons for this, including:

- Lack of human resources and time pressure. One midwife working in a labour ward of a large African teaching hospital remarked, “There is no time to chart the partograph unless there are students around. One nurse is looking after too many mothers, therefore she does not have time.”
- Stock-outs of copies of the printed partograph
- Inadequate monitoring of maternal and fetal key indicators, particularly the fetal heart, as the traditional Pinard stethoscope may be incorrectly used and Doppler ultrasound monitors are not widely available¹²
- Information may be collected but is not always used to change procedures, or there may be delays in undertaking emergency care, particularly caesarean section¹³





Emergency obstetric and newborn care for all mothers and babies with complications

Experiences from around the world suggest that about 15 percent of all pregnant women will develop obstetric complications, and that not all of these complications can be predicted through risk screening.¹⁴ Unless emergency care is available, the woman and the baby could either die or develop severe disabilities. With essential preventive care, proper management of labour, and timely management of complications, we can prevent or successfully manage many obstetric and newborn complications as well as intrapartum stillbirths. Almost 60 to 70 percent of cases of eclampsia can be averted by timely intervention when signs and symptoms of pre-eclampsia appear. Using a partograph to monitor labour will help to identify slow progress in labour, and providing such interventions as oxytocin infusions can prevent prolonged labour. If signs of obstructed labour

appear, assisted childbirth is required. Many breech births can be prevented by external cephalic version.

There are certain critical services or signal functions that have been identified as essential for the treatment of obstetric complications to reduce maternal deaths.¹⁵ These signal functions provide a basis for assessing, training, equipping, and monitoring EmOC services (Table III.3.1). If a health facility provides the first six signal functions, it is defined as a basic EmOC facility. If a health facility provides all eight functions, including surgery and blood transfusion, it is a comprehensive EmOC facility. None of these functions, however, specify essential newborn care and neonatal resuscitation, though both are critical functions for newborn survival. A recent review of EmOC process indicators by WHO, Averting Maternal Death and Disability (AMDD), and other partners suggested adding neonatal resuscitation to the signal functions.¹⁶

TABLE III.3.1 Basic and comprehensive emergency obstetric care (EmOC)

Signal functions essential for treatment of obstetric complications	Basic EmOC	Comprehensive EmOC
1. Administer parenteral (injection) antibiotics	●	●
2. Administer parenteral (injection) oxytocics	●	●
3. Administer parenteral anticonvulsants for pre-eclampsia / eclampsia	●	●
4. Perform manual removal of placenta	●	●
5. Perform removal of retained products, e.g. through manual vacuum aspiration	●	●
6. Perform assisted (instrumental) vaginal births, e.g. vacuum extraction	●	●
7. Perform safe blood transfusions		●
8. Perform surgery (births by caesarean section)		●

In addition, EmOC should be linked with newborn care, particularly extra care for LBW babies and emergency care for sick babies.

Extra care of LBW babies

LBW babies, especially preterm babies, account for the majority of newborn deaths. Immediate care with attention to providing warmth, resuscitating if needed, and avoiding hypoglycaemia (low blood sugar) will help save lives. Early detection and management of breathing difficulties, infections, and other complications are also important. Babies more than two months preterm or weighing less than 1,500 grams are likely to need facility-based care. Moderately preterm babies (less than one to two months preterm or birthweight greater than 1,500 grams) can be cared for at home if they do not have complications, and the mother can breastfeed and give expressed breastmilk if needed.¹⁷ More details on care for LBW babies are provided in other chapters in Section III such as extra care and home visits (chapter 4), Kangaroo Mother Care (KMC) (chapter 5), and extra support for breastfeeding (chapter 6).

Emergency care of ill newborns

All health workers attending birth should be prepared for emergencies, such as resuscitating babies who do not breathe properly, as well as managing and, if necessary, referring other newborn complications. Newborn emergencies after the first day are more likely to be referred to child health services, although often, the handover between services is not clear, and there may be confusion about where to go to access care. Lack of coordination between services and poor compliance with referral recommendations may result in delays.¹⁸

Home-based maternal and newborn care

Even where all women give birth in a facility, the family and community have an important role in supporting the pregnant woman to prepare for birth and emergencies, helping recognize the onset of labour, and assisting in seeking skilled care. After discharge from a facility, simple examples of essential maternal and newborn care can save many newborn lives.¹⁹ Although a skilled attendant for every birth is ideal, some components of maternal care and many components of essential newborn care can be

practiced at home if no skilled attendant is available. The following care-giving behaviours are important to promote at home:

- Warmth – immediate drying and warming of the baby, skin-to-skin care, warm room
- Cleanliness, particularly clean childbirth, hygienic cord, eye and skin care
- Early, exclusive breastfeeding within one hour (unless a safe feeding alternative is available for HIV-positive mothers)
- Extra care of preterm and LBW babies if no severe illness
- Recognition of maternal and newborn danger signs and immediate referral

While scaling up skilled attendance for all mothers and babies, what can be done in the interim for the 18 million African women who give birth at home every year? For home births where a skilled attendant is not available, can health extension workers (supported by the governments in Ethiopia, Malawi, and Ghana for example) and community health workers (CHWs) present in many African countries effectively provide immediate newborn care, including recognition of complications and appropriate referral for mothers and newborns? What kind of selection, training, remuneration, supervision, and logistical support must be in place so that CHWs are competent, motivated, and accepted by communities? What does it take to sustain such an effort on a large scale? Pilot studies in South Asia suggest that a trained CHW at birth can provide essential newborn care.^{20,21} However, evidence from similar approaches in African health systems is not yet available.

Current coverage and trends

Progress in scaling up skilled care including essential newborn care

Only 42 percent of pregnant women in sub-Saharan Africa give birth with a skilled attendant present. Coverage is lower in the poorest countries: in Ethiopia, for example, only five percent of births are assisted by a skilled attendant. Within countries, too, there are great disparities in the use of skilled care – while 25 percent of the highest income quintile in Ethiopia use a skilled provider, only one percent of the poorest women do.²² This inequity is also linked to education levels and rural residence. Increases in coverage of births with a skilled attendant in sub-Saharan Africa over the past decade have been limited. At current rates of progress, more than half of African women will still be without skilled care at birth by 2015. Increasing progress in skilled attendance must become a priority, as this is the cornerstone of MDG 5 and also important for MDG 4.

Health system weaknesses, both in accessibility and quality, impact care for births taking place at the health facility level. Many health centres do not remain open at

night or during weekends to provide the professional first level childbirth care that is needed 24 hours a day, and most are without adequate links to a hospital that can provide referral level care. Health centres and hospitals often lack running water or electricity, simple comforts such as sheets on the beds, and privacy for the mother. Essential equipment, supplies, and medicines may be missing. Clinical officers, midwives, and nurses in health centers may not be competent in identifying and managing maternal and newborn complications. Staff are not well paid, often unsupervised, and morale may be low. In addition to these structural weaknesses, out-of-pocket costs for services and cultural barriers exist to access and uptake of skilled care.²³

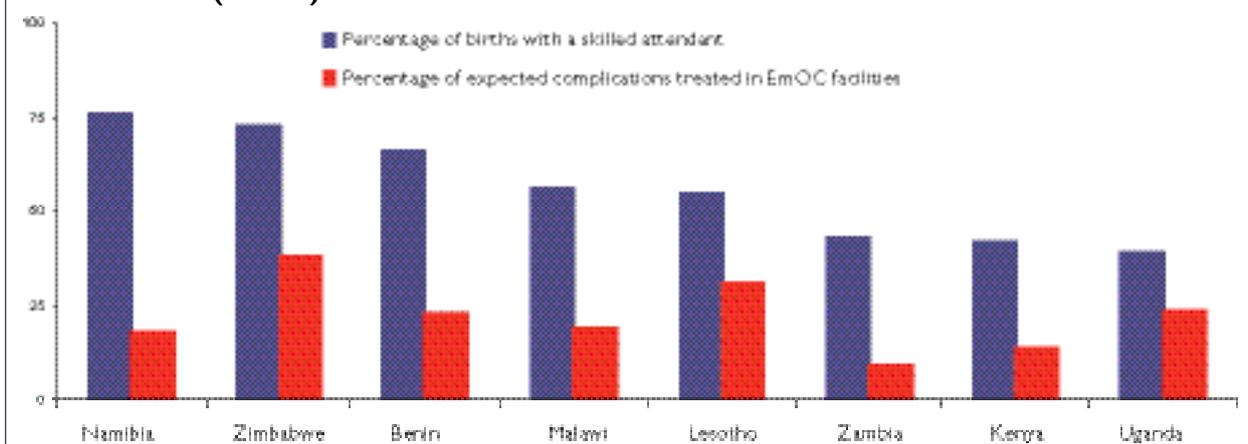
In sub-Saharan Africa, 18 million women give birth at home; in fact, in many African countries, the majority of women still give birth at home, assisted only by family members, if not alone. Data from Demographic and Health Surveys (DHS) suggest that less than one third of all births are attended by traditional birth attendants (TBAs).²⁴ TBAs and CHWs have limited knowledge to recognise obstetric complications or sick and high risk newborns, and linkages between the family, community, and health services are not always well established.

Progress in scaling up emergency obstetric and newborn care

Availability, quality, and use of EmOC are largely dependent on a functioning health system as well as appropriate communication and referral services to link household and health facilities (Section II). A series of surveys in more than 20 African countries suggests that of the 15 percent of pregnant women who are expected to require some kind of obstetric care, less than a third receive this care (Figure III.3.1). In order to save more lives of mothers and babies soon, the proportion of direct obstetric complications receiving timely treatment (met need for EmOC) should be increased by at least 50 percent. In addition, the proportion of births by caesarean section should increase. While the UN recommends a level between five and 15 percent, less than two percent of births are by caesarean section in most African countries. In poor rural populations, this level is under one percent.²⁵



FIGURE III.3.1 Coverage of births with a skilled attendant and met need for emergency obstetric care (EmOC) in 8 African countries



Source: Skilled attendant data from reference²⁶. EmOC facility data from UN and national assessments. See data notes page 226 for more details.

In most African countries where EmOC assessments of facilities and signal functions have been carried out, it has been shown that there are proportionately more *comprehensive* EmOC facilities than *basic* EmOC facilities, and these are concentrated in large cities. UN recommendations call for *at least one comprehensive* and four *basic* EmOC facilities for every population of 500,000.²⁷ *Basic* EmOC (the first six signal functions, Table III.3.1) should be provided in health centres and maternity units, and *comprehensive* EmOC (the first six signal functions, plus surgery such as caesarean section), should be available in hospitals. Many facilities in African countries fail basic EmOC assessments, often due to only one or two missing signal functions, such as assisted vaginal births, manual vacuum aspiration, and management of pregnancy-induced hypertensive disorders. In Tanzania, many health centres and facilities offered all the basic signal functions apart from vacuum extraction, which the midwives in these centres were not legally allowed to provide. In response, the government is moving to change legislation and train midwives in vacuum extraction. Some African countries are training medical assistants, clinical officers, and physicians to perform caesarean sections.²⁸

Less information is available regarding the coverage and quality of emergency newborn care since these services were not systematically included in the UN EmOC assessments. Current coverage of effective neonatal resuscitation within facilities is very low in Africa. In some district hospitals, nurses and midwives could perform most of the maternal life-saving functions, including vacuum extraction and even caesarean sections, but competency and capacity in newborn care may be limited – ambubags are often lacking, and few training facilities have baby resuscitation dummies for competency-based training. Facilities that provide EmOC often lack adequate emergency newborn care, or even protocols for managing neonatal infections or care of preterm babies, including provision of KMC.

Opportunities to strengthen newborn care within childbirth care

Of all the maternal, newborn, and child health packages, skilled childbirth care and EmOC provide the opportunities to save the most maternal and newborn lives.²⁹ Extending the coverage and quality of skilled care at birth, including essential newborn care and EmOC, to all mothers and babies, should therefore, receive urgent attention. Meanwhile, education and counselling to increase demand for skilled childbirth care at home and improve healthy home behaviours will benefit the many women who continue to give birth at home. Box III.3.4 lists some of the missed opportunities to strengthen newborn care in existing services that provide care during childbirth.

BOX III.3.4 Missed opportunities to strengthen newborn health within care provided during childbirth

- *Policy* – Lack of an integrated maternal and newborn health policy; more value placed on addressing maternal rather than fetal and newborn outcomes
- *Infrastructure* – Limited consideration of the newborn in the design and layout of labour wards and obstetric theatres, so resuscitation station, equipment, and drugs are lacking
- *Guidelines* – Lack of availability or poor dissemination/implementation of standard national guidelines for essential newborn care and obstetric and newborn complications. Sometimes caesarean section is not done on the basis of fetal distress, resulting in neonatal death or disability

- *Training* – Gaps in pre-service and in-service emergency obstetric care training for nurses and midwives that should include essential newborn care and neonatal resuscitation
- *Supplies* – Lack of basic equipment, drugs, and supplies for maternal and newborn care
- *Monitoring* – Not including stillbirths, neonatal deaths, and near miss outcomes in maternity registers or when auditing maternal outcomes. Not considering neonatal signal functions in the monitoring system

In order to increase coverage and quality of childbirth care and simultaneously strengthen newborn care, opportunities must be seized at each stage of policy, planning, and programme.

1. Policy and planning opportunities

Policy and planning should emphasise competency and care for *both* mothers and newborns during labour, birth, and the immediate postnatal period. There are a number of opportunities to strengthen and add newborn health to policies at both the national and service provision level. There has been recent policy attention for maternal and newborn health in Africa, particularly the Road Map for accelerating the attainment of the MDGs related to maternal and newborn health in Africa. National safe motherhood and reproductive health policies and strategies should include essential and emergency newborn care components, including good home care behaviours. The details of moving policy into plans and action are detailed in Section IV, but some important principles relevant to the planning of childbirth care are stressed here.

Phasing – Scaling up skilled attendance and EmOC is a priority to save the lives of women and babies, but is not a “quick fix,” since it requires strategic investment and planning.^{22,30} Table IV.4 on page 162 suggests priorities for short term, medium term, and long term according to level of neonatal mortality rate (NMR) that can be adapted for each country. Short and medium term activities should build towards long term goals of universal coverage of skilled care. We need to achieve a balance between investments in community approaches and clinical care. There is also a balance to be found between implementing simpler packages that can save lives now at fairly low cost,²² while working to achieve higher coverage with more complex care in the long term, including skilled attendance and EmOC.³⁰ By choosing only one or the other of these, the substantial reductions in mortality needed to achieve the MDGs, will not be produced.

Equity – Strategies should focus on equity to ensure that the poor and other marginal groups receive proper care,

addressing such access barriers as the often catastrophic costs of obstetric care and referral.²³ Conditional cash transfers, such as direct payments to poor households contingent on completion of four antenatal visits, may be given. Well-designed conditional cash transfers have the potential to improve health outcomes with relatively modest administrative costs.³¹

Human resources – To combat current human resource challenges, many countries in Africa require innovative strategies, like increasing the pace of training for midwives and examining incentives to expand care into hard-to-serve areas.²⁷ In Malawi, the government recently raised the salaries of nurses, and in Butare, Rwanda, a performance initiative showed that the quantity and quality of services, including maternal health care, increased when linking performance with incentives.³² Delegation of life-saving functions to mid-level health care providers may require policy change and review, but this is a crucial step towards high and equitable coverage of effective interventions. If policy were changed, midwives could carry out vacuum extraction, mid-level health care providers could undertake time-intensive counselling tasks such as support of early breastfeeding, and CHWs could provide postnatal care (Section III chapter 4). Building teams with a range of skills and offloading simpler tasks to lower cadres allows midwives to focus on higher impact tasks.

Revision of the pre-service and in-service training curricula for health workers to include essential newborn care and management of newborn complications will lead to better quality services and overall programme integration. Health workers attending births should become competent at providing essential and emergency care for both mother and newborn, and midwifery training components in particular should be reviewed to ensure competency-based training that includes skills in neonatal resuscitation and management of other newborn complications. Where governments promote an interim strategy of training health extension workers, CHWs, and TBAs to attend births at home, such training should include essential newborn care and recognition and referral of maternal and newborn complications.

2. Opportunities to strengthen essential newborn care while scaling up skilled care at birth

All health facilities conducting births should provide essential newborn care, care of LBW babies, and resuscitation. A clean and warm newborn corner with a heater and basic resuscitation equipment must be established in every labour ward and operating theatre. Success requires availability of health workers, clinical guidelines, competency-based training, basic equipment and supplies, supervision, and an enabling environment.

The need for resuscitation cannot always be predicted, so health workers attending childbirth should know how to use a bag and mask in case the baby is not breathing

(Box III.3.5). Health facilities should also be mother- and baby-friendly, promoting early and exclusive breastfeeding for mothers who have chosen to breastfeed. PMTCT services, such as rapid HIV testing, counselling, and antiretroviral medication, should be available in every labour room. This is particularly important for countries with high HIV prevalence. HIV-infected mothers wishing to prevent transmission of the virus to their newborns by choosing not to breastfeed must be counselled to decide on feeding options and receive appropriate information, advice, and support from health workers after making their decision.

3. Opportunities to include essential and emergency newborn care while scaling up EmOC

All health facilities providing basic and comprehensive EmOC should include essential and emergency newborn care, including newborn resuscitation. Indications for a caesarean section should include fetal distress, which in many countries is a cause of increasing caesarean section rates. In low resource settings, however, safety for the mother should be the priority. If staff cannot handle complications, ensure that immediate referral of both maternal and newborn complications is available. Maternal death and near miss audits should also review stillbirth and neonatal deaths. EmOC assessments should include newborn signal functions, particularly resuscitation, and other key indicators like intrapartum stillbirth rate and early neonatal mortality rate. New indicators are being added to the UN process indicators as discussed below.¹⁶

4. Increasing essential supplies and improving commodity management

While most immediate newborn care is not highly dependent on equipment and drugs, some supplies, such as bag and masks for resuscitation, are necessary. In Asia, locally-made bag and masks are about US\$10 each, but in Africa, these items are imported at about eight times the price and are not widely available. In order to manage commodities, there is a need to review supplies available for maternal care and add the necessary newborn care supplies. Antenatal steroids for women in preterm labour are highly effective at reducing deaths for preterm babies due to respiratory complications,³³ yet few of the facilities with this capacity are doing so and the appropriate steroid, while relatively low cost, is not on many essential drug lists. Equipment, supplies, drugs, and other commodities for EmOC have been improved by an international standard of pre-packaged kits, and a similar approach may work for essential and emergency newborn supplies appropriate for different levels of care (Table III.3.2). Attention to strengthening routine health system logistics for supplies is also important. Innovation is required to develop lower cost, more robust devices which can be used in settings with unreliable electricity.

BOX III.3.5 Breath of life

All skilled attendants should be able to resuscitate babies who do not breathe at birth. Training requires competency-based practice with a resuscitation dummy.

In emergency obstetric care facilities, a neonatal resuscitation team should be available to assist births, especially for emergency caesarean sections, very premature or breech babies, or for births where thick, meconium-stained amniotic fluid is present.

Kayunga District Hospital in Uganda, less than one hour away by car from Kampala, serves a population of 320,000. The labour ward has three hospital beds. The neonatal resuscitation corner was set up in 2005 with assistance by neonatologists from the national teaching hospital. In one year, 25 newborns with an Apgar score of less than five were resuscitated. Twenty-three survived and two died. Without resuscitation, many of these babies would have died or suffered severe brain damage.



TABLE III.3.2 Where, what, and who? Supplies for essential and emergency newborn care

Where	What is needed?	Who uses it?
Clean birth kit for home births	Plastic sheet, razor, cord tie, pictorial leaflet on maternal and newborn danger signs	The individual who is attending a birth where there is no skilled attendant
Essential newborn kit for home births by skilled attendant	The above content plus portable weighing scale, essential drugs, bag and mask, bulb syringe or portable suction unit	Skilled attendants
Essential newborn kits for health facilities	The above content plus weighing scale and suction machine and possibly pulse oximeter	Skilled attendants
Emergency newborn kit for hospitals	The above content plus IV cannulae, giving sets and fluids; nasogastric tubes; low reading thermometer; oxygen; and injection antibiotics	Skilled attendants and doctors

Note: See accompanying CD for detailed list and other optional equipment.

5. Opportunities to improve healthy behaviours at home and link households and health facilities

Promote birth planning and emergency preparedness. It is important to clarify that promoting birth preparedness and good home care practice for mothers and newborns is different from promoting home births. Programme experiences show that when communities are better informed on good care practices and prepared for

maternal and newborn complications, more women give birth in health facilities.³⁴ Family and community involvement in preparing a birth and emergency plan can also shorten the first delay (Box III.3.1) in deciding whether and where to seek care, should complications occur during a home birth. Mothers, family members, and community workers should be aware of danger signs for both maternal and newborn complications (Box III.3.6).

The increasing availability of mobile phones in rural areas can facilitate emergency communication. Community mobilisation for emergency transport teams can improve access to EmOC, as shown in rural Tanzania where communities worked together to provide bicycle or boat stretcher teams for women with complications in labour.³⁵ In Ghana the government reimburses local transport cooperatives to bring women and babies with emergencies to hospital. Community prepayment schemes may help poor families ease the burden of out-of-pocket payments at point of service.

Consider the role of maternity waiting homes. Maternity waiting homes can help bridge the gap between home and facility care,³⁶ and several studies in Africa have shown significant reduction in stillbirths and neonatal deaths for women using maternity waiting homes.³⁷ Women who live far away from health facilities, have experienced health problems during pregnancy, and have had negative pregnancy outcomes are primary clients of maternity waiting homes. Many district hospitals in Africa have a maternity waiting home already, but the conditions and use vary. Field experience shows that an affordable maternity waiting home that offers basic care, comfort, and security; welcomes relatives and young children; and is located next to a comprehensive EmOC facility is likely to be well attended.

BOX III.3.6 Danger signs during and immediately after birth

If any of these danger signs are present, mother and baby should seek care at a hospital or health care centre immediately:

Mother

- If waters break but she is not in labour after six hours
- Labour pains continue for more than 12 hours
- Heavy bleeding (soaks more than two to three pads in 15 minutes)
- Placenta not expelled one hour after birth of baby

Baby

- Difficulty breathing (no cry at birth)
- Not able to feed
- Fever (>38°C) or feels cold (<35.5°C)
- Very small (less than 1,500 grams or born earlier than 32 weeks)
- Fits or convulsions
- Excessive bleeding

Source: Adapted from reference¹⁷



Consider the possibility of community midwifery. Where families have access to facilities, cost effectiveness modelling suggests that a facility-based approach with enough midwives and an acceptable quality of care would result in the fastest scaling up.³⁰ Where facility access is very difficult, however, some countries may consider an interim strategy to provide care for births taking place at home, such as the one implemented in Indonesia.³⁸ Professional midwives could work out of their own homes or with other midwives in birthing units, if effective support and referral is possible. In rural Kenya, a pilot scheme employed retired midwives to attend home births and linked them to local health facilities for referral support.³⁹

Encourage midwife-TBA partnerships. TBAs are not a homogeneous group: some are trained, but most are not; some have well established businesses, but most attend only a few births a year; most work from home, but some work in health facilities when there is a shortage of skilled care providers. While some TBAs are linked to the health system by reporting the number of births attended every month to the nearby health facility, most are unsupervised. Although TBAs have been providing childbirth care and are often recognised community members, they are not skilled attendants, and in isolation, they are not able to save women's lives. There is no evidence of the effectiveness of neonatal resuscitation by TBAs during home births. Therefore, early recognition and referral of women with obstetric complications should be a programme priority. However, as described anecdotally in Box III.3.7, TBAs can contribute, particularly by promoting skilled care and accompanying mothers to give birth in a health facility where essential maternal and newborn care is available. Where linkages are promoted and roles found for TBAs to encourage referral of women in labour, referrals have increased substantially.^{40,41} TBAs can serve as advocates for skilled care, but they will only be able to perform this role when there are good working relations with skilled attendants and staff in referral facilities (Box III.3.11).

BOX III.3.7 New roles for traditional birth attendants

One traditional birth attendant in Canda, Burundi reported on how she has been able to contribute in making births safer for women:

“When a birth is imminent at home, I can support the woman. But even a woman with a seemingly normal birth can have problems internally. It is very difficult to give birth at home because women and babies can die. I come with women to give birth in a health centre now because there are five nurses and the ambulance comes from the provincial hospital if complications take place. I am not paid anything, but the family will share food and some gifts with me after birth from what the mother receives.”

For unattended births, promote healthy behaviours. When skilled care is not yet accessible, interim steps should be taken to mobilise families and communities to ensure that each woman receives a clean birth and proper care for the mother and the newborn. Danger signs should be recognised and referred immediately. The minimum healthy behaviours should include:

- Clean birth through the “six cleans” (Box III.3.8) or clean birth kits. Clean childbirth practices could avert six to nine percent of the 1.16 million newborn deaths in sub-Saharan African countries (For more information on the inputs of this analysis, see data notes on page 226).

BOX III.3.8 The six “cleans”

1. Clean hands of the attendant
2. Clean surface
3. Clean blade
4. Clean cord tie
5. Clean towels to dry the baby and then wrap the baby
6. Clean cloth to wrap the mother

- Newborn care, including cleanliness, warmth (skin-to-skin care), initiation of exclusive breastfeeding within one hour, and eye and cord care
- Extra care of preterm and LBW if the baby is small but can breastfeed
- Compliance with PMTCT of HIV for families where the HIV status is known, for example, promoting alternatives to breastfeeding where feasible and appropriate
- Timely recognition and referral of danger signs for mother and newborn
- Promotion of birth registration
- Promotion of birth spacing and family planning
- Promotion of early immunisation

6. Include newborn indicators in monitoring and evaluation

Maternal and newborn care programmes should be evaluated based on an agreed set of indicators, both qualitative and quantitative. In most countries, routine health information systems track outputs such as number of admissions, births, caesarean sections, etc. There is little information on quality of maternal and newborn care, such as intrapartum stillbirth rate, babies receiving resuscitation and outcome, and percentage of newborns receiving essential newborn care, among others (Box III.3.9). This could be assisted by including key newborn care indicators in maternity registers, monthly summaries, health management information systems, DHS surveys, Service Provision Assessment (SPA), and other large surveys as well as seeking alignment with country-specific monitoring and evaluation process for the MDGs. A new indicator recently added to the UN process indicators is the intrapartum case fatality rate, which measures the proportion of intrapartum (fresh) stillbirths and very early neonatal deaths (within the first 6 or 12 hours of life) amongst babies weighing more than 2,500 grams.¹⁶ This is a sensitive measure of quality of intrapartum care.

BOX III.3.9 Key indicators for newborn health during childbirth

- Births attended by a skilled provider*#
- Met need for emergency obstetric care
- Stillbirth rate (macerated and fresh)
- Newborns receiving resuscitation
- Newborns receiving essential newborn care at birth by skilled attendants
- Breastfeeding within one hour after birth
- Skilled staff at health facilities competent to manage newborn complications

*Key newborn and child indicators in Countdown to 2015 child survival process⁴²

#Core WHO reproductive health indicators⁴³
See Section IV for a full list of indicators.

In addition, the overall coverage and quality of birth records for both mothers and babies must be improved. Currently maternal and newborn deaths, complications and outcomes are not properly recorded, resulting in under-reporting of maternal and newborn deaths and stillbirths. Maternity registers should be reviewed and revised to reflect fetal and newborn outcomes as well as maternal.⁴⁴ The mode of childbirth, sex, diagnosis, treatment, and referral of maternal and newborn complications should also be recorded. Other opportunities exist for including stillbirth and newborn outcomes in maternal mortality audit systems, such as the WHO *Beyond the Numbers*.⁴⁵

Setting up solid baseline data for programmes that aim to reduce maternal and newborn mortality is essential for documenting progress and changes. This will help advocacy and prioritise budget allocation to maternal and newborn health care.

Challenges

The challenges that impede scaling up skilled attendance to reach all women and babies can be considered in terms of barriers to supplying services and limited demand for services.

Challenges of supplying childbirth services

Universal access to skilled attendance and EmOC is particularly challenging because of requirements for infrastructure (such as functioning operating theatres), human resources (notably highly skilled clinical staff with fast response times, available 24 hours a day), and reliable supplies of blood, drugs, and equipment.²⁷ It has been estimated that an additional 180,000 midwives are needed in the next 10 years in Africa to overcome the current shortage.¹⁴ These inputs necessitate substantial funding, yet maternal, newborn, and child care competes with well-funded vertical programmes. Working with vertical programmes to find synergies for maternal, child, and newborn health requires special skills at the policy and programme level, intersectoral coordination, and general health system strengthening.

Offering good quality care will automatically create demand for services in the community. Women and the wider community should be involved in the process of improving the quality of services. Quality care during labour and birth is marked by a series of core competencies defined by WHO, the International Council of Midwives (ICM), and the International Federation of Gynecology and Obstetrics (FIGO).⁹ Existing global clinical standards and protocols need to be locally adapted and implemented, and the speed of developing new protocols is not fast enough to take new evidence into consideration. In-service training involves high direct and opportunity costs, especially with a steady stream of new evidence that necessitates new training. Current supervisory tools and protocols should be revised

BOX III.3.10 Reducing delays and improving skilled care: progress at the Ntobwe Community Health Centre

Thanks to improving quality of care, the number of births in the Ntobwe Community Health Centre in Rwanda has been increasing to the point where virtually all mothers are now giving birth in the community health centre. Almost all mothers attend antenatal care (ANC) and receive the essential interventions – tetanus toxoid immunisation, counselling on danger signs, information on breastfeeding, intermittent preventive treatment of malaria in pregnancy, and PMTCT. The nurse in the centre has not been trained in EmOC, so he still refers most of the obstetric complications to the Muhororo district hospital, using stretchers. The community health centre also operates as a waiting home for women who live far away. After 38 weeks of pregnancy, a mother can wait in the community health centre free of charge, as long as she has attended three ANC visits. Food is the responsibility of relatives.

For the most part, traditional birth attendants (TBAs) have stopped attending births due to both community awareness and administrative interventions. The new roles of TBAs are health education and promotion. At one community gathering, one TBA said “We conducted births in the past because people did not have money to pay and the district hospital is too far away. Now people participate in the health insurance, and the local health centre provides good care, so the difficulties are removed. We lost our job but we are happy that mothers and babies survive.”

More than 90 percent of households participate in the health insurance scheme. It costs about US\$1 per family member per year. In event of sickness, a member needs to cover only the initial US\$0.50, while the rest of the care is free. However, if a patient needs to go to the district hospital, only 20 percent of all charges are covered. Four emergency committees transport emergency cases on a cost-sharing basis. An effective information management system improves care. For example, if a woman in the third trimester close to the estimated date of birth has not shown up, the community health centre will trace the woman to find out if the date of birth had been estimated incorrectly, or to follow up if she has given birth at home.

to ensure that adequate support is provided to the staff to facilitate efficient and quality integrated services. Maternal and perinatal mortality review, review of near misses, and criterion-based clinical audit *coupled with action* will effectively address poor quality of care and reduce maternal and newborn deaths due to avoidable factors. A high degree of provider accountability is required to provide quality service.⁴⁶ Frequent staff changes soon after training and brain drain make sustainability a huge challenge. Lack of staff motivation reduces quality of care.²⁷ Box III.3.11 illustrates how a health centre in Burundi improved the supply of childbirth care.

Limited demand for skilled attendance at childbirth

At the same time, increasing demand for skilled care is fundamental in ensuring an effective continuum of care from home to facility, emphasising essential care for mothers and newborns and improving care-seeking behaviour for complications. In many places the lack of

collaboration between midwives or obstetricians and TBAs weakens linkages between community and referral centres. (See Box III.3.10) While a number of the constraints related to childbirth care are driven by the supply of services, specific issues related to access and demand also prevent women and their babies from receiving care:

- Lack of confidence in quality of care provided by health facilities.
- Lack of knowledge of obstetric and neonatal dangers signs among family members.
- Cultural practices and beliefs.
- Catastrophic costs for families. User fees, in particular, affect access to obstetric care, as hospital costs for EmOC can be catastrophic. For example, a study in Benin and Ghana found that the cost of caesarean section was up to one third of the average annual national household income.³

BOX III.3.11 Strengthening newborn and maternal care: Madanba Health Centre, Burundi

The Madanba Health Centre, which receives support from UNFPA, has successfully strengthened care for mothers and newborns. Situated in a large town bordering Tanzania, this centre covers a population of 13,000. There are 13 nurses with midwifery skills. All pregnant women who come for antenatal care (ANC) receive focused ANC and health education related to pregnancy, newborn, and maternal care. The labour ward has two beds and is well equipped. The centre is successful because:

- The health facility is well managed and staff are motivated
- A partograph is used for every birth and standard maternity register records are completed
- Mothers and babies are kept for 24 hours if the birth is normal
- The centre provides all basic emergency obstetric care services except vacuum extraction
- Essential newborn care as well as maternal and newborn danger signs are clearly displayed in the labour ward
- The nurse in charge calls an ambulance from the provincial hospital when there is an emergency
- All low birthweight newborns are referred to provincial hospitals



Practical steps

- *Policy and planning* – Ensure that the Road Map and other policy documents translate into effective interventions. Delegate life-saving skills to mid-level health care providers, and ‘outsource’ essential newborn care to every home with links to the health system. Develop and implement strategies to ensure quality and equitable access to services.
- *Resources* – National and donor budget allocation should prioritise maternal and newborn care. Forge closer linkage with PMTCT, child health, and other programmes to bridge resource gaps.
- *Guidelines* – Develop, disseminate, and implement standard national guidelines for management of care during labour and birth, including essential newborn care and management of obstetric and newborn complications.
- *Human resources* – Improve competency of doctors, clinical officers, midwives and nurses in managing childbirth, including essential newborn care, as well as obstetric and newborn complications, including resuscitation. Strengthen accreditation, regulation, and quality assurance. Improve working conditions and remuneration.
- *Management* – There is an urgent need to improve the management capacity of maternal and newborn programs at both national and district level.
- *Infrastructure and supplies* – Consider women-friendly maternity waiting homes. Every labour ward should have a warm and clean newborn corner for providing essential newborn care and newborn resuscitation. Make sure drugs and supplies for essential newborn care are available. Pre-packaged newborn care kits, specific to care at the community level, health centre, or hospital, should be supplied.
- *Monitoring* – More information is collected than analysed and used, particularly in reaching the poor with essential interventions. Practical steps to improve information for newborn health include incorporating neonatal signal functions into EmOC process indicators and the routine health information system.
- *Research* – Operations research to generate local evidence is an important foundation to scaling up. There is a lack of reliable baseline data on the true magnitude of NMR and a lack of large-scale trials to guide policy and practice, such as newborn resuscitation at community level by CHWs or TBAs. Two small studies in Asia have used community workers to provide home resuscitation, but a significant reduction in neonatal mortality has not been demonstrated.^{20;47} More research is required which also examines feasibility and cost-effectiveness.

Conclusion

If 90 percent of pregnant woman in Africa were to give birth with a skilled attendant and have access to effective emergency obstetric and immediate neonatal care, the deaths of up to 395,000 African newborns could be prevented each year. In addition, the lives of many mothers would be saved and numerous intrapartum stillbirths would be averted. Progress in scaling up skilled attendance and EmOC has been disappointing. In Africa, the proportion of births with a skilled attendant has been flat for a decade, two in three women with obstetric complications go without necessary care, and few babies receive simple essential care, let alone effective

resuscitation and extra care for preterm and LBW babies. But scaling up childbirth care is achievable with political will and more investment. Progress will be made, but it will take time, and will require major health system strengthening, human resources and infrastructure over the next two decades.³⁰ Meanwhile, there are actions that can be taken to improve quality and use of existing care, such as increasing demand for services, improving linkages with the community, and promoting simple home behaviours in order to save lives where they are most vulnerable.



Priority actions for strengthening newborn care during childbirth

- Leverage increased investment for skilled birth attendance and emergency obstetric care (EmOC), and use this investment to strengthen health systems, increase the number of health care providers with midwifery skills, and prioritise equitable deployment
- Integration and convergence: Instead of creating a vertical programme for the newborn, consider how to integrate effective newborn interventions with existing health, nutrition, HIV/PMTCT and other programmes with clear potential for scaling up
- When scaling up skilled childbirth care in policy and practice:
 - Strengthen essential newborn care within skilled care at every birth by setting up a newborn corner in every labour ward
 - Include essential and emergency newborn care when strengthening EmOC
- Tackle equipment and supply problems within the health system and consider the development and distribution of internationally standard pre-packaged essential and emergency newborn care kits, as for EmOC
- Improve linkages between home and hospital through improved communication and referral, maternity waiting homes, partnerships with traditional birth attendants and midwives, and community emergency transport plans
- Address financial barriers to skilled care, especially EmOC, through a variety of options – reviewing user fees and considering prepayment schemes
- Agree on a set of monitoring indicators for EmOC that includes newborn health, and use this data to drive improvements in coverage and quality of care



Postnatal care

Charlotte Warren, Pat Daly, Lalla Toure, Pyande Mongi

Every year in Africa, at least 125,000 women and 870,000 newborns die in the first week after birth, yet this is when coverage and programmes are at their lowest along the continuum of care. The first day is the time of highest risk for both mother and baby. The fact that 18 million women in Africa currently do not give birth in a health facility poses challenges for planning and implementing postnatal care (PNC) for women and their newborns. Regardless of place of birth, mothers and newborns spend most of the postnatal period (the first six weeks after birth) at home.

Postnatal care (PNC) programmes are among the weakest of all reproductive and child health programmes in the region. How can we increase the coverage of integrated maternal and newborn care in the postnatal period? What does PNC include, when and where can it be provided, and by whom? How can we operationalise, improve, and sustain linkages between homes and hospitals? How can PNC be integrated with existing strategies and programmes, especially childbirth care, Integrated Management of Childhood Illness (IMCI), nutrition promotion, prevention of mother-to-child transmission of HIV and immunisation?



Problem

The postnatal period – defined here as the first six weeks after birth – is critical to the health and survival of a mother and her newborn. The most vulnerable time for both is during the hours and days after birth. Lack of care in this time period may result in death or disability as well as missed opportunities to promote healthy behaviours, affecting women, newborns, and children:

Effects on women: Half of all postnatal maternal deaths occur during the first week after the baby is born, and the majority of these occur during the first 24 hours after childbirth.¹ The leading cause of maternal mortality in Africa – accounting for 34 percent of deaths – is haemorrhage, the majority of which occurs postnatally. Sepsis and infection claim another 10 percent of maternal deaths, virtually all during the postnatal period.² HIV-positive mothers are at greater risk of postnatal maternal death than HIV-negative women.³ Access to family planning in the early postnatal period is also important, and lack of effective PNC contributes to frequent, poorly spaced pregnancies (Section III chapter 1). This is a stressful time for new mothers, so emotional and psychosocial support should be available to reduce the risk of depression.

Effects on newborns: Sub-Saharan Africa has the highest rates of neonatal mortality in the world and has shown the slowest progress in reducing newborn deaths, especially deaths in the first week of life. Each year, at least 1.16 million African babies die in the first 28 days of life – and 850,000 of these babies do not live past the week they are born.⁴ Asphyxia claims many babies during the first day, and the majority of deaths due to preterm birth occur during the first week. Thirty-eight percent of babies in sub-Saharan Africa die of infections, mainly after the first week of life.⁵ The majority of these deaths are low birthweight (LBW) babies, many of whom are preterm. In addition, long term disability and poor development often originate from childbirth and the early postnatal period.

Effects on children: At least one in four child deaths occur during the first month of life. These deaths often take place before child health services begin to provide care, usually at six weeks for the first immunisation visit. Low coverage of care in the postnatal period negatively influences other maternal, newborn, and child health (MNCH) programmes along the continuum of care. For example, the lack of support for healthy home behaviours, such as breastfeeding, can have ongoing effects for the child in terms of undernutrition. (Section III chapter 6). Additionally, newborns and mothers are frequently lost to follow up during the postnatal period for prevention of mother-to-child transmission (PMTCT) of HIV.⁶ (Section III chapter 7).

The period following birth in Africa is often marked by cultural practices. Understanding these beliefs and practices is an important part of ensuring effective and timely care. Many communities throughout Africa observe practices that keep mothers and babies indoors for the first month after birth – a period of seclusion. Families are wary about visitors coming in close contact with newborns.^{7,8} If mothers or babies become ill during the period of seclusion, seeking formal health care is often delayed. Yet, sick babies often die within a few hours and delays can be fatal. Delays also affect maternal outcomes. Three crucial delays are outlined in the previous chapter on childbirth care – delay in recognition of complications, delay in reaching appropriate care, and delay in receiving appropriate care.

When a baby dies, the women – not the men – of the family perform the burial. It is often taboo to moan and cry during the burial of a newborn or for relatives and friends to inquire about newborn deaths. In some

countries, it is said that if a newborn baby dies, ‘the baby has gone back and the baby has not been born yet.’

Some cultural practices hinder the health and survival of the newborn, and young first-time mothers are often most likely to follow these practices. Giving newborns cold baths, discarding colostrum, and providing food other than breastmilk soon after birth can be harmful. Applying butter, ash, or other substances such as cow dung to the umbilical stump increase the risks of infection.

This chapter will outline the package for PNC and describe the current coverage and trends for PNC in Africa. Then we will explore opportunities to strengthen PNC at the health facility, through outreach, and in the community, and suggest practical actions that will help address key challenges relating to providing quality care to mothers and babies during the critical postnatal period.

Package

It has been estimated that if routine PNC and curative care in the postnatal period reached 90 percent of babies and their mothers, 10 to 27 percent of newborn deaths could be averted. In other words, high PNC coverage could save up to 310,000 newborn lives a year in Africa.⁹ (See data notes on page 226 for more information on this

analysis) The impact on maternal survival and well being would also be significant.

There is now more consensus on the content of PNC (what),^{10,11} but questions remain about the best timing (when) and place (where) for postnatal visits, and who can deliver this package. Box III.4.1 outlines the current consensus regarding the *what, when, where, and who* of routine PNC.

BOX III.4.1 Routine postnatal care (PNC): What, when, where, and who?

WHAT is routine PNC?

Preventive care practices and routine assessments to identify and manage or refer complications for both mother and baby including:

Essential routine PNC for all mothers

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

Essential routine PNC for all newborns

- Assess for danger signs, measure and record weight, and check temperature and feeding
- Support optimal feeding practices, particularly exclusive breastfeeding
- Promote hygiene and good skin, eye, and cord care
 - If prophylactic eye care is local policy and has not been given, it is still effective until 12 hours after birth
 - Promote clean, dry cord care
 - Identify superficial skin infections, such as pus draining from umbilicus, redness extending from umbilicus to skin, more than 10 skin pustules, and swelling, redness, and hardness of skin, and treat or refer if the baby also has danger signs
- Ensure warmth by delaying the baby's first bath to after the first 24 hours, practising skin-to-skin care, and putting a hat on the baby
- Encourage and facilitate birth registration
- Refer for routine immunisations
- Counsel on danger signs and home care

Extra care for low birthweight (LBW) or small babies and other vulnerable babies, such as those born to HIV-infected mothers (two or three extra visits)

The majority of newborn deaths occur in LBW babies, many of whom are preterm. Intensive care is not needed to save the majority of these babies. Around one third could be saved with simple care,⁹ including:

- Identify the small baby
- Assess for danger signs and manage or refer as appropriate
- Provide extra support for breastfeeding, including expressing milk and cup feeding, if needed
- Pay extra attention to warmth promotion, such as skin-to-skin care or Kangaroo Mother Care
- Ensure early identification and rapid referral of babies who are unable to breastfeed or accept expressed breastmilk
- Provide extra care for babies whose mothers are HIV-positive, particularly for feeding support (Section III chapter 7).

WHAT is routine PNC? (continued)

Early identification and referral/management of emergencies for mother and baby

Appropriate detection, management, or referrals are necessary to save mothers and babies in the event of life-threatening complications

Danger signs for the mother

- Excessive bleeding
- Foul smelling vaginal discharge
- Fever with or without chills
- Severe abdominal pain
- Excessive tiredness or breathlessness
- Swollen hands, face and legs with severe headaches or blurred vision
- Painful, engorged breasts or sore, cracked, bleeding nipples

Danger signs for the baby

- Convulsions
- Movement only when stimulated or no movement, even when stimulated
- Not feeding well
- Fast breathing (more than 60 breaths per minute), grunting or severe chest in-drawing
- Fever (above 38°C)
- Low body temperature (below 35.5°C),
- Very small baby (less than 1500 grams or born more than two months early)
- Bleeding

WHEN and how many postnatal visits should occur?

The optimum number and timing of PNC visits, especially in limited resource settings, is a subject of debate. Although no large-scale systematic reviews have been carried out to determine this protocol, three or four postnatal visits have been suggested. Early visits are crucial because the majority of maternal and newborn deaths occur in the first week, especially on the first day, and this period is also the key time to promote healthy behaviours. Each country should make decisions based on the local context and existing care provisions, including who can deliver the PNC package and where it can be delivered. The following are offered as a guide:

- *First contact:*
 - If the mother is in a facility, she and her baby should be assessed within one hour of birth and again before discharge
 - Encouraging women to stay for 24 hours, especially after a complicated birth, should be considered
 - If birth occurs at home, the first visit should target the crucial first 24 hours after birth
- *Follow up contacts* are recommended at least at 2-3 days, 6-7 days, and at 6 weeks
- *Extra contacts* for babies needing extra care (LBW or those whose mothers have HIV) should have two or three visits in addition to the routine visits

WHERE should PNC be provided and WHO can provide it?

There are a number of possible strategies for delivery of PNC and many of the routine tasks can be delegated, although supervision and linkages are crucial:

- *At a facility:* This is more likely if the mother gives birth in the health facility, but even then women and babies do not necessarily receive an effective PNC contact before discharge from the health facility, and even if mothers initially come to facilities for birth, they may not return in the first few days after discharge from a facility
- *Through outreach services:* A skilled provider can visit the home to offer PNC to the mother and baby
- *Home visits from a community health worker (CHW):* Where health systems are not as strong and human resources are limited, certain tasks can be delegated to CHW, linking to health facilities for referral as required
- *Combination of care in the facility and at home:* PNC may be provided in the health facility following childbirth, at the home during the first crucial two to three days, with subsequent visits to the facility after six to seven days and six weeks, when the mother is better able to leave her home

Sources: Adapted from references^{1,12}

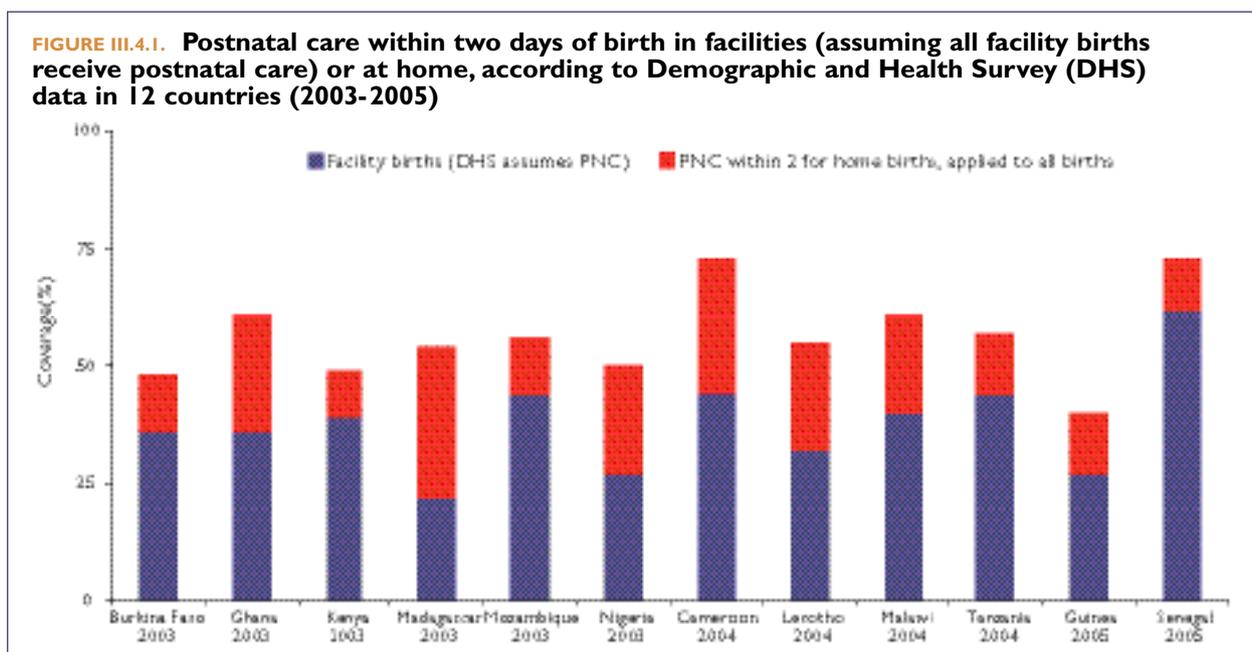
Note: This information is not intended to be a detailed clinical guide.

Current coverage and trends

The postnatal period is a neglected period. Despite the fact that the majority of maternal and newborn deaths occur within the first week of the postnatal period,¹ health care providers across sub-Saharan Africa continue to advise mothers to come back to the facility for a first check-up only after six weeks. This is a visit for survivors.

The void of comparable, relevant data for programmes reveals the lack of systematic implementation of this package. There are no consistently measured indicators of effectiveness of national PNC programmes.⁸ The definitions for monitoring PNC are sometimes problematic, including the assumption used in some surveys that all women who have facility births automatically receive PNC. Based on an analysis of 23 Demographic and Health Surveys (DHS), two thirds of women in sub-Saharan Africa give birth at home, and only 13 percent of these women receive a postnatal visit within two days of birth.

According to DHS data in Ethiopia, 90 percent of mothers did not receive any PNC within the first six weeks. Of the few who did have a PNC contact, more than half gave birth in a health facility, where crowds and the practice of early discharge often hinder mothers from receiving proper PNC. In Eritrea, 92 percent of women giving birth at home received no PNC within the first six weeks. Similarly, 85 percent of women giving birth at home in Mali and 70 percent of women giving birth at home in Rwanda received no PNC at all, according to the most recent DHS country data. Aside from measuring the number of births that take place at home, the PNC indicator in DHS gives no information on the content or quality of the visit. This is in contrast to the more comprehensive information provided by questions on antenatal care (ANC), where women are asked if they received a variety of interventions, such as tetanus toxoid injections and blood pressure measurements.



Source: DHS data for surveys from 2003-2005. DHS assumes that all facility births receive PNC. See data notes on page 226 for more information on this indicator.

A lack of PNC affects the coverage of several essential interventions. Although healthy home behaviours such as breastfeeding are well described, only 30 percent of babies in sub-Saharan Africa are exclusively breastfed. Many newborns are also found to be too cold after birth, even in tropical countries,¹³ and skin-to-skin care after childbirth is not widely practiced.

Family planning is an important missed opportunity in the postnatal period. Focus group discussions in Kenya revealed that virtually all women thought that family planning information could be given during postnatal visits or before a woman leaves the hospital after childbirth.^{14:15} The lactational amenorrhoea method should be the first method of choice for early family



planning among mothers with new babies, also considering condoms to provide dual protection against HIV/AIDS as well as pregnancy.¹⁶ Family planning technologies for the early postnatal period, such as insertion of an intrauterine contraceptive device within the first 48 hours after childbirth, should be considered.¹⁷

Opportunities to strengthen PNC

Across Africa, policy and programmatic opportunities exist to strengthen PNC, given widespread recent recognition that this is a key gap in the continuum of care. PNC contact maintains continuity of care between maternal and child health services, supporting healthy behaviours that should have been introduced during ANC visits and continued during labour and childbirth. In addition, PNC contact is crucial to ensure a seamless continuum of care from home to hospital. Improvement of PNC depends on the capacity and accessibility of local

health systems, the level of decentralised decision making, and common cultural practices, particularly cultural practices regarding seclusion that may reduce care seeking.

Even with agreement on the main content of a global package for PNC, the *who*, *where*, and *how* should be adapted to the relevant health and social context. Approaches for scaling up PNC include different possibilities for women giving birth in a health facility and women giving birth at home. Given that over half of women and their newborns remain at home during and immediately after birth, integrating care for both mother and newborn outside the formal health system is crucial.

Four possible approaches to provide PNC are listed in Table III.4.1, based on the place of birth and the place(s) and providers for PNC. The expected acceptability and challenges of these possible approaches for the mother and the provider and the health system are also detailed.

TABLE III.4.1 Postnatal Care (PNC) strategies: feasibility and challenges to implementation

Possible strategies	Mother-friendly	Provider-friendly	Challenges for implementation
1 Mother and baby go to facility for PNC	●	●●●	Requires mother to come to the facility within a very short time following birth. More likely following a facility birth.
2 Skilled provider visits the home to provide PNC for mother and baby	●●●	●	Conditional on sufficient human resources, which is challenging and may not be highest priority for skilled attendants in settings where skilled attendance at birth is still low. May be possible where rural health facilities are quiet during afternoons.
3 Community Health Worker (CHW) visits home to see mother and baby	●●●	●	Requires training for CHW and management, supervision, and logistic support.
4 Combination: Facility birth and first PNC visit in the facility, then home visit within two to three days, with subsequent PNC visits at the facility	●●	●●	Requires team approach with facility and CHW, sufficient human resources, good management and supervision, good referral systems, and an efficient information and tracking system so that mother and baby are not lost to follow up.

Key: ●Low ●●Moderate ●●●High

Source: PNC working group composed of chapter authors and editors.

With a supportive policy environment, these strategies can be implemented and integrated within the continuum of care, linking with other services at the facility, home, and community levels. Serious consideration should be given before commitment is made to an approach that would necessitate the scaling up of a new cadre of worker.

1. PNC at the facility level

The most common model used for PNC in Africa is to

ask the mother who has given birth in a facility to return to the facility for PNC.⁷ In sub-Saharan Africa, a high proportion of women attend at least one ANC visit, when providers can counsel pregnant women in their last trimester on the importance of having a skilled attendant at birth and an early check-up for mother and baby. Evidence suggests that women are more likely to have a skilled attendant at childbirth if they receive good ANC, and if they have a skilled attendant at birth, they are more likely to return for PNC.^{18,19}



Women who give birth in a health facility could ideally be encouraged to stay for at least 24 hours before discharge. This allows the health facility staff to observe the mother and the newborn to ascertain whether the preferred feeding option is established and to make sure any maternal or neonatal complications are detected and managed. If specific risk factors are identified in the baby, the mother and baby should be kept another two days to enable feeding, warmth, and care for complications, and the mother of a LBW baby can be taught Kangaroo Mother Care (KMC). Before discharge, mothers should be advised to bring their newborns back if they notice any danger signs. They should be given a specific date to return for PNC, which will increase the likelihood of them attending with their newborns.²⁰ In many settings, however, even if the woman has a facility birth, she will not return for care in the first two days after birth, when the risk of dying is highest for herself and her baby. Where feasible, timely home visits should be arranged and scheduled, or a combination approach can be considered as discussed in the fourth strategy below.

2. PNC as outreach: Home visits by a skilled attendant

Postnatal follow up of new mothers and their newborns can also be provided through outreach visits by a skilled attendant. The attendant can examine both mother and baby, provide essential maternal and newborn care, and identify complications, which can either be managed on the spot or referred appropriately. Successful outreach visits for PNC have already occurred in limited resource settings. In Madagascar, 15 percent of women receive a postnatal visit by a health professional in their own homes. In one pilot study in rural Kenya, retired midwives facilitate childbirth at home and visit the mother and baby two or three times in the first week.⁸ A study in Zambia showed that midwives who educated mothers in their homes on newborn health enabled them to identify danger signs and take action more frequently, resulting in a reduction in the prevalence of health problems in newborns.²¹ In general, however, there are not enough midwives to provide care during childbirth in much of Africa, and adding two or three home visits may be expensive and challenging with current human resource limitations. Additional time and expense for travel to undertake home visits must also be considered. Childbirth care does require a skilled attendant and may be the priority for the midwife's time.

3. PNC at the family and community level

Since the postnatal period is often characterised by seclusion for the mother and baby, community health worker (CHW) visits to the home offer an opportunity to reach the woman and baby with care and build specific health messages into this culturally sensitive time.^{22,23} Certain tasks in routine PNC could be delegated to a less skilled cadre, where feasible and appropriate (Box III.4.2). In countries where CHW programmes are being scaled up nationally, adding home PNC for mother and baby to

the CHW remit and training would have a high impact at relatively low cost. Health facilities serving certain geographic areas can strengthen linkages between formal health workers and community health extension workers, CHW, and other cadres, such as traditional birth attendants, to improve both the knowledge base and care for the mother and baby pair immediately after birth. CHW who are tasked with providing PNC should be connected to the health facility through supervision and a functional referral system. If a CHW visits a mother and newborn and finds a complication, she should refer the patient and accompany her to the health centre, if possible. Experience of home-based PNC is available from several studies and pilots in Asia.^{24,25} Currently there is less experience in Africa, although a number of studies are in process to test adapted approaches for home-based care, linking to the health system.

BOX III.4.2 Is there a role for community health workers (CHW) in postnatal care?

According to a number of recent reviews, with proper training and support, CHW can:

- Increase healthy behaviours for the baby such as exclusive breastfeeding, ensuring warmth (for example, delayed bathing and skin-to-skin care), and hygienic practices
- Provide extra care for the low birthweight (LBW) baby
- Reduce newborn deaths through early identification and case management of pneumonia where referral is not possible²⁶
- Provide information and services for the mother especially for birth spacing and family planning, giving vitamin A to mothers
- Identify danger signs for both mothers and newborns and support referral for management of maternal and newborn complications
- Promote the use of other services such as birth registration and vaccination

Source: Adapted from references ²⁵⁻²⁹

4. PNC through linking facility care with outreach and community care

Instead of a facility-only strategy or a community-only strategy, it may be possible to develop a linked approach, with a skills mix in the team. This is particularly true in countries or settings where access to primary level facilities is good and referral links between primary level and referral level are functional. For example, the woman may give birth in the facility, go home, have a CHW or extension CHW visit her at home on the second day, and then return to the facility after one week and six weeks. A referral slip can be designed to facilitate these linkages. Where maternity waiting homes are available, the new mothers and their infants could perhaps stay for three days to ensure all is well before travelling the long distances home. Referral links, however, continue to remain the weakest point in many maternal and newborn health care programmes.³⁰ One programme that trained CHW to give key messages was successful in improving healthy home behaviours and increasing postnatal attendance among village women of childbearing age in a remote area of Uganda.³¹

Targeting specific groups for additional PNC

Whether births occur at facility or at home, health workers should be able to identify specific risk factors in women and in newborns (LBW, preterm birth, feeding problems, illness and history of prolonged and difficult labour, mother with HIV) and follow up. Extra care is specifically needed for LBW babies and preterm babies. Where the birth is in a facility and specific risk factors are identified, the mother and baby can be kept in the facility longer to enable extra support for feeding, warmth, and care for complications. If appropriate, the mother can be taught KMC. If the birth is at home and a CHW or extension worker is being used for routine PNC visits, extra visits should be considered for LBW babies and others requiring special care, such as babies of HIV-infected women. For PMTCT programmes, the postnatal period provides opportunities for increased support, particularly for alternate feeding choices.³² Integration of PMTCT with MNCH programmes would strengthen the linkages in this crucial handover period to enhance the continuum of care

Challenges

There is a major gap in the continuum of care due to low coverage of PNC. There is limited available research to identify the optimum timing and delivery approaches, and in any case, these may be situation-specific. The challenges may be considered in terms of demand and supply of services.

Increasing demand for postnatal care

There are many delays in seeking care, especially during pregnancy, childbirth, and the postnatal period (Section III chapter 3). Delays in seeking care in the postnatal period often occur because of the restrictions that keep

mothers and babies at home. Another important obstacle is lack of information. Women may not seek care because they do not recognise complications or know the service is available to them.⁷ If care does exist, they may not perceive any benefits in attending, even though they would welcome information on caring for their new baby, breastfeeding, and family planning, either before becoming pregnant or during pregnancy.³³ Women perceive childbirth as a major event but may view the postnatal period with less concern.

Community involvement is crucial for shortening delays in seeking care after birth because family members can significantly influence behaviours. In many areas where husbands work away from home, women may wait for the 'decision maker' to return to give permission and pay for visiting a facility. Additionally, many societies in sub-Saharan Africa acknowledge that grandmothers play an influential role in supporting the young women (their daughters and daughters-in-law) in their community during pregnancy, childbirth, and throughout the care of the newborn (Box III.4.3). Sometimes harmful practices are endorsed by grandmothers, but given the wide-ranging role they play, their influences, and their intrinsic commitment to promoting the wellbeing of women and children, they should be viewed as key actors in the provision of PNC. The influence of other community gatekeepers such as local leaders, traditional birth attendants, CHW, and support groups and their potential for channelling information and swaying behaviour offer both opportunities and challenges.

Improving the supply of PNC

Many countries have some sort of postnatal policy (even if it only exists as a six week check-up), but generally at the national level, there is a lack of guidelines, standards, protocols, and most importantly, human resources for the management of the mother and baby in the early postnatal period.³⁴ Moreover, there is often insufficient coordination between the different health providers, weak links between programmes, and inappropriate use of information. In many countries, unless she decides to seek family planning, a woman may never receive a check-up until she becomes pregnant again. The majority of countries do not have a postnatal register, so even if a nurse has a check-up with new mothers, she cannot record her efforts. To deal with this problem, the Ministry of Health in Kenya has recently designed and instigated a register for three targeted postnatal visits: one visit within 48 hours, the next within one to two weeks, and the third visit at around six weeks.

The quality of care around the time of childbirth will influence newborn care during the postnatal period. Where skilled care is lacking, there are very few providers trained in essential newborn care or care of the sick newborn and very few courses for nurses and midwives to extend their skills.³⁴ Where skilled care is available, providers are often too busy to think about giving information about the importance of having a postnatal

check-up for new mothers and their babies.³⁵ The immediate postnatal period is often a time of uncertainty for programme planners, who question whether PNC is the responsibility of those looking after the mother through a safe motherhood programme or those caring for the newborn through a child survival programme. There is rarely a systematic handover between those who care for the mother and those who care for the baby and child; thus, a disconnect occurs in the continuum of care.

Limited health management capacity as well as referral and communication failures have also been identified at various service levels.³⁶ One study from Tanzania suggests that midwives need more support to provide PNC. Factors that may affect health workers in providing PNC include the gap between classroom theory and practice, political awareness, and involvement in policy making. In addition, lack of confidence in management and referral of women with complications and limitations in dealing with job stress were also highlighted.³⁵

Innovative solutions exist in other regions where PNC packages have been adapted, and Africa should build on these experiences. One project in Nepal aimed to improve the mother and newborn's access to basic, acceptable PNC through a network of CHW delivering home-based care. The results showed that it is feasible for trained volunteers to provide effective home-based PNC of reasonable quality and coverage. The project has also shown high rates of identifying health problems and referring both mothers and newborns, although these results should be interpreted with caution given the low sample size of mothers and newborns with health problems.³⁷

Practical steps

There are a number of practical steps that can be taken by governments and partners in order to scale up PNC services. These include developing an evidence based PNC package, building and reinforcing links between the community and health facility, and improving available information to guide programmatic decision making.

1. Develop an evidence based PNC package

Standardise timing and frequency of care. The timing, frequency, and exact content of PNC visits require further testing and harmonisation. Many countries in Africa have adopted or partially adopted the World Health Organization (WHO) 1998 model of care, which suggests postnatal visits within six hours after birth, three to six days, six weeks and six months (6-6-6-6).¹⁰ However, the most important time period for PNC is the critical first 24 hours, when most maternal and newborn deaths occur (Box III.4.1). If possible, the next contact should be on the second or third day of life, and, if resources permit, a third visit during the first week should be included. The routine visit during the sixth week is important for the baby's immunisation and the mother's family planning counselling. Countries may require

BOX III.4.3 Wisdom from grandmothers on newborn care

In Mali, one programme engaged grandmothers to educate communities about making simple changes to protect the health of mothers and babies. Grandmothers discussed better nutrition, preventing and treating infections, keeping newborns warm and dry, and early breastfeeding. As a result, there were fewer newborn deaths and a decrease in harmful practices such as high workload for pregnant women, bathing within six hours after birth, application of cocoa butter on the baby's umbilical cord, and giving coffee to newborns. Husbands were more willing to pay for medical services and nutrition supplementation during pregnancy and even accompanied their wives to health services for consultation.

One mother's thoughts: "the shame wall between mother-in-law and daughter-in-law falls gradually; money is given by the husband because permission was given by his father, who was influenced by his wife."

Source: Adapted from reference³⁸

support to adapt their PNC package based on existing policy, including who can deliver PNC and where it can be delivered.

Establish leadership at various levels to review, adapt, integrate, and implement a PNC package. Based on individual country situations, high level government officials, donors, and other advocates can collaborate to champion PNC for the mother and newborn. It is important for Ministries of Health to coordinate, integrate, and strengthen the PNC component within existing programmes such as IMCI, child survival, safe motherhood initiatives, emergency obstetric care, and early childhood development.





The leadership team should assess the pre-service and in-service training curricula for all cadres of health providers so that essential PNC is included.²¹ Furthermore, they should adapt, disseminate, institutionalise, and implement evidence based PNC policies.³⁹ Guidelines, training materials, job aids, and postnatal registers for both mother and newborn are available but are not yet combined to make an integrated package for systematic implementation within the region. Where focused ANC has been successfully introduced, coverage can extend smoothly along the continuum of care to deliver a targeted PNC package. Key messages for PNC can also be developed to match other MNCH messages. After implementation, Ministries of Health and stakeholders should plan to review programmatic operations, such as supplies and logistics issues, as well as lessons learned.

2. Integrate programmes: Build and reinforce linkages between community and facility

Connect MNCH services at every service delivery level. PNC requires coordinated care for both mother and baby wherever services are offered (at the health facility, community, and home) and referral linkages to both maternal and child health services. In many instances, the same health worker is providing care for the mother and baby, yet protocols and standards for combining maternal and newborn care have yet to reach peripheral health facilities, or a child health worker is assessing a newborn but has not been trained to do so. It is therefore imperative to bring national level guidelines to those who deliver services – the health workers.

Empower family and community members. Use birth planning programmes and PNC to inform mothers, family, and community members on good maternal and newborn care practices at home. Simple communication and counselling materials can guide families from cultural practices to evidence based essential newborn care, including timely recognition and referral of maternal and newborn danger signs. When suggesting a change in behaviour, it is important to negotiate this change and ensure that community gatekeepers are included in the process.

Provide for supervision, management, and accountability. For various community-based programmes, supervision and quality assurance are the weakest links and failing points. Programme managers as well as outreach and health extension workers should be supported in routine supervision of CHW and volunteers. Performance-based remuneration of CHW should be considered in order to keep CHW motivated and hold them accountable for delivery of services.

Consider the use of maternity waiting homes. Maternity waiting homes linked to health facilities with emergency obstetric care services may help reduce deaths for mothers and babies, especially for those who live far from the facility and who have known risk factors, such as a previous neonatal death. The new mother and baby can stay in these maternity homes for three or four days to make sure they are healthy before going home.

Bridge the gap between PNC and family planning. Family planning programmes should increase outreach and bring community-based workers to coordinate efforts with health providers at facilities (and vice versa). Programmes must recognise and respond to the cultural and physical immobility of the mother in the postnatal period as well as the receptivity of mothers and their husbands, grandmothers and other influential family members to advise and support. Counselling strategies should be redirected to include all aspects of newborn care⁴⁰ (Section III chapter 1).

Establish and nurture key partnerships. Use creative ways to recognise and support new and existing partnerships between government, donors, non-governmental organisations, women's groups, traditional health practitioners, and local faith-based organisations. Consider:

- Recruiting the support and cooperation of religious figures, who are often prominent figures in community health
- Recognising the influence of traditional birth attendants and other community health promoters and providers and inviting them to join the 'community health team' to educate parents and grandparents on positive practices
- Expanding formative research on knowledge, attitudes, and behaviours, and negotiating change for practices that are harmful while encouraging those that are helpful

3. Improve available information to guide programmatic decision making

Strengthen monitoring of PNC. Data on PNC coverage are lacking. Standardised monitoring indicators must be developed to promote PNC as an important MNCH programme and to evaluate cross-country comparisons.⁴¹ Routine health management information systems should also include PNC indicators (Box III.4.4). For example,



future DHS and Multiple Indicator Cluster Surveys (MICS) should ask women who have recently given birth about the quality and use of PNC they received, including when, where, and with whom. Compound indicators for essential newborn care are under discussion, such as the percentage of newborns dried after birth, breastfed within one hour, and kept close to the skin of the mother or caregiver.

Conduct relevant operations research. Many questions remain about the *who, where, and how* of providing PNC, particularly for poor and underserved populations, and how to provide PNC in varying settings whilst linking to the health system. Most of the studies so far have been in Asia and there is a dearth of information for PNC programming in Africa. Some of these research gaps include:

- Who can provide care in various settings? How do programmes locate pregnant women and new mothers who do not access antenatal and/or childbirth care? Who can do what for the mother and baby?
- Where is care best provided? Where do women and families want to receive PNC – at home or in the facility? Can services be provided in facilities and homes and linked? How can referral systems be strengthened?
- How frequently should services be delivered for routine PNC and for extra care for small babies? How can PNC services be better integrated with PMTCT and other programmes?
- What is the impact and cost of varying models of PNC delivery?

Conclusion

Many African women and their newborns do not have access to health care during the early postnatal period, putting them at an increased risk of illness and death. Each year, 310,000 fewer newborns would die in Africa and many maternal lives would be saved if the coverage of PNC reached 90 percent of women and babies.⁹ Yet PNC programmes are among the weakest of all reproductive and child health programmes in the region. Advancing PNC policy and programmes is crucial, as is implementing and testing the feasibility, sustainability and cost effectiveness of what we do know. There is an incredible opportunity to adapt PNC to varying settings to reach women and their newborns, especially for the 18 million African women who give birth at home.

BOX III.4.4 Key indicators for postnatal care (PNC)

- Mother/newborn receiving PNC within three days* and subsequent visits
- Place where care is provided and type of care provider
- Timely initiation of breastfeeding within one hour after birth*
- Sick newborns taken for treatment
- Health facilities where skilled or trained health care providers are competent in essential newborn care and management of maternal and newborn complications
- Case fatality rate of newborn complications (by cause if possible)

*Newborn and child indicators in Countdown to 2015 child survival indicator list.⁴² See Section IV for complete list.



Priority actions for strengthening postnatal care

Develop and implement an evidence based PNC package

- Attain global agreement on timing, frequency, and content of care
- Establish or revitalise a national working group to develop and operationalise a national PNC package, for example, one that is linked to the national Road Map
 - Adapt programmatic protocols and key messages for use in PNC
 - Train/retrain health workers
 - Address supply and logistics issues

Strengthen the programme

- Bridge key gaps in implementation at the family/community, outreach and facility level between family planning, ANC, childbirth, and PNC

Improve the information available to guide programmatic decision making

- Improve and standardise monitoring indicators for PNC
- Conduct relevant operations research



Integrated Management of Childhood Illness (IMCI)

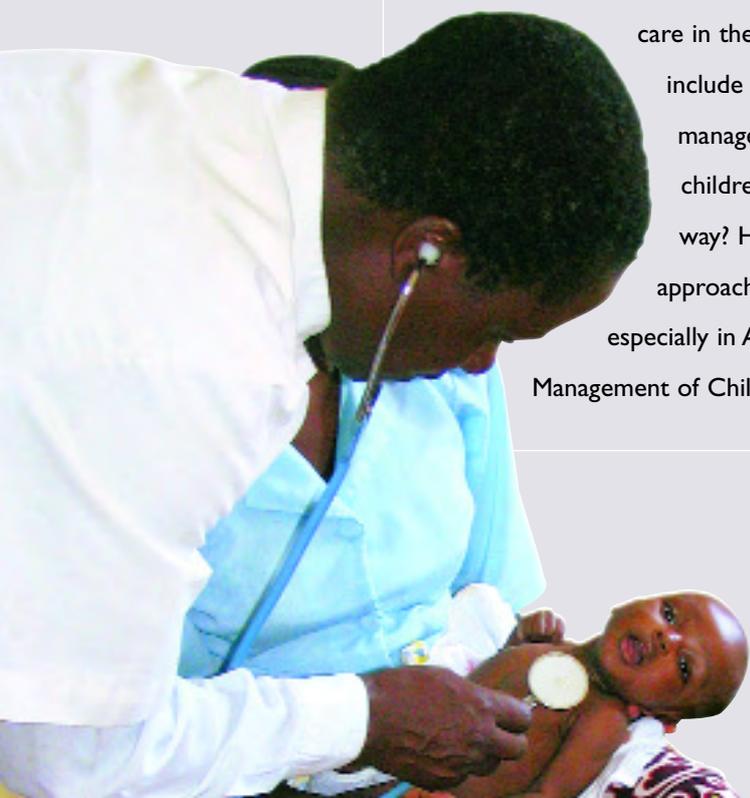
Tigest Ketsela, Phaniel Habimana, Jose Martinez, Andrew Mbeve, Abimbola Williams, Jesca Nsungwa Sabiiti, Aboubacry Thiam, Indira Narayanan, Rajiv Bahl

Every year, nearly 11 million children die before reaching their fifth birthday.

In response to this challenge, WHO and UNICEF in the early 1990s developed Integrated Management of Childhood Illness (IMCI), a strategy designed to reduce child mortality and morbidity in developing countries. The approach focuses on the major causes of deaths in children through improving case management skills of health workers, strengthening the health system, and addressing family and community practices. However, the original IMCI modules did not include care of the sick newborn during the first week of life, the time when one in three child deaths occur, and it did not emphasise home-based newborn care.

IMCI has become a main child survival strategy in almost all countries in the African region, creating a unique opportunity to scale up newborn health interventions using IMCI as a vehicle. Incorporating newborn algorithms in IMCI and strengthening the components of the strategy related to the health system and community will directly impact newborn health. Some of this work has already begun as generic IMCI guidelines and training materials have been revised to include the first week of life. Many countries in Africa are planning to adapt IMCI to include the missing aspects of newborn care. Questions about adapting IMCI in

Africa remain, however. For example, should routine home visits for postnatal care in the first week of life be included in the IMCI strategy? Should IMCI include care at the time of birth? Should IMCI training start with management of young infants (0-2 months) rather than older infants and children? What are the challenges in implementing IMCI in an effective way? How can complementary facility-based and community-based approaches be combined? Many lessons can be gained from countries, especially in Asia, where IMCI has already been adapted to Integrated Management of Childhood and Neonatal Illness (IMNCI).



The problem

The health of children is closely linked to the health and care of their mothers. As the newborn grows into a child, healthy home behaviours and care of illnesses are crucial to save lives. Lack of care, or poor quality care, has effects for newborns and children:

Effects on newborns: Every year 1.16 million African babies die in the first month of life and the leading cause is infections. The majority of the estimated 325,000 babies who die from neonatal sepsis and pneumonia could be saved with simple preventive practices such as clean skin and cord care, breastfeeding and warmth, and better management of those who are sick, especially using antibiotics.¹ Most newborn deaths are among low birthweight (LBW) babies, or babies weighing less than 2500 grams at birth. Simple care of all small babies and early treatment of complications would save many newborn lives. However, neither home care practices nor care of small babies, or even treatment of newborn infections have been systematically addressed by child health programmes at scale, including Integrated Management of Childhood Illness (IMCI).

Effects on children: Lack of health promotion and services for babies has an impact on older children too. Severe illness during the first month of life can result in long term disability and poor school performance but there is little concrete data available on these serious newborn illnesses and their long-term effects on health. The first weeks of life are crucial for establishing healthy behaviours, such as breastfeeding – in Africa only one third of babies under 6 months of age are exclusively breastfed.²

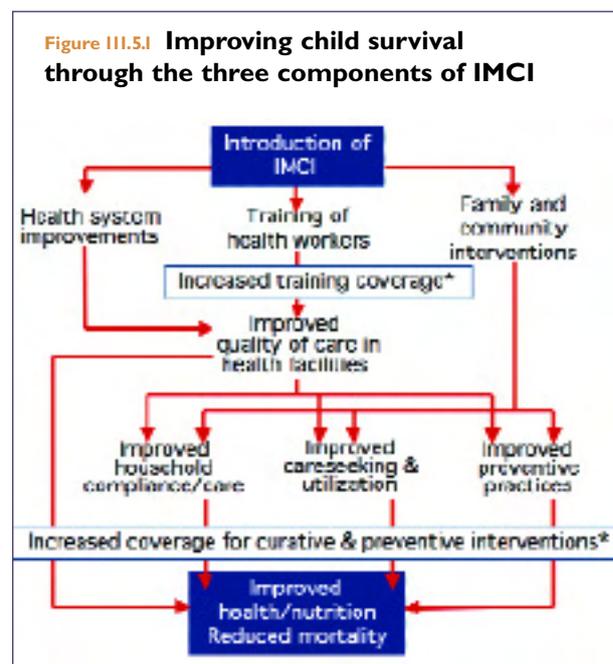
The IMCI package

The Integrated Management of Childhood Illness (IMCI) strategy is central to the achievement of child survival and development, a key principle of the Convention on the Rights of the Child. The strategy is based on human rights that guarantee health care to all children, no matter where they live, and is implemented by addressing the gaps in knowledge, skill, and community practices regarding children's health, recognition of illness, home management of the sick child, and appropriate careseeking behaviour. The IMCI strategy includes three important components:

1. Integrated management of ill children in facilities and health centres
2. Health system strengthening, particularly drugs and logistics support
3. Community IMCI, or promotion of key family and community practices

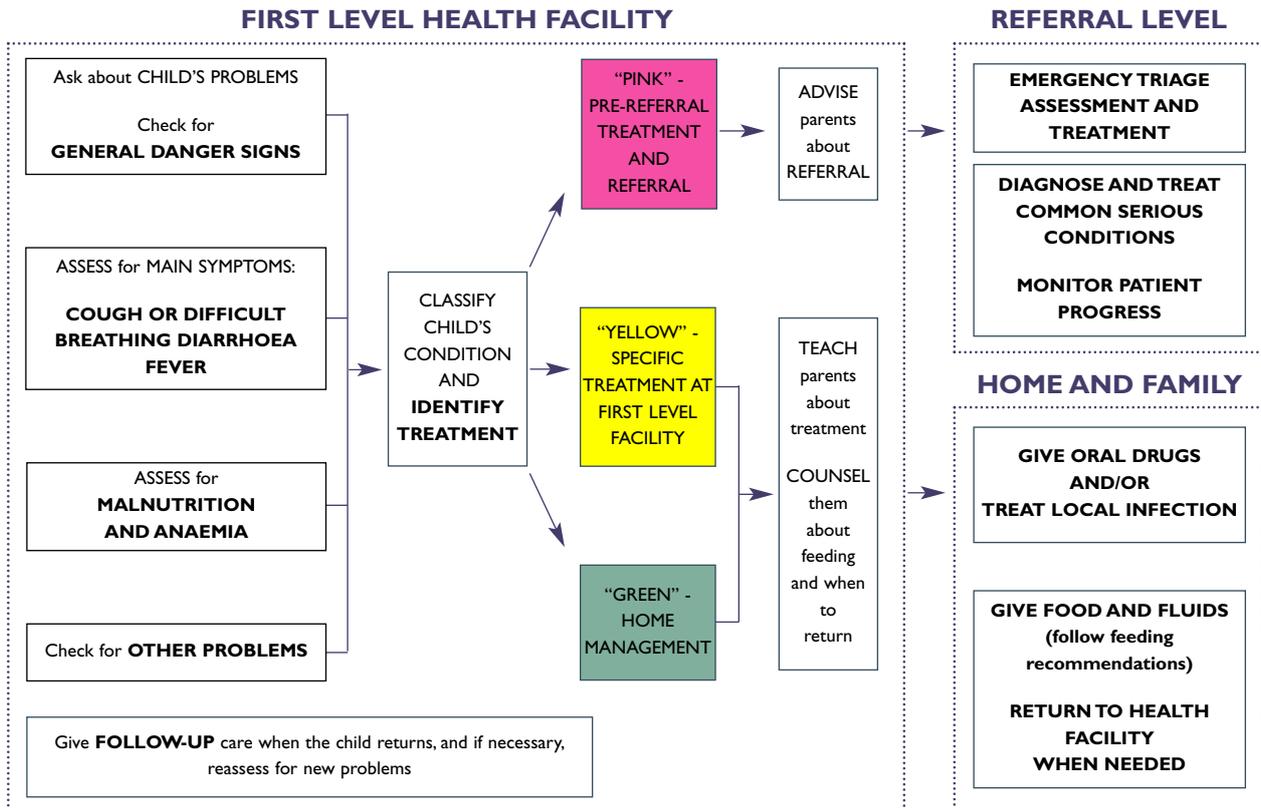
The three components of the IMCI strategy are most effective when they are implemented simultaneously. For example, IMCI training to improve the skills of health workers for better case management in health facilities, accompanied by health systems strengthening efforts, such as improving the supply of essential drugs, resulted in a 13 percent reduction in under-five mortality in two years in Tanzania.³ In Bangladesh, home care for illness

and timely careseeking improved through community IMCI (C-IMCI), while IMCI training increased quality of care at the health facilities. This combination of community and health facility approaches resulted in substantial increases in the use of services.⁴ Figure III.5.1 illustrates the effect on survival of interventions in the three IMCI components.⁵



Source: References⁵⁶ Reproduced with permission of WHO

Figure III.5.2 IMCI case management at first level health facility, referral level, and home



Source: Adapted from references 56

IMCI functions best when families and communities are linked to the first level facility which in turn links well to the referral level. (Figure III.5.2) This is the same principle that is set out in Section II regarding the importance of a seamless continuum of care across health service delivery levels.

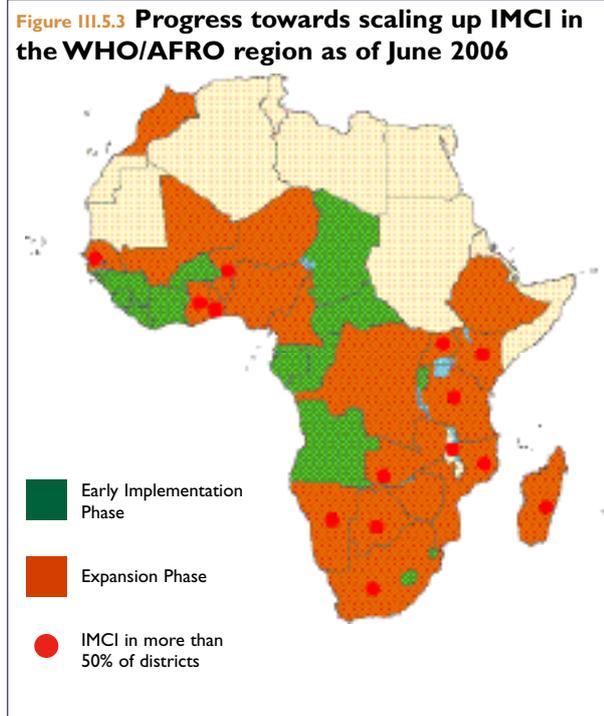
IMCI combines prevention and care, focusing on the child and not only on the individual diseases. The types of interventions currently in the IMCI strategy are shown in Table III.5.1.

Table III.5.1 Types of interventions currently included in the IMCI strategy

LEVEL	TYPES OF INTERVENTION	
	Illness prevention and growth promotion	Response to illness (curative care)
Home and community	<ul style="list-style-type: none"> Community/home-based promotion of appropriate infant feeding practices; peer counselling for breastfeeding and complementary feeding Use of insecticide treated bednets Appropriate infection control practices 	<ul style="list-style-type: none"> Early recognition and home management of illness Appropriate care seeking Adherence to treatment recommendations
Health Services	<ul style="list-style-type: none"> Vaccinations Micronutrient supplementation Health worker counselling for breastfeeding and appropriate complementary feeding 	<ul style="list-style-type: none"> Case management of acute respiratory infection diarrhoea, measles, malaria, malnutrition, and other serious infections Counselling on feeding problems Iron for treatment of anaemia Antihelminthic treatment

Current coverage of IMCI

IMCI is currently being implemented in more than 100 countries throughout the world. As of June 2006, 44 of 46 sub-Saharan African countries in sub-Saharan Africa are in various phases of IMCI implementation, with 27 expanding beyond a few initial implementation districts. Fourteen of these 27 countries are carrying out the strategy in more than 50 percent of their districts (Figure III.5.3).



IMCI implementation has been evaluated through two large efforts: the Analytic Review of IMCI⁷ and the Multi-Country Evaluation.^{5,6} These reports have found that IMCI training substantially improves the quality of care in health facilities.^{3,8-10} Still, while some countries have reached high coverage, most countries have progressed much more slowly than initially expected.⁶ The focus of IMCI strategy in many countries has been more on health worker training than the balance of all three components. Where more than one of the three IMCI components were advanced together, however, as in Tanzania and Bangladesh, faster progress was made in improving child survival.^{4,11}

Opportunities to strengthen newborn care within IMCI

While prioritising the main causes of child mortality, the original generic IMCI guidelines missed two major causes of neonatal deaths during the first week of life – asphyxia and preterm birth. The young infant IMCI algorithms only addressed prevention and management of infections after the first week of life because information on the performance of simple clinical signs of illness in this

period has only recently become available.^{12,13} When the algorithms were originally developed, it was considered that care around the time of birth and the first week were to be mainly addressed through maternal care programmes, although in reality newborn care falls in the gap between maternal and child care programmes.¹⁴

Further, in IMCI implementation the emphasis has been on delivering interventions through the formal health care system. However, many of the simplest first steps to save newborn lives require delivery approaches that are community based. The key family and community practices originally identified in the IMCI strategy did not focus on newborn care practices such as early initiation of breastfeeding and thermal care.

Strengthening the newborn interventions in each component of IMCI would contribute to saving many newborn lives, and would also benefit IMCI itself through further integration of the three components of the IMCI strategy. In this way, IMCI programmes can strengthen the continuum of care by promoting activities that enhance newborn care practices within the family and providing support to vulnerable newborns. In particular this applies to providing care for LBW babies, identifying newborns with signs of severe illness and facilitating timely referral, and improving the quality of care for newborn illness at primary and referral care facilities. Follow-up of babies with problems identified because of a maternal condition, such as syphilis or HIV infection, would also become a priority of child health workers as a result of improved hand-over between maternal and child health services.

Case management of illness in first level health facilities – opportunities to include newborn interventions

The first and most effectively implemented component of IMCI has been the integrated management of ill children in facilities. The core principle is to improve the ability of health workers to categorise sick children using simplified algorithms to identify very severe disease requiring referral and other more simple conditions which can be treated at primary care level. The original generic version of IMCI included algorithms and case management of young infants from one week to two months of age. The training focused on identification and management of serious and local infections, diarrhoea, LBW, and feeding problems in young infants.

The generic IMCI case management guidelines have been recently revised and should form the basis of country adaptations in the future. (See programme resources on page 148) The revised guidelines include the following additions to the original version:

- An evidence based algorithm for identification and management of illness in the first week of life (very severe disease including asphyxia, complications of



preterm birth and serious infections, local infections, and jaundice)^{12,13}

- Additional guidance on thermal care of LBW infants, including skin-to-skin care
- Additional guidance on feeding of LBW infants, including expressed breastmilk feeding using an alternative feeding method, such as a cup
- Improved guidance on home care during the entire neonatal period, including early and exclusive breastfeeding, keeping the infant warm, hygienic cord and skin care, and timely and appropriate care seeking for illness
- In settings with high HIV prevalence, prevention of mother-to-child transmission (PMTCT) of HIV

The revised IMCI training materials also provide guidance on what health workers can do when a young infant needs referral but referral is not possible. It should be noted that the revised IMCI case management guidelines do not include care of the newborn at the time of birth or neonatal resuscitation. There are, however, available guidelines and training modules that can be adapted for this purpose, and health workers who attend births should consult these to develop or improve their skills. (For more information, see Section III.3)

Community IMCI – opportunities to bring newborn care closer to families

The improvement of family and community practices through C-IMCI was officially acknowledged as an essential component of the IMCI strategy at the first IMCI Global Review and Consultation Meeting in 1997. At this meeting, participants acknowledged that improved quality of care at health facilities alone would not achieve the required reduction of childhood morbidity and mortality because many caregivers do not bring their sick children to health facilities for care.

Reducing child mortality requires a partnership between health workers and families, with support from communities. Health workers need to connect with families and communities to ensure that families can provide adequate home care to support the healthy growth and development of their children. Families should be able to respond appropriately when their children are sick, recognising the problems or signs of illness in its early stages, seeking appropriate and timely assistance when children need additional care, and giving recommended treatments.

C-IMCI aims to reach families and communities where they live and is one way of impacting marginalised and hard-to-reach children. It promotes and enables the participation of parents, caregivers, and communities in

Table III.5.2 Key family and community practices

<p>Growth Promotion and Development</p> <ul style="list-style-type: none"> • Exclusively breastfeed for 6 months • Introduce appropriate complementary feeding from 6 months while continuing breastfeeding up to 24 months • Provide adequate micronutrients through diet or supplementation • Promote mental and psychosocial development 	<p>Home Management</p> <ul style="list-style-type: none"> • Continue to feed and offer more food and fluids when child sick • Give child appropriate home treatment for illness • Take appropriate actions to prevent and manage child injuries and accidents
<p>Care Seeking and Compliance</p> <ul style="list-style-type: none"> • Take child to complete full course of immunisation before first birthday • Recognise when child needs treatment outside the home and take to health worker • Follow health worker’s advice about treatment, follow-up and referral • Ensure that all pregnant women have adequate antenatal care and tetanus toxoid vaccination during pregnancy • Encourage active participation of men in child care and reproductive health activities 	<p>Disease Prevention</p> <ul style="list-style-type: none"> • Carry out proper disposal of faeces, washing hands after defecation, before preparing meals, and before feeding the child • Ensure that children sleep under insecticide treated bednets • Ensure prevention and care of persons infected and affected with HIV/AIDS • Prevent child abuse/neglect and take appropriate action when it occurs

their own development and in actions that will make a difference in the survival and development of their children. There are 16 key family and community practices for child care identified for the African region, as shown in Table III.5.2. As part of country adaptation, birth registration has been added in a number of countries.

Of the existing key community practices to promote the wellbeing of the older child, a number also address newborn health including the following:

- Exclusive breastfeeding up to six months (taking into account WHO/UNICEF/UNAIDS policy and recommendations on HIV and infant feeding)^{15,16}
- Early recognition of danger signs and prompt careseeking for treatment of illnesses
- Following the health worker's advice about treatment, follow up, and referral
- Ensuring that infants, children under the age of five, and pregnant woman in malaria-endemic countries sleep under insecticide treated bednets
- Promoting the active participation of men in child care
- Ensuring that every pregnant woman receives the recommended four antenatal visits, at least two doses of tetanus toxoid vaccination, and intermittent preventive treatment for malaria during pregnancy.

However, more practices that improve newborn health and survival should be incorporated. Adding the following key practices to C-IMCI would increase the programme's effect on newborn health:

- Early initiation of breastfeeding, within one hour of birth
- Keeping newborns warm, including skin to skin care (See Box III.5.1)
- Hygienic cord and skin care

Expanding the coverage of C-IMCI while promoting key newborn care practices will be challenging, but it can be done.¹⁷ C-IMCI has been implemented using a variety of delivery approaches at the community level, and several successful practices have emerged. For example, social mobilisation through women's groups to improve care for pregnant women and newborns in Nepal led to substantial reduction in neonatal mortality, according to one study.¹⁸ Routine home visits to improve postnatal care (PNC) have also been successfully replicated in several research¹⁹ and programme settings (e.g. IMNCI in India, and Lady Health Workers in Pakistan).

Community or home-based management of illness is an especially effective method of reducing neonatal mortality in settings where access to health facilities is very low and referral is difficult. A meta-analysis of studies has shown that community management of pneumonia in newborns

was effective in reducing all-cause neonatal mortality by 27 percent (18 - 36 percent).²⁰ The studies also identified barriers to operationalising the strategy. For example, community health workers (CHW) had difficulty differentiating pneumonia from sepsis and meningitis in newborns. In another study in Gadchiroli, India, home management of sepsis by CHW using oral cotrimoxazole and intramuscular gentamicin was effective in reducing sepsis-specific and overall mortality.²¹ However, it should be noted that this one study using injection antibiotics took place in a setting with almost no access to health care; where intensive training and regular follow-up of CHWs was possible. Therefore, careful consideration is required before implementation at scale. Currently, WHO does not recommend management of serious newborn infections by CHW.

Management of illness in hospitals – opportunities to improve care and save lives

Guidelines for hospital care of children and babies in settings with limited resources have been recently published, such as the *Pocket Book of Hospital Care for Children*. (See programme resources on page 148) The chapter on problems of the neonate outlines care at the time of birth, including neonatal resuscitation as well as management of newborns with asphyxia, severe infections, and LBW. The guidelines also list skills for giving intramuscular injections, intravenous catheterization, umbilical vein catheterization, and nasogastric feeding. The guidelines can be used as standards for improving quality of care in hospitals.

Although guidelines exist, there are few concerted programme efforts to improve the quality of care for children in district and teaching hospitals in Africa, and even less attention to improving hospital care of ill newborns. In countries where at least half of all births take place in hospitals, improving the quality of care for ill babies at the facility is one of the most cost effective ways to reduce neonatal deaths.^{1,22,23} Effective hospital care of sick newborns requires adapting existing guidelines and improving skills of health providers, and improving infection prevention practices and logistics for essential equipment and drugs.

Successful management sick children in hospital requires incorporating essential interventions such as neonatal resuscitation, management of infections, and better care of feeding of LBW and especially preterm babies.²⁴ All infants benefit from skin to skin care, especially in a cold climate or cold time of year. LBW infants who are not ill and weigh between 1000 and 2000 grams will especially benefit from Kangaroo Mother Care (KMC) particularly in the first few days of life. (Box III.5.1)

Health system strengthening

Building human resources capacity, including improving health worker skills, needs to be complemented by basic infrastructure, regular availability of drugs, supplies, and

Box III.5.1 Kangaroo mother care

Kangaroo mother care (KMC) is an effective way to care for a small baby weighing between 1,000 and 2,000 grams who has no major illness. KMC enables warmth, breastfeeding, protection from infection, stimulation, and love.

The baby is undressed except for cap, nappy, and socks and is placed upright between the mother's breasts, with head turned to one side. The baby is then tied to the mother's chest with a cloth and covered with the mother's clothes. If the mother is not available, the father or any adult can provide skin-to-skin care. This care is continued until the infant no longer accepts it, usually when the weight exceeds 2,000 grams. KMC is safe to continue at home.

Research has shown that for preterm babies, KMC is at least as effective as incubator care.²⁵ Small babies receiving KMC experience a shorter average stay in hospital compared to conventional care, have fewer infections, and gain weight more quickly, saving the hospital money and time and saving the family additional suffering.



equipment, as well as supportive supervision and monitoring. Efforts to draw the attention of policy makers to the importance of the under-five disease burden and of adequate levels of investment resulted in IMCI and newborn health being placed higher on local and international agendas.^{26,27} This enabling environment and the underpinning management skills are necessary for effective intervention delivery at all levels – community, first-level health facility, and hospitals.

Adding drugs and supplies for managing common newborn conditions to IMCI essential drug and supply lists is a critical step in ensuring the availability of such items.

Proper monitoring can lead to improved care for young infants and children. Programmes can use checklists to assess the quality of newborn care, which can help gauge case management of ill babies and development of health worker skills. Monitoring indicators should track the number of sick babies at health facilities who are referred for severe illness as well as young infants who had routine postnatal contacts with trained health workers. Local information on burden of disease and investment levels for newborns and children should be made available to help policy makers in decision making and prioritisation of intervention and programme implementation.

Adapting IMCI to save newborn lives – putting the “N” in IMNCI

Adapting IMCI to strengthen newborn care requires organising or revitalising a national committee of technical experts and stakeholders to discuss the specifics of the new IMCI package. The committee should take into account the current status of neonatal health as well

as the status of maternal and child health programmes.

The following are key questions to ask when adapting IMCI case management guidelines to strengthen newborn care for use at first level health facilities:

Content of training? It is strongly recommended that IMCI include management of neonates during the first week of life. In other words, the young infant section of IMCI should outline management of babies after birth and up to 2 months old. In all settings, IMCI material should address severe disease in babies (serious infections, asphyxia, and complications of preterm birth), diarrhoea, feeding problems, and care of LBW infants. For example, gonococcal eye infection can be added in settings where local epidemiology suggests that gonococcal eye infections are a problem. Inclusion of jaundice should be considered, bearing in mind that jaundice, though an important cause of disability, is not a major cause of death. Unfortunately, clinical signs are not a reliable way to detect jaundice which requires treatment.^{12,13}

The generic, revised IMCI does not include care at the time of birth, because health professionals present at the time of birth should also have skills to care for the mother during childbirth and this is usually not the same person who is providing IMCI services to children. A complementary training module for newborn care at the time of birth, including resuscitation, might be used either for the skilled attendant or for specific settings where the worker being trained in IMCI would also be present at birth. The WHO Making Pregnancy Safer Essential Newborn Care course can be adapted for this purpose.

Order of training? In the generic version of IMCI, training starts with management of a child of 2 months to 5 years, followed by the young infant. Some countries (e.g. India and Ethiopia) have reversed the training sequence in order to increase the emphasis on newborn health. There are several implications of this decision. The common parts of training (such as the concept of colour-coded classification, clinical signs such as fast breathing and chest indrawing, etc.) will need to be taught at the beginning, using the young infant (0 to 2 months) section. This requires all the training materials to be rewritten and increases the proportion of time devoted to the young infant section of the course. There is no evidence to date that reversing the sequence of training leads to a greater improvement in health worker skills. The current recommendation is that reversing the sequence is not necessary if enough time is dedicated to the training of the management of young infants, including newborns.

How long to train for? Perhaps the greatest strength of IMCI training is the emphasis on skills development through hands-on practice. The revised IMCI case management guidelines call for at least three clinical practice sessions in the young infant training, covering assessment and management of severe disease, feeding problems, and LBW, with all three including components of home care. This implies that at least 2.5 to 3 days are needed for teaching the young infant section. If the full

11-day IMCI training is being implemented, it is recommended that at least one third of the total training time should be allotted for the management of young infants – a minimum of three days. If a short training course is being used (for example six days) then at least 40 percent of the time should be on young infant care – a minimum of 2.5 days. When this length of time is not feasible in a country, alternative strategies for strengthening skills, such as on-the-job supervised clinical practice during follow up after training, should be implemented.

Where to train? Outpatient facilities are generally not the appropriate place to teach clinical practice on young infants. Clinical practice sessions should be organised in inpatient wards, emergency rooms, and postnatal wards in hospitals. The strategy for clinical practice for young infants differs slightly from that of the older child, which mostly takes place in an outpatient setting.

One of the strategies for providing PNC to mothers and newborns is through home visits by facility or community based health workers. Adding this component to IMCI would require additional practice in conducting home visits and at least one extra day of training.

Country examples of the adaptation process

The adaptation process may differ in each country, and the final package may not be the same, but it is important to weigh the pros and cons of each choice.

Table III.5.2 Adaption of IMCI to IMNCI in India – key decisions and their rationale

Issue	Decision made by Indian adaptation committee	Rationale
First week of life	Include management of infection, jaundice, hypothermia, feeding problems, and LBW	A large proportion of neonatal deaths in India occur during the first week of life
Care at the time of birth	Not included	Not all of the target audience attends births. Complementary materials exist to improve skills of workers who do attend births
Training sequence	Young infant before older child	Almost half of under-five deaths in India occur in the neonatal period. There is a need for increasing the focus on newborn
Training time	50 percent of total training duration	Change of sequence implies that common sections (e.g. classification approach) are taught with management of illness in the young infant; 3 clinical practice sessions and 1 practice session for home visits are needed
Clinical practice	3 clinical practice sessions – (i) severe disease: in emergency room and inpatient ward (ii) breastfeeding problems: postnatal wards, (iii) LBW: inpatient and postnatal wards 1 home visit practice session – community	Sick young infants are not usually taken to outpatient department. They are taken to the emergency room, admitted in inpatient wards, or remain at home
Routine home visits for postnatal care	3 routine home visits by community-based workers, supported by facility staff, in the first week of life – days 1, 3 and 7 – for all neonates. Three additional weekly visits for LBW infants – week 2, 3 and 4.	Coverage of PNC is low, particularly in the first week, and existing community based workers can be used to provide PNC at home



The table below summarises the adaptation decisions taken in India. Some of these decisions may be specifically applicable to the Indian context

A number of African countries have also adapted IMCI to include newborn care:

In **Tanzania**, care of illness in the first week of life was added to IMCI algorithms and the standard 11-day IMCI training course.

In **Ethiopia**, due to cost constraints and the length of the time the health worker has to be away from the workplace for training, the Ministry of Health requested a shortened IMCI training course. In response, IMCI training was reduced from 11 days to 6 days, and substantial newborn care components were added, including home visits for all babies, an algorithm for care of the ill baby, and extra care of LBW babies, including home based KMC.

In **Malawi** the addition of newborn care and HIV/AIDS care were undertaken simultaneously in order to avoid repeated, separate revisions to the IMCI training programme. In addition, as human resources are a major constraint in Malawi, a decision was made to reduce the training time to 6 days at least for the pilot stage, along with an assessment of the level of skills.

Challenges

IMCI creates a major opportunity for scaling up newborn care, but there are challenges to rolling out IMCI effectively and for strengthening newborn interventions and care within IMCI.

Supply of services

Adaptation of materials and training/retraining of health workers: Adaptation of materials is an intensive process requiring time, resources, and coordination as well as involving all the various stakeholders at country level. Retraining IMCI-trained health workers according to newly adapted materials has resource implications in terms of direct costs and also opportunity costs for workers taking time away from service provision.

Inadequate human and financial resources: One of the challenges to scaling up IMCI in countries has been reaching a large number of health workers through use of a time-intensive and costly course. To accelerate scaling up, some countries have adopted short IMCI courses that reach many health workers. There is a need to evaluate these efforts and the quality of care. Even if the course is shortened, at least 2.5 to 3 days are needed for the young infant section. There may also be challenges in finding adequate numbers of newborns, especially sick newborns, for demonstration in some health facilities, which limits the choice of training sites. The very nature of illness in such babies may also prevent close observation and handling. Hence additional creative methods, such as videos, may need to be employed.

Inadequate quality of care at community level: There may be legal hurdles involved, whereby government policies and professional bodies do not allow CHW to be responsible for the treatment of sick babies, even where access to care at facilities is low. A strategy to overcome this policy constraint is urgently needed to provide life-saving care to newborns and children who are not receiving it at the community level. Tools for building capacity for home visits and community activities by CHW and other community health care providers are under development.

Demand for care

Families generally have insufficient knowledge about seeking care for sick children. This is further complicated by traditional practices that keep mothers and babies secluded in their homes for varying periods of time. In addition, they often stay in dark or poorly lit rooms which make it difficult to detect any problems, especially in the baby. There is a need to increase awareness and improve care-seeking behaviour for sick newborns among the community.

Linking community care and health facility care

Connections between communities and health facilities are often weak. There is neither adequate supportive supervision from facilities to communities, nor an effective referral system from the CHW to the first level health facility. Given that severely ill newborns identified at the community or first level health facility have a high risk of death within hours, it is extremely important to develop and strengthen connections between the community and the facility. Health facilities and communities must work together to improve the quality of health services and increase their use. Selected community members can take part in the non-technical components of supervision.

Although there are often a number of different organisations working at the community level, they usually work in a fragmented manner. For maximum impact, all efforts towards reducing newborn and child deaths should be coordinated and approaches harmonised. There should be an open line of communication between the various players in the community and other levels. Governments should also coordinate community-based interventions undertaken by the various partners.

Practical steps to strengthen newborn health within IMCI

- *Revitalise a national group linked to the IMCI task force:* Invite technical experts and stakeholders to discuss the new IMCI package.
- *Adapt the revised IMCI guidelines:* The IMCI training guidelines should be adapted to include management of illness in the first week of life, including home care and additional care of LBW infants. Drafts of the revised

generic chart booklet, training materials, and adaptation guide are already available to serve as a basis for this process.

- *Implement the revised guidelines*
 - **Train/retrain health workers:** Health workers already trained in IMCI should be given a refresher course to acquaint them with the adapted materials. Health workers not already trained in IMCI should undergo a full revised course with both young infant and older child components. A minimum of 2.5 to 3 days should be dedicated for training in the young infant part of the course.
 - **Include drugs for newborn care into essential drugs list:** Ministries of Health should be encouraged and supported to include key drugs and supplies for newborn care in their essential drugs list.
 - **Include key family practices for newborn care and strategies for increasing coverage:** The list of key family practices adopted by countries should be revised to include additional practices that positively impact newborn survival. Efforts to promote these practices through counselling at health facilities, counselling by CHW and peers, and discussions in women's groups should be accelerated.
 - **Improve quality of care in hospitals and strengthen referral systems**
- *Provide health care in communities where access to health facilities is very poor:* Routine home visits by CHW to provide PNC, additional home care for LBW infants, and community-based management of local infections and referral for severe illness should be considered to increase coverage of interventions in remote areas.
- *Document and share experiences:* Countries should document and share their experience of efforts for improving newborn health through IMCI. South-to-south exchange of information should be encouraged. Research to evaluate the skills of health workers after IMCI training, testing the algorithm for detection of newborns with problems at routine home visits, and comparison of the effectiveness of different delivery approaches for community based interventions are high priority.

Conclusion

IMCI, already in place in almost all countries in sub-Saharan Africa, provides a unique opportunity to rapidly scale up newborn health interventions, especially care of serious infections. Strengthening the newborn component of IMCI implemented at the community, first level

health facility, and referral levels is likely to contribute to improved newborn survival in Africa. Adaptation of the revised IMCI algorithms, including the missing newborn care practices in C-IMCI, and strengthening hospital care for newborns are key steps in this process. The adoption of a joint WHO/UNICEF/World Bank child survival strategy developed in collaboration with the African Union will provide a policy framework for more integration of newborn health interventions within child survival programme implementation.

There are several challenges in implementing IMCI in an effective way to improve newborn survival. In most situations, IMCI has been implemented to include infants and children in health facilities, but is not proactive in reaching children in the community, which is especially detrimental to newborn health. Complementary strategies such as home visits by facility-based or community-based health workers to provide routine PNC may be necessary. Furthermore, the IMCI algorithm includes referral of young infants with severe problems to a higher level facility. However, considerable effort is needed to achieve timely referral and ensuring that referral centres can care for ill newborns.

Priority actions for strengthening IMCI to address newborn health

- Finalise global algorithms and adaptation guide for IMCI
- Revitalise a national group linked to IMCI task force
- Adapt the revised IMCI guidelines for young infants, including the first week of life
- Implement the revised guidelines
 - *Train/retrain health workers*
 - *Include drugs for newborn care into essential drugs list*
 - *Include key family practices for newborn care and strategies for increasing their coverage*
 - *Improve quality of care in hospitals and strengthen referral systems*
- Provide health care in community settings in areas with very poor access to health facilities
- Document and share experiences

Nutrition and breastfeeding promotion

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Undernutrition of children is an important contributor to the deaths of 10.5 million children globally each year. Malnutrition is inter-generational. Girls who are malnourished, especially those who are still children when they become pregnant, often have babies who are too small, and therefore more likely to have poor health throughout the lifecycle into adulthood, which in turn will affect future generations. In spite of the recognized benefits of breastfeeding for mothers and children, breastfeeding practices in Africa remain sub-optimal and enmeshed with issues around the current HIV epidemic and prevention of mother-to-child transmission (PMTCT).

The health and nutrition needs of Africa's newborns and their mothers are significant and inextricably linked, and optimal child growth and development are fundamental to governments' efforts to accelerate economic development. Pregnancy and the first two years of life provide a window of opportunity to ensure a healthy start. *The Lancet's* 2003 child survival series identified a package of proven nutrition interventions with the potential to avert up to 25 percent of child deaths if implemented at scale. One of these

interventions, exclusive breastfeeding, could save up to 1.3 million children worldwide.

This essential intervention involves the early initiation of breastfeeding and ensuring that the mother gives only breastmilk, and no other food or fluids, during the first six months of life. We know that "breast is best" and that mothers' nutrition is essential for the wellbeing of newborns in Africa. We also know what is needed to

improve the situation, as outlined in the *Global Strategy for Infant and Young*

Child Feeding. However, progress is slow. How can we ensure that the majority of newborns benefit from this knowledge and that nutrition promotion efforts are better integrated with existing programmes?



Problem

Undernutrition and micronutrient deficiencies resulting from inadequate food and micronutrient intake by women and sub-optimal feeding practices of newborns and infants are associated with health problems throughout the lifecycle. The negative consequences for maternal, newborn, and child health (MNCH) are summarised below:

Effects on mothers: Many women in Africa suffer from chronic undernutrition and micronutrient deficiencies and fail to gain enough weight during pregnancy. The consequences of malnutrition for mothers include increased risk of death, illness, and complications during pregnancy and childbirth, greater susceptibility to infection, reduced activity levels, and lower productivity.¹ Vitamin A and iron deficiencies are common; it is estimated that half of all pregnant women in Africa are anaemic, though this is difficult to measure and compare because of the use of different definitions and insufficient data.² When intake of energy and other nutrients does not increase during pregnancy, lactation, and periods of high physical activity, a woman's own reserves are used, leaving her weakened.

Effects on newborns: Maternal malnutrition increases the risk of stillbirths and newborn deaths, intrauterine growth restriction, low birthweight (LBW), preterm birth, and birth defects. Each year, more than four million LBW babies are born in Africa.³ These babies are at increased risk of death in the neonatal period, are more likely to be stunted and wasted children, and are at higher risk of child death. Stunting in infancy and early childhood is associated with lower levels of school performance.^{4,5}

Sub-optimal feeding practices during the postnatal period increase the risk of death, illness, and malnutrition. Despite overwhelming evidence of the benefits of exclusive breastfeeding, only about one in three African babies under six months is exclusively breastfed, due to lack of understanding of optimal feeding practices and lack of support from health service providers, community members, and families.⁶ Babies who are not exclusively breastfed in the early months have a higher risk of death, especially from infection.

Effects on infants and young children: Trends in childhood malnutrition suggest that the situation in sub-Saharan Africa is static or deteriorating, particularly as HIV/AIDS affects child health and nutrition. Based on projections, the prevalence of underweight children under five years of age in sub-Saharan Africa will increase from 24 million children in 1990 to 43 million in 2015. In other regions of the world, the prevalence of underweight children is expected to decline.⁷ Anaemia during pregnancy affects infant iron status, increasing the risk of infection, delaying motor development, and leading to cognitive impairment in early childhood. The prevalence of anaemia remains high in children under five years of age, estimated at 60 percent in sub-Saharan Africa.⁸ Vitamin A deficiency also remains a significant concern. Infants with vitamin A-deficiency are at greater risk of growth failure, eye problems, lower resistance to infections, more severe cases of measles, and more frequent and severe episodes of diarrhoea.

Cultural and social factors often contribute to poor nutrition and health outcomes. Incorrect information from family, neighbours, and friends as well as 'local myths' may lead to nutrition practices that fail to provide optimal benefits to mothers and newborns. For example, women may avoid certain nutritious foods that are considered taboo during pregnancy, or may 'eat down' for fear of having a big baby and a difficult labour. Economic constraints may also lead to energy and nutrient insufficiency, as pregnant women may be required to perform physically demanding work that may be harmful to both mother and baby. Cultural and social factors also impact feeding practices of newborns. Often the first milk, colostrum, is not given to the baby, sometimes due

to fears that the yellow milk will give the baby jaundice. On the other hand, some cultural practices promote healthy behaviours. In some cultures, for instance, a woman may receive special foods and be encouraged to rest for several weeks after childbirth.

This chapter covers the package of essential nutrition actions contributing to newborn health, starting with the health and nutrition of the mother and then discussing recommended breastfeeding practices. We then give an overview of opportunities to integrate these practices within existing programmes, the challenges to optimal feeding practices, and practical planning and programmatic steps to accelerate progress.

Package

Mothers and babies form an inseparable biological and social unit, so the health and nutrition of one group cannot be divorced from the health and nutrition of the other. Optimal nutrition for maternal, newborn, and child survival, health, and development can be promoted at key points throughout the lifecycle. The optimal practices are often called Essential Nutrition Actions.⁹

The WHO/UNICEF *Global Strategy for Infant and Young Child Feeding*¹⁰ provides an integrated and comprehensive approach for promoting improved infant feeding practices.

Recent estimates in *The Lancet*¹¹ have quantified the costs required for breastfeeding promotion and suggest that the costs are surprisingly low. To reach 99 percent of families with two home visits by peer counselors, the estimated additional cost is around US\$124 million for 75 countries with high under-five mortality, including 40 African countries. This translates to an additional three cents per capita in those countries. This is around US\$90 per life saved – cheaper even than measles immunisation, which is considered a very low-cost intervention.

The mother

Essential nutrition actions for the mother that have an effect on the nutritional status of newborn infants are:

- Adequate intake of iron during and after pregnancy
- Adequate intake of vitamin A in the postnatal period
- Adequate intake of iodine

Other interventions affect the nutritional status of the mother, particularly through anaemia prevention. These interventions may be considered in certain settings, which include:

- Treatment of hookworm (with mebendazole) in second or third trimester of pregnancy
- Intermittent preventive treatment for malaria during pregnancy
- Use of insecticide-treated bed nets during pregnancy and after birth
- PMTCT of HIV

The baby

Essential nutrition actions for newborn health and nutrition are:

- Early initiation of breastfeeding
- Exclusive breastfeeding for the first six months of life
- Feeding newborns in exceptionally difficult circumstances, including LBW or premature babies, those born to HIV-infected women, sick or severely malnourished babies, and those in emergency settings, such as war or natural disaster

Maternal nutrition

Improving women's nutrition will result in healthier mothers and babies

Years of nutritional neglect perpetuate a cycle of malnutrition and poor health that begins in utero, continues throughout childhood and adolescence, and

passes to the next generation with the birth of a malnourished baby. A baby's low weight at birth is the result of preterm birth (before 37 weeks of gestation), restricted fetal (intrauterine) growth, or both. Many factors relating to the mother, the baby, and the physical environment affect the duration of gestation, the rate of fetal growth, and thus the birthweight and the baby's future health.

A baby is considered to be LBW if he or she weighs less than 2500 grams at birth and small size is due to either inadequate fetal growth or to preterm birth (born before 37 weeks of gestation), or both. Mothers in deprived socio-economic conditions are more likely to have LBW babies. In these settings, LBW stems primarily from the mother's undernutrition and poor health, underpinned by poverty, and leading particularly to the high prevalence of infections, such as malaria or syphilis, and pregnancy complications.¹² Physically demanding work during pregnancy also contributes to poor fetal growth and increases the risk of preterm birth.

During pregnancy, all women need more food, a varied diet, and micronutrient supplements. The most commonly used supplements are currently iron/folic acid; however, multiple micronutrient supplements for pregnant woman are being tested as a way to enhance maternal micronutrient status and increase birthweight. During lactation, maternal stores of energy, protein, and other nutrients need to be established, conserved, and replenished to ensure both the health of the mother and adequate levels of micronutrients in her breastmilk. Contrary to popular belief, virtually all mothers, unless extremely malnourished, can produce adequate amounts of breastmilk. The primary factors influencing breastmilk production are the frequency of suckling and good attachment to the breast, not the nutritional status of the mother. When the breastfeeding mother is undernourished, it is more beneficial for her and her child as well as safer and less expensive to improve her diet than to expose the infant to the risks associated with breastmilk substitutes. Box III.6.1 lists actions to improve maternal nutrition.



BOX III.6.1 Actions to improve nutrition for pregnant and breastfeeding women

- At least one extra serving of staple food per day during pregnancy and the equivalent of an extra meal per day during lactation
- Increased daily consumption of fruits and vegetables, animal products, and fortified foods
- Iron/folic acid supplementation or multiple micronutrient supplementation during pregnancy and the first three months postpartum; continued use as needed
- Adequate intake of iodine – use only iodized salt
- Decreased workload and additional rest during pregnancy
- Antimalarial drugs and insecticide treated bednets to prevent anaemia in malaria-endemic areas
- Proper sanitation and footwear to prevent anaemia from hookworm infections where endemic, and routine use of anthelmintics after the first trimester of pregnancy where hookworm prevalence exceeds 20 percent
- Adequate intake of vitamin A in the postnatal period and a high-dose vitamin A supplement taken after childbirth, where this is national policy

Source: Adapted from reference¹

Early and exclusive breastfeeding: Breast is still best

After decades of research on breastfeeding, new findings point to an even greater effectiveness of breastfeeding for saving lives and improving health than previously known. In Africa, the vast majority of babies are breastfed, but sub-optimal breastfeeding practices put them at risk. Even though it is a natural act, breastfeeding is also a learned behaviour. Mothers need skilled support to learn to position the baby and breastfeed optimally. Box III.6.2 summarises the recommended breastfeeding practices for the newborn.

Breastfeeding early or immediately after birth

A longitudinal study in Ghana estimated that 22 percent of newborn lives could be saved if breastfeeding were initiated within the first hour.¹⁴ Early initiation of breastfeeding provides warmth, promotes bonding, and helps the mother by reducing the risk of postpartum haemorrhage. During the first days of life, breastfeeding helps to prevent low blood sugar (hypoglycaemia) and low temperature (hypothermia), which are important contributors to newborn deaths. Most newborns are ready to find the nipple and latch on to the breast within the



first hour of birth, if provided with immediate skin-to-skin contact. Colostrum, the thick and yellowish or clear breastmilk produced in the first few days, provides the baby with high levels of antibodies, immune cells, vitamin A, and other protective factors.

Breastfeeding exclusively Giving no other foods or liquids, including water, to babies for the first six months could save the lives of up to 1.3 million children each year worldwide.^{15,16} According to a meta-analysis undertaken by a WHO Collaborative Study Team to assess the impact of breastfeeding on infection-specific mortality, the risk of death for babies younger than two months was approximately six times greater for non-breastfed babies as compared to breastfed babies.¹⁷ Edmond and others report a four-fold increase in neonatal mortality risk in babies who are partially rather than exclusively breastfed and a two-fold higher mortality risk in infants who receive pre-lacteal feeds.¹⁴

Exclusive breastfeeding protects newborns against major causes of death such as sepsis, acute respiratory tract infections, meningitis, and diarrhoea.¹⁸ Exclusive breastfeeding also provides all of the fluid and nutrients needed for optimal growth and development during the first six months. Early and exclusive breastfeeding are associated with increased maternal-infant bonding and the earlier establishment of effective suckling and feeding behaviours. Good attachment at the breast enables an infant to suckle effectively, remove milk efficiently, and stimulate an adequate milk supply. Poor attachment can result in ineffective suckling, which may lead to insufficient breastmilk intake and breast conditions such as breast engorgement, sore and cracked nipples, and mastitis.

More vulnerable groups require extra support for feeding

All newborns are vulnerable and require support to enable optimal breastfeeding. However, some groups are even more vulnerable and thus require extra support, including LBW babies, babies born to HIV-infected women, and

BOX III.6.2 Breast is best: Recommended breastfeeding practices for the newborn

- Early breastfeeding – initiation of breastfeeding takes place within one hour of birth, with colostrum and continuous skin-to-skin contact
- Exclusive breastfeeding (no other foods or liquids, not even water) for six months
- Good attachment and positioning and prompt treatment of breast conditions such as engorgement, cracked nipples, mastitis, and breast abscesses
- Frequent breastfeeds, day and night (8-12 times per 24 hours and more frequently if needed, especially in the early weeks)
- Continuation of breastfeeding when mother or newborn is ill
- Extra support for feeding more vulnerable newborns, including low birthweight or premature babies, those born to HIV-infected women, sick or severely malnourished babies, and those in emergency settings such as war or natural disaster

Source: Adapted from reference¹³

babies born in complex emergency settings. In sub-Saharan Africa, 14 percent of babies are born with LBW. There is strong and consistent evidence that feeding the mother's own milk to LBW infants, especially preterm babies, is associated with lower incidence of infections and improved neurodevelopment as compared with formula feeding. Box III.6.3 provides guidelines for feeding LBW babies. To reduce the risk of haemorrhagic disease, WHO recommends that all LBW babies receive vitamin K by injection.¹⁹ Small babies, especially babies born too early, can benefit from Kangaroo Mother Care (KMC), or skin-to-skin contact with the mother. KMC can start immediately after birth and has been shown to increase breastfeeding and accelerate weight gain.

Babies born to HIV-infected women present another particularly vulnerable group. Interventions for preventing HIV transmission should start in pregnancy. Safer infant feeding practices can also reduce the risk of mother-to-child transmission of HIV. Each woman needs accurate and unbiased information and counselling on infant feeding options as well as support in selecting and practicing the most appropriate feeding option for her situation. If replacement feeding is acceptable, feasible, affordable, sustainable, and safe (often referred to as AFASS), avoidance of all breastfeeding by HIV-infected mothers is recommended (Figure III.6.1). Otherwise, exclusive breastfeeding is recommended during the first months of life and should be discontinued as soon as replacement feeding meets these AFASS standards. Special care should be taken to prevent and promptly treat breast conditions to reduce the risk of transmission. (See Section III chapter 7)

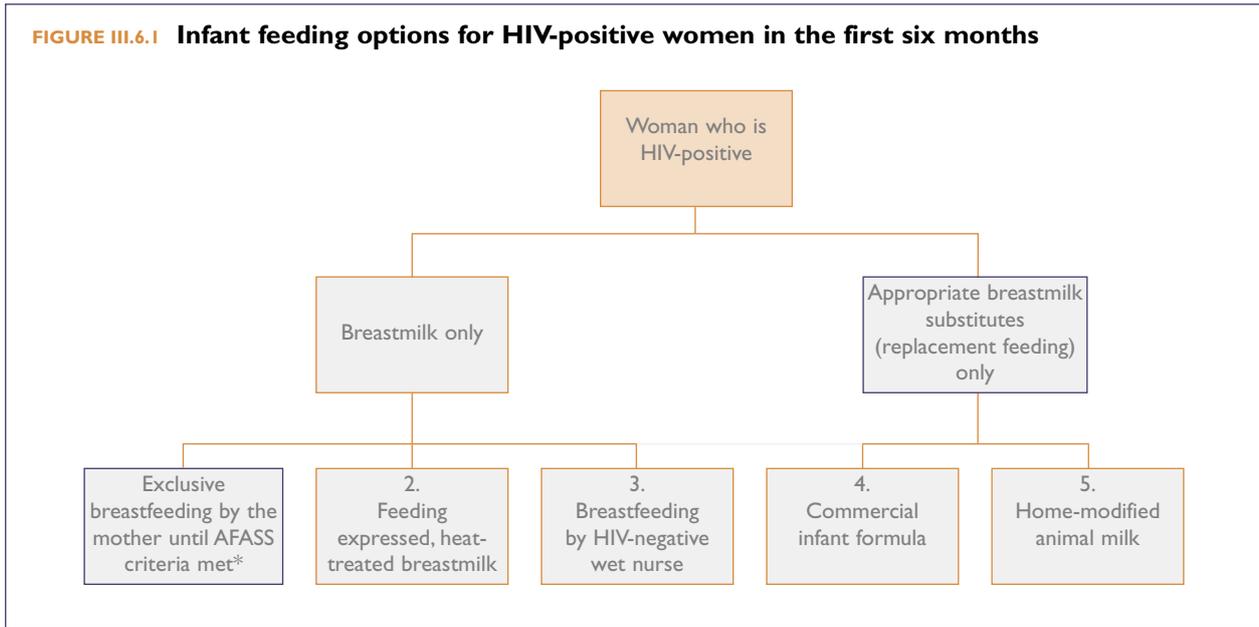
Babies are especially vulnerable during complex emergencies. Childhood illnesses and death rates can

BOX III.6.3 Extra care and support for feeding low birthweight (LBW) and preterm babies

- Most LBW babies who are not preterm (born too early) can breastfeed immediately after birth, but require extra care and support for staying warm and establishing good breastfeeding practices.
- Moderately preterm babies (born around one to two months early or weighing about 1,500 to 2,000 grams) can usually suck, but may tire easily. Mothers should be supported to start expressing breastmilk within the first six hours after childbirth. During the first few weeks, when the baby is learning to breastfeed but cannot complete the feed, the mother can put the baby to the breast, and after the baby tires, the mother can give additional expressed milk using a cup or spoon. The mother can express breastmilk into a sterile/clean container just before the baby sucks. Both the expression and suckling will stimulate continued milk production, and the suckling will provide the baby with the fat-rich hind milk. In health facilities, tube feeding may occasionally be required.
- Very preterm babies (born more than two months too early and often weighing less than 1,500 grams) may not be able to suck efficiently in the first days or weeks and may need nasogastric tube feeding or intravenous fluids. If possible, they should receive care in a referral facility.

Sources: Adapted from references²⁰⁻²²

FIGURE III.6.1 Infant feeding options for HIV-positive women in the first six months



*If replacement feeding becomes acceptable, feasible, affordable, sustainable, and safe (AFASS) during the first six months, the HIV-positive woman should move from exclusive breastfeeding to replacement feeding, avoiding an abrupt change. Source: Adapted from reference²³

increase 20-fold in these situations because of high levels of exposure to infections, poor hygiene, and inadequate feeding and care. Lack of breastfeeding dramatically increases these risks. Breastfeeding practices should not be undermined through inappropriate distribution of breastmilk substitutes. Emergency staff can endorse customary good practices and support mothers by providing breastfeeding counselling and appropriate health care and nutrition, such as the establishment of breastfeeding shelters as well as ensuring a safe supply of drinking water for women's increased hydration requirements and an adequate supply of quality and quantity of food to support lactation.

Current coverage and trends

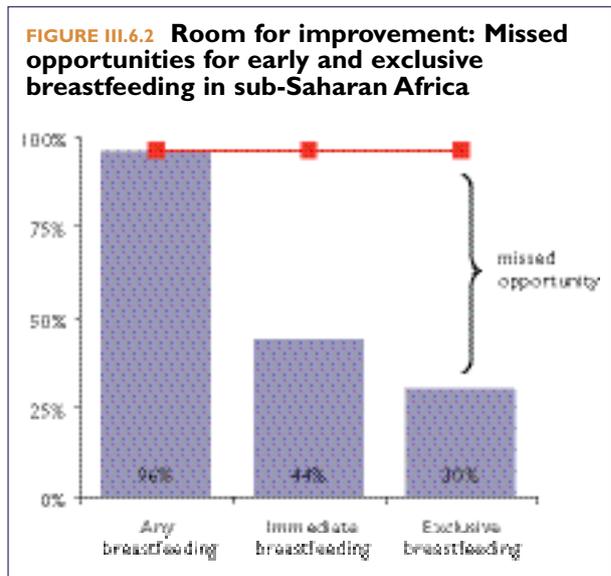
Nearly all babies in Africa are breastfed, but feeding practices are sub-optimal for the majority compared to the optimal practices of early and exclusive breastfeeding.

Early breastfeeding, within the first hour of birth, is not the norm. This is a major missed opportunity for breastfeeding in Africa. While 96 percent of babies are breastfed, only 44 percent of babies are put to the breast within one hour of birth, according to Demographic and Health Survey (DHS) data from 29 African countries. Rates ranged from a low of about 23 percent in Senegal to a high of 81 percent in Namibia.

Exclusive breastfeeding, measured as infants less than six months old who received only breastmilk in the previous 24 hours, is even lower. Fewer than one in three babies in sub-Saharan Africa is exclusively breastfed⁶ (Figure III.6.2). Exclusive breastfeeding rates in the countries of western and central Africa are the lowest of all developing countries.

The reasons for the low exclusive breastfeeding rates worldwide are many and vary from country to country. Common reasons include lack of awareness of the benefits of optimal practices, inadequate health worker training on optimal practices and counselling skills, inadequate access of mothers to those who have received such training, local beliefs and customs, commercial and family pressures, and unsupportive work environments. For example, in one programme in Ghana, it was found that many women were breastfeeding 'on the run'. Because of competing demands on mothers' time, at each feed mothers gave a little bit of milk from both breasts, so children were not suckling enough to get the rich hind milk. These babies remained hungry and mothers were therefore tempted to give other foods.²⁴

FIGURE III.6.2 Room for improvement: Missed opportunities for early and exclusive breastfeeding in sub-Saharan Africa

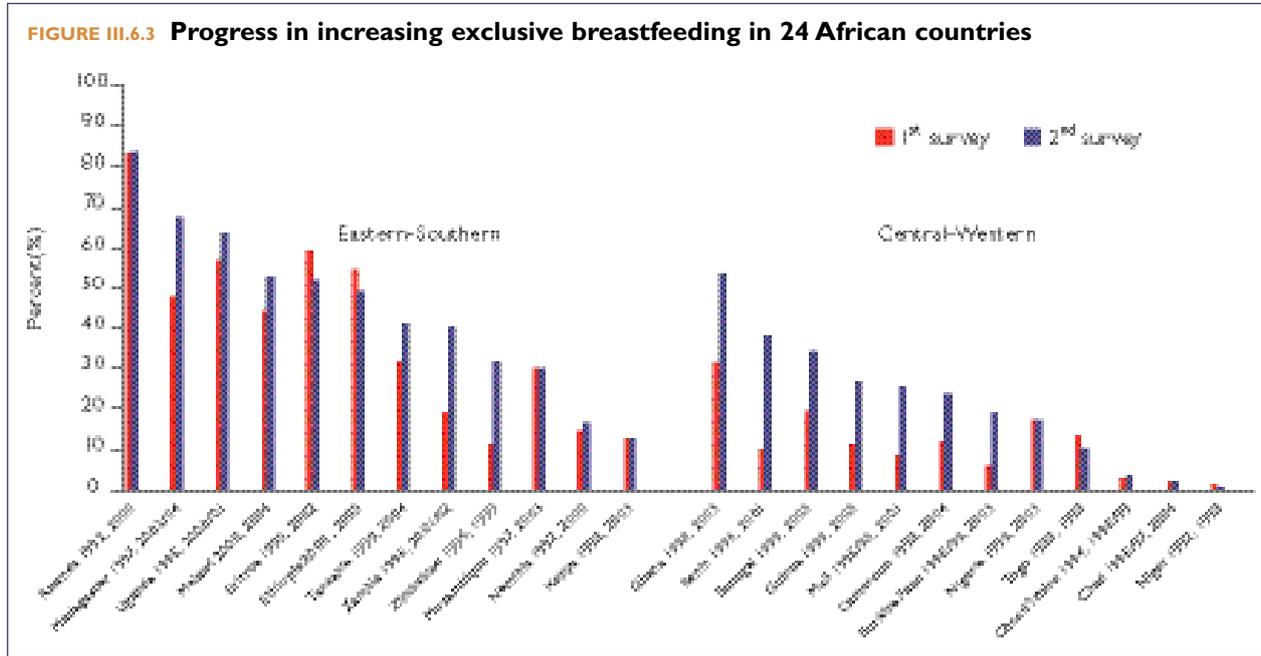


Source: Demographic and Health Surveys, see data notes on page 226 for more details. See country profiles in Section V for country-specific data.



While exclusive breastfeeding rates remain low, a number of countries have made significant progress (Figure III.6.3). Within a five to eight year period, the rates

increased by 20 to 40 percentage points in Benin, Ghana, Madagascar, Mali, Zambia, and Zimbabwe, according to DHS data.



Note: Among infants under six months of age at the time of the survey, the percentage who received only breastmilk in the 24 hours preceding the interview
Source: Demographic and Health Surveys (DHS) from 24 countries with two DHS, see data notes on page 226 for more details

Opportunities to strengthen and integrate nutrition with MNCH programmes

There are opportunities to provide all pregnant women and their newborns with essential nutrition actions through existing nutrition and health care services as well as other MNCH programmes. Within MNCH, nutrition support can take place throughout the continuum of care in antenatal services, safe motherhood and reproductive health activities, integrated management of childhood illness (IMCI), and programmes to prevent mother-to-child transmission of HIV. Opportunities outside of the health sector should also be seized. For example, nutrition messages have been successfully integrated into the meetings of women’s credit groups that provide ‘credit with education’ and have led to improved breastfeeding behaviours and nutrition outcomes.²⁵

The overall strategy should strive to use all programme opportunities to the maximum extent possible to deliver the *right* nutrition support at the *right* time to the *right* group. Information, support, and confidence building contribute to the establishment and maintenance of optimal breastfeeding practices. These require trained breastfeeding counsellors and an effective behaviour change communication approach with targeted, concise messages disseminated frequently and widely through appropriate media. Messages delivered through multiple channels, for instance, to the policy maker, health care provider, community leader, and radio journalist, should be harmonised.

Routine health services offer opportunities to provide support for optimal feeding practices for newborns and adequate nutritional care for pregnant women and new mothers.

- *During pregnancy* women can be counselled on adequate food intake to maintain healthy levels of weight gain, food diversity to improve vitamin and mineral intake, and the control and treatment of both malaria and helminth infections to prevent anaemia. Pregnant women can also receive counselling on micronutrient supplementation and early and exclusive breastfeeding.
- *During labour* hydration and continuous physical, emotional, and informational support can reduce the need for medical interventions that can make the baby drowsy and less likely to initiate breastfeeding immediately. This support can increase a woman’s confidence in her ability to breastfeed and care for her baby.
- *During and immediately after childbirth* those attending the mother should offer counselling and support for early and exclusive breastfeeding, correct positioning and attachment. Several studies suggest that allowing a brief interval of time (30-120 seconds) to pass between childbirth and clamping or tying the umbilical cord can increase the transfer of blood and iron to the newborn and reduce the risk of anaemia in infancy.²⁶ However, international guidelines on the recommended timing of cord clamping are currently under review. A high-dose vitamin A supplement should also be given to the mother after childbirth, where this is policy.

- *Throughout the postnatal/neonatal period* contacts with new mothers provide an opportunity to counsel on frequent and exclusive breastfeeding, observe the newborn for correct positioning and attachment, resolve problems, and discuss actions related to maternal nutrition during lactation, particularly eating more each day, ensuring diet diversity, and continuing micronutrient supplementation as indicated.

These opportunities are missed for a variety of reasons, including inadequate competencies to provide the support needed, lack of clear protocols for service providers (e.g. lack of ‘job aids’), lack of stock and key supplies, or simply an overloaded health system resulting in sub-standard health service delivery.

Mozambique: A study in 10 facilities in Manica Province assessed whether health providers used their contacts with mothers for nutritional counselling. Of the 39 women observed during postnatal consultations, only three were asked if they were exclusively breastfeeding. Opportunities to discuss exclusive breastfeeding were again missed during child consultations.²⁷

Ethiopia: Although 79 percent of pregnant women in an urban/peri-urban area attended at least one antenatal visit, only 22 percent received iron/folic acid supplements, 45 percent were tested for anaemia, and 33 percent were counselled on exclusive breastfeeding.²⁸

Opportunities in health facilities

One major strategy to address early infant feeding

practices at the health facility level is the Baby-Friendly Hospital Initiative, supported by WHO and UNICEF and launched in 1991, to ensure that opportunities were not missed to support breastfeeding during antenatal and postnatal care. A maternity facility can be certified as “baby-friendly” if it adheres to the Ten Steps to Successful Breastfeeding, listed in Box III.6.4, and if it implements relevant provisions of the *International Code of Marketing of Breast-milk Substitutes*.

Opportunities in communities

Many African women have limited contact with health services. Strengthening community-based activities to increase skilled and timely support for maternal nutrition and breastfeeding is essential. Community-based activities include education and support from skilled birth attendants and existing community groups, community mobilisation, traditional and mass media, and home visits.

- **Existing community groups.** Mother-to-mother support groups, mothers’ clubs, and social, religious, and credit groups can be avenues for breastfeeding information and support. In the Gambia, 12 communities identified five women and two men in each community to be trained and certified as Village Support Groups on infant feeding. These groups disseminated information through home visits, village meetings, ceremonies, songs, and dances. Early initiation of, and exclusive breastfeeding became the norm. In addition, the communities constructed rest

BOX III.6.4 Being Baby-Friendly

To be declared baby-friendly, a facility or hospital must pass these ten steps for successful breastfeeding:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff
2. Train all health care staff in skills necessary to implement this policy
3. Inform all pregnant women about the benefits and management of breastfeeding
4. Help mothers initiate breastfeeding within one half-hour of birth
5. Show mothers how to breastfeed and maintain lactation, even if they should be separated from their infants
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated
7. Practice rooming in – that is, allow mothers and infants to remain together 24 hours a day
8. Encourage breastfeeding on demand
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants
10. Foster the establishment of breastfeeding support groups, and refer mothers to them on discharge from the hospital or clinic

Source: Adapted from reference²⁹





houses near the fields to enable mothers who were farmers to breastfeed their infants at work.³⁰

- **Community mobilisation events.** Songs, drama, storytelling, puppet shows, baby shows, health fairs, World Breastfeeding Week, and community festivals are examples of community mobilisation events to promote breastfeeding and better nutrition practices for pregnant and lactating women. They are entertaining ways of sharing information and celebrating accomplishments, while involving local officials, health volunteers, and families.
- **Mass media.** Mass media can be used to reinforce messages communicated through print materials and interpersonal communications as well as raise awareness, extend reach, and create a supportive social environment for behaviour change. Local radio broadcasts reach a large proportion of the population. In Madagascar, a popular singer wrote songs with messages on early and exclusive breastfeeding. They were sung at concerts, played on the radio, and listened to on cassettes provided to taxi and bus drivers.
- **Home visits by peer counsellors and community health workers.** Home visits within the first days and weeks can improve the chances for successful breastfeeding. During those first days, doubts and breastfeeding problems, such as engorged breasts that often happen approximately three to five days after birth, can discourage a mother. A home visitor in the early days, however, can reinforce good breastfeeding practices and reassure the mother. Several studies have examined the effect of peer and lay counsellors on exclusive breastfeeding.³¹ In general, mothers who are visited more frequently are more likely to adopt optimal practices than those visited less often or not at all.³²

Challenges

The *Global Strategy for Infant and Young Child Feeding* identifies several challenges to optimal feeding practices for newborns. These challenges need to be addressed in order to improve breastfeeding rates in particular.

Strengthening nutritional support services in health systems

Awareness of decision makers at all levels. Decision makers think, “Almost all women breastfeed, so what’s the problem?” Policy makers and programme managers must understand the social, human, and economic costs of sub-optimal breastfeeding practices; otherwise, an unsupportive policy environment leads to under investment in programmes that protect and promote optimal breastfeeding. Health workers, volunteer organisations, community leaders, and family members must also recognize and promote the importance of improving women’s nutrition and breastfeeding practices.

Support for health providers. Most women report that health care providers are their primary source of information on infant feeding. They should therefore be trained and equipped to support maternal nutrition and breastfeeding as well as give appropriate, quality care at home and in facilities. Too often, this is not the case: appropriate topics are not covered adequately in pre-service education. To counsel mothers on breastfeeding successfully, providers need to be competent in lactation management, breastfeeding counselling skills, and infant feeding counselling in the context of HIV, where relevant. Principles of the Baby-Friendly Hospital Initiative should become standard clinical practice and be integrated into pre-service education and continuing education. The curriculum of health care providers should also stay technically up-to-date in nutrition and include training on counselling and negotiation skills. Some countries, including Ethiopia, Ghana, and Madagascar, have addressed these gaps by strengthening pre-service curriculum in all major medical and para-medical training institutions based on the essential nutrition actions.

Number and quality of baby-friendly hospitals and health facilities. Staff turnover, lack of resources for repeated in-service training, competing health issues, and confusion and concerns regarding HIV have resulted in declining baby-friendly practices in many facilities that had been awarded baby-friendly status. The challenge is to sustain the quality of care in baby-friendly hospitals and extend the initiative to include activities that go beyond the immediate postnatal period to provide breastfeeding support in the home and community.

Special training for health care providers for feeding exceptionally vulnerable babies. Small babies, especially preterm babies, need extra support to enable breastfeeding. Current guidelines for HIV and infant feeding as well as training courses and counselling materials (see programme resources listed at the end of this section) need to reach the decision makers, managers, supervisors and health workers implementing these programmes in African countries.

Accessing the hard-to-reach groups

First time mothers and adolescent girls. Approximately one-half of African women experience their first pregnancy by 19 years of age. These mothers are at higher risk of giving birth to premature and LBW babies; thus, they require added support to initiate and maintain good breastfeeding practices and manage special feeding situations. Establishing early healthy feeding and care practices will positively influence later care. This group also needs practical and emotional support to protect their own nutrition and health, including family planning.

Women who give birth at home. Nearly 60 percent of women in sub-Saharan Africa do not have a skilled

attendant present when they give birth.⁶ An assessment of care and management of newborns in 14 health facilities in Africa found that about 80 percent of women visited the antenatal clinic at least once, but only 30 percent returned to give birth in a facility.³³ This underscores the importance of community-based services and programmes to increase early and exclusive breastfeeding and sustain good feeding practices in the home.

Mothers and babies living in difficult circumstances.

Women and babies in refugee and emergency settings are especially at risk of infections and illness and often have less access to support for breastfeeding and nutrition.

BOX III.6.5 Addressing barriers to early initiation of breastfeeding

The Ghana Health Service and the USAID-funded LINKAGES Project worked with a network of government, international, nongovernmental, and institutional partners to improve infant and young child nutrition in northern Ghana. Giving water to the baby at birth was a deeply ingrained practice, and non-exclusive breastfeeding was the norm. Messages were designed to appeal to different audiences (pregnant women, mothers of children younger than two years, fathers, and grandmothers):

- Mothers, put your baby to the breast immediately after childbirth to ensure a healthy beginning for both you and your child. This will help reduce bleeding and protect your child from infection. The yellow milk is God’s way of welcoming your baby into the world
- Fathers, a wise father encourages exclusive breastfeeding so his baby grows up to be strong, healthy, and intelligent
- Grandmothers, breastmilk has everything your grandchild needs to satisfy and quench the baby’s hunger and thirst

The project, reaching 3.5 million people, developed a set of counselling cards for use with pregnant women and mothers and another set for grandmothers and traditional birth attendants. Messages for fathers were placed on posters, t-shirts, and calendars. Health providers and members of mothers’ clubs were trained to communicate key messages to these various audiences. Major improvements were seen from 2000 to 2003 in timely initiation of breastfeeding, from 32 percent to 40 percent, and in exclusive breastfeeding, from 68 percent to 79 percent.

Source: Adapted from reference³⁴

Linking health facilities with communities. Step Ten of the Baby-Friendly Hospital Initiative – community outreach – is the least developed of the Ten Steps (see Box III.6.4). Few countries actively implement this critical component, and the referral process between the community and the health facility is often weak.

Overcoming family and community obstacles

Many societies consider colostrum “dirty,” so mothers discard it and give their newborns pre-lacteal feeds such as butter, sugar water, and herbal concoctions. When they do start breastfeeding, they often continue to give liquids such as tea, sugar water, and juice, not realising that breastmilk is 88 percent water and meets a baby’s water requirements, even in hot climates.

Qualitative research can identify why sub-optimal nutrition and infant feeding practices occur. Knowledge of local enablers and barriers to good nutrition practices should guide the development of messages and strategies for any programme designed to reach specific audiences, as illustrated in Box III.6.5.

Practical steps to strengthen and integrate essential nutrition actions within MNCH programmes

The *Global Strategy for Infant and Young Child Feeding* suggests actions to protect, promote, and support appropriate feeding practices. Other documents, such as the *HIV and Infant Feeding Framework for Priority Action* and the *International Code of Marketing of Breast-milk Substitutes* provide important policies regarding infant feeding.

Planning Steps

The WHO/UNICEF *Planning Guide for National Implementation of the Global Strategy for Infant and Young Child Feeding* proposes the following six-step planning process to develop a country-specific strategy:

1. Identify and orientate key stakeholders and prepare for developing a comprehensive strategy
2. Assess and analyse the local situation
3. Define preliminary national objectives
4. Identify and prioritise actions to be taken
5. Develop a national strategy
6. Develop a national plan of action
7. Implement and monitor the plan

The *Global Strategy for Infant and Young Child Feeding* is being implemented in more than 20 countries in the African region by governments in coordination with a variety of partners. Lessons learned from large-scale country programmes that have improved overall nutrition practices can guide programme implementation. The following are some important steps:

Review existing nutrition policy and strengthen if necessary.

International policy guidelines on the nutrition actions needed for women and young children

should serve as a technical basis for programme managers in planning, implementing, and scaling up programmes to improve the nutrition of women and young children, including newborns.

Create and cultivate partnerships. A network of partners involving government leaders, NGOs, private partners, universities, development agencies, and print and radio media personalities can facilitate rapid scale up and spread key messages to a wider audience.

Apply a behaviour change strategy at all levels. Harmonised messages across all programmes and standardised indicators provide a common focus and a shared framework. Effective communication channels, including mass media and community mobilisation activities, should be used to saturate mothers and communities with a few key nutrition messages.

Take advantage of multiple programme opportunities and contact points. Existing programmes within and outside the health sector can provide many opportunities to reach pregnant and lactating women and newborns. Integration of infant and young child feeding practices, counselling, supervision, and training of health workers should be sought in programmes such as immunisation, community integrated management of childhood illnesses (C-IMCI), early childhood development, family planning, and integrated management of pregnancy and childbirth. (See Section III chapters 5 and 9)

Build the capacity of service providers. Service providers require training in interpersonal communication skills to counsel and negotiate with women on nutrition and infant feeding. Short-term competency based training in nutrition and communication skills can be integrated into existing programmes. A variety of training approaches and tools currently exists. (See programme resources at the end of Section III.)

Improve logistics support for service delivery. Necessary supplies for adopting some of the recommended nutrition practices should be available and accessible. These supplies include iron/folic acid supplements, vitamin A capsules, antihelminthics, malaria drugs, insecticide-treated bed nets, and communication materials. The need for integrated supply systems for MNCH programmes is discussed further in Section IV.

Monitor and evaluate key indicators for better decision-making. Once key indicators are chosen and linkages are established, monitoring and evaluation of nutrition and other MNCH outcomes is crucial. These indicators should be included in existing surveillance mechanisms and reporting structures.

A national approach in Madagascar used these steps to scale up essential nutrition actions, which resulted in change at scale (Box III.6.6).

BOX III.6.6 Scaling up essential nutrition actions in Madagascar

In 1997, an inter-sectoral nutrition coalition was created in Madagascar. The Groupe d'Actions Inter-Sectoriel en Nutrition (GAIN), chaired by the Nutrition Division of the Ministry of Health, was formed and received support from USAID, UNICEF, and the World Bank. GAIN expanded to more than 75 representatives from 50 organizations, including government ministries (health, finance, education, agriculture, trade, population) and representatives from the donor community and nongovernmental organizations. Key aspects of the scale up strategy included:

- **Vision** A shared vision to achieve scale was established from the beginning by GAIN members
- **Wide coverage** Many partners, especially big field programmes with wide reach (e.g. USAID bilateral project, UNICEF-supported area based programme, and World Bank Secaline project) participated, and multiple programmes served as opportunities for entry points
- **Specificity** Initial focus was placed on optimal breastfeeding practices, but within the overall context of essential nutrition actions
- **Harmonisation** Partners reached consensus so that everyone was “singing the same song to the same tune”
- **Support to all levels** Groups at the national level (policy and protocol development and pre-service curricula), regional/district levels (the Baby-Friendly Hospital Initiative, capacity development of health staff), and community level (training of primary level health service providers, NGO staff, and community members) received support



- **Short-term skills-based training** Short-term skills-based training modules included counselling and negotiation skills that were easily incorporated into child survival, reproductive health, and nutrition programmes
- **Behaviour change** A behaviour change strategy was used at all levels and particularly targeted mothers to achieve optimal nutrition practices often based on small, do-able actions known to make a difference. Key messages were also reinforced by songs, jingles, and skits delivered through radio and television broadcasts, cassettes provided to bus and taxi drivers, and news print (newspapers and simple village newsletters)
- **Community volunteers** Members of women's groups were trained as community nutrition volunteers to support health workers stationed at primary facilities
- **Monitoring and evaluation** Key indicators and results were collected annually and shared with all partners

This approach was implemented in programme sites, reaching 6.3 million people out of a total population of 19 million. Over a four-year period, timely initiation of breastfeeding increased in programme areas from 34 percent to 78 percent, and exclusive breastfeeding increased from 46 percent to 68 percent. At the national level between 1997 and 2003, early initiation of breastfeeding rose from 34 percent to 62 percent, and exclusive breastfeeding increased from 47 percent to 67 percent, as measured by the Madagascar Demographic Health Survey.

Source: Adapted from reference³⁵

Conclusion

Breastfeeding and other nutrition actions contribute to better health throughout the lifecycle. Newborns survive, children thrive and grow, and well-nourished women have healthy pregnancies and live more productive lives. The cost of promoting breastfeeding through two home visits is certainly affordable in high-mortality countries.¹¹ Efforts should focus on seizing opportunities for nutrition promotion within existing programmes. This means emphasising partnerships, harmonising field approaches for scaling up, and addressing newborn health within a continuum of women's health, newborn care, and child survival, growth, and development.



Priority actions for strengthening nutrition actions

- Review existing nutrition policy in the context of the *Infant and Young Child Feeding Strategy* and if necessary, strengthen policies and the enforcement of supportive legal frameworks, such as the *International Code of Marketing of Breast-milk Substitutes*
- Create and cultivate partnerships and harmonise messages
- Apply a behaviour change strategy at all levels: household, community, health facility, district and national
- Use multiple programme opportunities to extend coverage to pregnant and lactating women and newborns
 - Build capacity through short-term competency based training and strengthening pre-service education
 - Improve logistics support for delivery, especially the availability of micronutrient supplements
- Improve data collection for decision making

Prevention of mother-to-child transmission of HIV/AIDS programmes

Lily Kak, Inam Chitsike, Chewe Luo, Nigel Rollins

Each year, over half a million newborns are infected with HIV in sub-Saharan Africa through mother-to-child transmission (MTCT). Of all health crises in the African region, HIV/AIDS has attracted the most political support and resources. Programmes for the prevention of mother-to-child transmission (PMTCT) of HIV include antenatal HIV testing and counselling, avoiding unintended pregnancy, provision of appropriate antiretroviral (ARV) regimen for mothers and newborns, and support for safer infant feeding options and practices. However, in spite of efforts to scale up, less than ten percent of pregnant women in Africa infected with HIV receive interventions to reduce MTCT.¹ Even in settings where effective prophylaxis is available to prevent transmission during pregnancy and childbirth, there is often a major gap in service provision in the postnatal period. Few PMTCT programmes successfully reach mothers and newborns after discharge to provide support for the infant feeding choices or to provide ongoing care and treatment.

Most PMTCT interventions focus on identifying HIV-positive mothers and preventing HIV infection in infants. In the same time period maternal, newborn, and child health (MNCH) programmes are aiming to ensure the survival of children from “traditional” causes of death, especially during the high-risk neonatal period. The risk of newborn death in Africa is high; many of these deaths could be prevented by simple measures provided during the postnatal period, which is also an important time for PMTCT follow up.

The goal of *HIV-free survival* for children highlights the win-win proposition of integrating PMTCT and MNCH. Indeed, the investment in PMTCT will be safeguarded by ensuring that simple interventions are delivered through MNCH services to promote survival. The challenge is determining how integration between PMTCT and MNCH programmes can be achieved in reality.



Problem

The HIV crisis in Africa is headline news. Even in countries where leadership is ambivalent to treating adults, there is often clear commitment to PMTCT of HIV. In Africa, HIV infection rates among pregnant women range from 15 to 40 percent in the countries with the highest overall HIV prevalence, with women of reproductive age comprising over 55 percent of HIV-infected adults.¹ This overwhelming burden is carried by women and babies as well as families, society, and the health system:

Effects on women: HIV is becoming the leading cause of death for women in some African settings. Pregnant women with HIV are at an increased risk of intrapartum and postpartum complications. Emerging evidence suggests that HIV-infected women are more susceptible to postpartum infections and have higher rates of postpartum complications than uninfected women, regardless of whether their babies have a vaginal or caesarean birth.² In some southern African countries, maternal mortality due to opportunistic infections is a major cause of maternal death. A study covering 50 years of maternal death in South Africa found that recent increases in maternal mortality are mainly due to an increase in infections associated with HIV/AIDS and not pregnancy-related infections, thus making HIV/AIDS the most frequent cause of maternal death (18 percent) in this setting.³ In Zambia, the maternal mortality ratio for Lusaka University Teaching Hospital was calculated in 1997 at 921 per 100,000 live births, a significant increase from the 160 noted in 1974 and 667 in 1989. During the same period, causes of maternal death changed with a decline (94 percent to 42 percent) in direct causes and an increase (6 percent to 57 percent) in deaths due to opportunistic infections.⁴ In addition to an increased risk of infection, HIV also increases susceptibility to other health problems; for example, women living in impoverished areas are at greater risk of malnutrition if they are HIV-positive.

Effects on newborns: While HIV/AIDS is not a major direct cause of neonatal death, maternal HIV status affects newborn survival by causing an increased risk of stillbirth and death in the neonatal period and infancy, even among those babies who do not become HIV-positive.⁵ Newborns of HIV-positive women are more likely to be very low birthweight (LBW), preterm and have low Apgar scores, placing them at greater risk of death.^{6,7} While babies born to all HIV-positive mothers are susceptible to acquiring the infection, women who become infected with HIV during pregnancy or while breastfeeding have an exceptionally high risk of passing the infection to their newborn.⁸⁻¹⁰ The interaction of HIV with other infections and the indirect effects of HIV, such as poverty and maternal illness, also contribute to poor outcomes for newborns. In addition, confusing information about feeding choices for HIV-infected women, combined with the provision of commercial infant formula in poor communities with high infant mortality rates, has resulted in losses for breastfeeding in general and has had a spillover effect on the breastfeeding behaviours of non-HIV-infected mothers and infants as well.^{11,12}

Effects on children: AIDS is an important cause of mortality and morbidity after the first month of life in many African countries. HIV-infected children have a significantly higher risk of death from *pneumocystis jiroveci pneumonia* (PCP), and from HIV-related complications, such as failure to thrive. It is estimated that AIDS caused six percent of under-five deaths in sub-Saharan Africa during the year 2000.^{13,14} Yet in six southern African countries, including those which had success in reducing child deaths from other causes prior to the AIDS epidemic, AIDS is now the cause of more than one-third of all under-five deaths: Botswana (54 percent); Lesotho (56 percent); South Africa (57 percent); Namibia (53 percent); Swaziland (47 percent); and Zimbabwe (41 percent).¹ In the absence of any intervention to prevent transmission, as is the case for most African mothers, roughly one-third of all infants born to HIV-positive mothers will acquire the infection. The risk is in stark contrast to high income countries, because transmission rates are less than two percent, there is almost total elimination of paediatric HIV.¹⁵



Effects on families and society: HIV has many indirect effects. For instance, families where parents are ill with AIDS are often impoverished by a lack of employment and high medical bills. Therefore, even for children who escape HIV infection, home care and care seeking are often compromised. When an HIV-infected mother progresses to the late stages of AIDS, her children are 3.5 times more likely to die, irrespective of their infection status, and more than four times as likely to die when the mother herself dies.¹⁶ The loss of parents is an additional detriment to families and a strain on societies. The epidemic has already produced an estimated 12 million orphans on the continent; nine percent of all children will have lost at least one parent due to AIDS, and one in six households with children are caring for orphans.¹

Effects on the health system: The effect of the HIV epidemic on the health sector itself has serious consequences for all. The drain on local health systems of increased workloads as well as the deaths of infected health care providers affects all aspects of health care provision, with newborns especially vulnerable. For example, 15 out of 27 districts in Malawi have fewer than two nurses per facility, a problem that is exacerbated by HIV/AIDS.¹⁷ Only a few African countries, notably Swaziland and Zambia, have programmes to counsel, support, and treat health workers exposed to HIV.

Early identification of HIV-exposed newborns and infected children is especially important because they are at increased risk of life-threatening infections such as PCP, tuberculosis, and nutritional deficiencies. In addition, other infections, such as malaria and diarrhoea, are likely to be more complicated to treat and result in hospitalisation and death among HIV-infected newborns and infants. The complex interactions between HIV and maternal and newborn health and survival are summarised in Box III.7.1.

The remainder of this chapter will provide an overview of the current PMTCT package and current coverage of interventions during pregnancy and the postnatal period. We will present opportunities for integrating the four components of PMTCT programmes with MNCH programmes. Challenges will also be discussed along with practical steps that can be taken to address these challenges.

BOX III.7.1 Interactions between HIV and maternal, newborn, and child health and survival

- **Malaria:** HIV infection in pregnancy increases the prevalence and effect of malaria,¹⁸ the so-called “double trouble”. Malaria and HIV infection are independently associated with increased risk of maternal anaemia, low birthweight (LBW), and fetal growth restriction. Dual infection with malaria and HIV is associated with increased risk of maternal, perinatal, and early infant death as compared to either disease alone. Infants born to women with HIV and malaria infection are almost twice as likely to be born underweight compared to infection by either malaria or HIV alone.¹⁹ (Section III chapter 8)
- **Tuberculosis:** Tuberculosis (TB) in pregnancy is emerging in the context of HIV. HIV and TB infection are independently associated with increased risk of maternal and perinatal mortality; the impact of dual HIV and TB infection is even more severe, resulting in higher risk of preterm birth, LBW, and intrauterine growth retardation.²⁰ Recent evidence from Durban, South Africa, showed that TB rates have increased among HIV-infected pregnant women, and TB infections have doubled among newborns and young children. The synergistic effect of HIV on TB in pregnancy is clear from the Durban experience: 54 percent of maternal deaths caused by tuberculosis were attributable to HIV infection, and 35 percent of these maternal deaths were associated with stillbirths.²¹
- **Sexually Transmitted Infections:** There is a strong association between HIV and sexually transmitted infections (STI), as an untreated STI can increase the risk of acquisition and transmission of HIV. Of all the STI, syphilis is a major cause of adverse pregnancy outcomes in developing countries.²² When partnered

with antenatal care, prevention of mother-to-child transmission (PMTCT) programmes offer an opportunity to implement screening programmes for syphilis that are universally recommended but rarely implemented. (Section III chapter 1 and chapter 2)

- **Pneumocystis pneumonia:** AIDS-related pneumocystis pneumonia increases the risk of LBW, particularly through preterm birth.²³⁻²⁶ Preterm birth increases the risks of hypothermia and neonatal infections.
- **Nutritional deficiencies:** Nutritional deficiencies compound the effects of HIV/AIDS, while HIV/AIDS can lead to nutritional deficiency. Over half of all pregnant women in Africa are anaemic, and HIV infection and malaria in pregnant women increase the risk of maternal anaemia. Anaemia is associated with increased risk of mother-to-child transmission of HIV as well as reduced survival of HIV-infected women and their babies, independent of HIV disease progression and immune insufficiency.²⁷ Pregnancy and lactation are periods of nutritional stress for all women. Although pregnancy itself has not been shown to cause more rapid disease progression, HIV-positive women, including those who are pregnant or lactating, have a higher risk for poor nutrition. Energy requirements to maintain body weight are likely to increase by approximately ten percent during asymptomatic infection and up to 30 percent during secondary infections.²⁸ Integration of PMTCT and maternal, newborn, and child health programmes offers an opportunity to promote improved maternal nutrition and dietary counselling as well as reduce and/or treat anaemia. (Section III chapter 2 and chapter 5)
- **Neonatal infections:** Due to the compromised immune status of HIV-exposed newborns, counselling on clean cord care and infection prevention are important messages for mothers and caregivers. Mothers should be proactive about preventing infections in their newborns, while service providers should be proactive in diagnosing HIV infection among exposed infants, detecting and promptly treating *all* newborn infections as well as providing prophylactic cotrimoxazole for HIV-infected babies.

Package

A comprehensive PMTCT approach includes the following four components that address MNCH throughout the continuum of care:

Component 1. Preventing HIV infection in women of reproductive age

Component 2. Avoiding unintended pregnancy among HIV-infected women

Component 3. Preventing transmission of HIV from an HIV-infected woman to her infant during pregnancy, labour, childbirth, and breastfeeding through:

- HIV counselling and testing
- Antiretroviral (ARV) drugs for prophylaxis
- Antiretroviral therapy (ART) for those who are eligible
- Safer infant feeding practices

Component 4. Providing follow up and care, support, and treatment to HIV-infected women, their infants, and families

Antiretroviral therapy: The new WHO PMTCT guidelines²⁹ for ARV drug prophylaxis recommend giving HIV-infected pregnant women the drug azidothymidine (AZT) from 28 weeks, combined with single-dose nevirapine at birth to the mother and infant. Ideally, mothers should receive one week of further treatment of AZT and 3TC postnatally in order to reduce the

likelihood of developing viral resistance to Nevirapine. These regimens, although very effective in clinical trials, have not been implemented at scale in high HIV-prevalence settings. Experience within routine health systems is therefore lacking, and whether an integrated antenatal and postnatal care package can be successfully crafted to improve availability, sustainability, and adherence to these prophylactic regimens is yet to be learned. The health system linkages required by these new guidelines underscore the importance of integrating PMTCT and MNCH, particularly postnatal care programmes.

Safer feeding practices: The special challenges related to infant feeding by HIV-positive mothers are important considerations and opportunities for strengthening the linkages between PMTCT and MNCH programmes. WHO currently recommends avoidance of all breastfeeding by HIV-positive mothers if replacement feeding from birth is acceptable, feasible, affordable, sustainable, and safe. However, not breastfeeding is associated with increased risks of diarrhoea and pneumonia; therefore, careful individual counselling and ongoing support are needed.³⁰ Otherwise, exclusive breastfeeding is recommended for the first few months, or until these conditions are in place. Exclusive breastfeeding may result in lower HIV transmission than partial breastfeeding (breast milk plus animal milk or

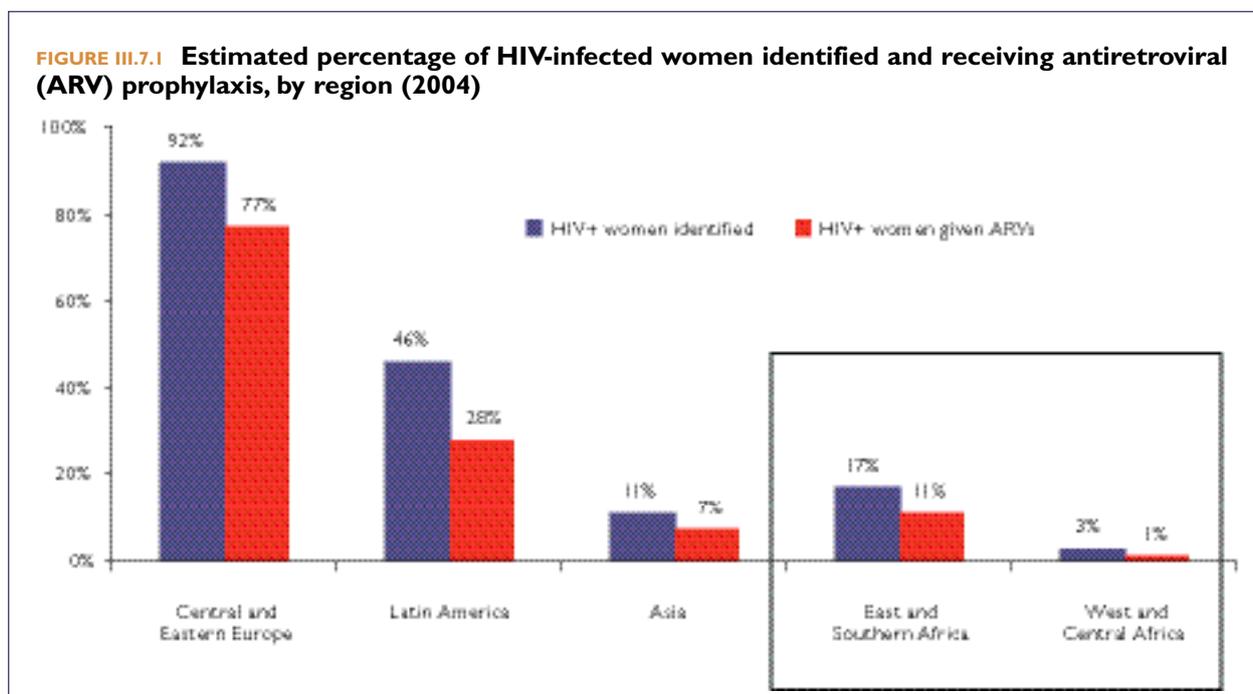


solid foods). Mixed feeding, whether or not the mother is HIV-positive, is also associated with higher risks of morbidity, hospitalisation, and death.³¹ (Section III chapter 5)

Current coverage, progress, and trends

PMTCT services exist in most African countries, but coverage is limited and utilisation of services varies between and within countries. In 1998, the first pilot projects were initiated to demonstrate the feasibility of PMTCT programmes in high-prevalence countries. In 2004, just ten percent of women were tested for HIV through PMTCT services, and only 8.7 percent of HIV-positive pregnant women received ARV prophylaxis globally. In East and Southern Africa, where these services are most needed, 17 percent of HIV-infected women were identified as such through PMTCT HIV screening,

and only 11 percent of the projected total of HIV-infected pregnant women received ARV prophylaxis. In West and Central Africa, the coverage is even lower: only three percent of infected women were identified, and just one percent received ARV prophylaxis (Figure III.7.1). This deficit does not include women who become infected during pregnancy, when women appear especially prone to becoming infected – some reports suggest that in high HIV prevalent settings, up to five percent of pregnant women may become infected. The deficit also does not include women who were tested for HIV in the very early stages of infection, when anti-HIV antibodies are not yet detectable (the window period), and might have been identified only through repeat HIV testing at 36 weeks or later. Thirty-nine sub-Saharan countries have implemented PMTCT programmes, however, only two countries, Botswana and Mauritius, have achieved universal coverage.



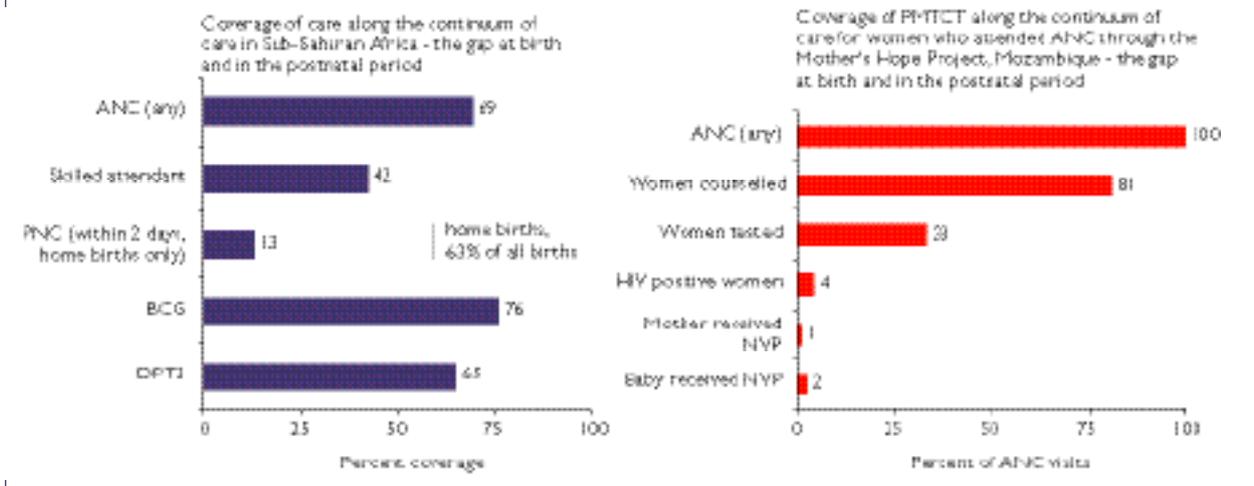
Source: Reference¹

HIV-free child survival requires clear strategies for protecting children from all major causes of death, not just HIV infection. In many countries affected by HIV, coverage of care is low at crucial times for both MNCH services and PMTCT programmes. This results in the characteristic cascade of diminishing service utilisation and delivery of interventions at the most crucial time, as shown in Figure III.7.2. Continuity of care for individuals is an additional challenge affecting the quality of both MNCH and PMTCT services. Data from a project in Mozambique illustrate this major constraint to both MNCH and PMTCT.

The high uptake of at least one antenatal care (ANC) visit (69 percent) in sub-Saharan Africa suggests that

ANC represents an ideal entry point for PMTCT interventions. By the time of childbirth, however, less than half of women have access to a skilled attendant during childbirth, or give birth in a health facility. Provision and uptake of postnatal services is a weak link in the continuum of care for women and their babies. Most women and their newborns are lost to the health system after childbirth, yet paradoxically immunisation rates for Bacille Calmette-Guérin (BCG) and three doses of diphtheria, pertussis and tetanus (DPT3) remain high (76 and 65 percent respectively), suggesting that families are still within reach of formal health care services.

FIGURE III.7.2 Coverage of maternal, newborn, and child health packages and prevention of mother-to-child transmission (PMTCT) decreases around birth and the postnatal period



Acronyms used: ANC=antenatal care; PNC=postnatal care; BCG=Bacille Calmette-Guérin vaccine; DPT3=three doses of diphtheria, pertussis and tetanus NVP=antiretroviral drug nevirapine.

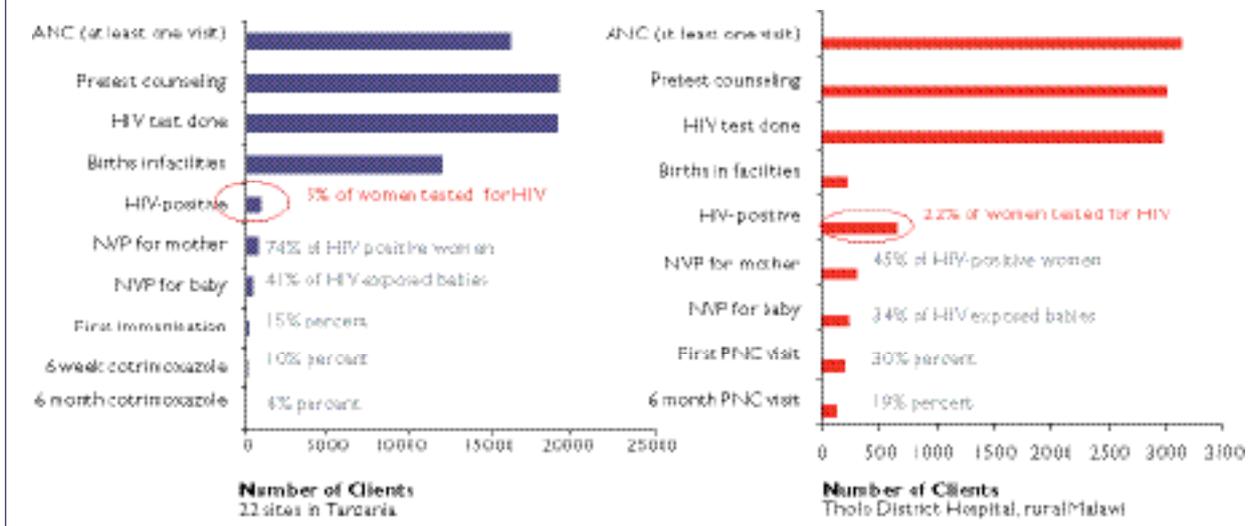
Sources: ANC, skilled attendant at birth, BCG, DPT3 vaccination from reference.³² PNC is from 1998-2005 Demographic and Health Surveys.

Note: PNC is women who received a postnatal check up within 2 days for the most recent birth outside a health facility, applied to all births outside a health facility (63% of all births), see data notes on page 226 for more details. The country profiles provide information regarding coverage along the continuum of care for each country. Mother's Hope Project graph is based on 30,122 mothers attending ANC. Elizabeth Glaser Paediatric AIDS Foundation and Save the Children, Mozambique.

Some programmes have strengthened the links between maternal and newborn care and PMTCT. In instances where this has occurred, integration seems to be more feasible and effective in the antenatal period rather than the postnatal period, partly because the existing postnatal services are weak and poorly defined. In Tanzania and Malawi (Figure III.7.3), integration of services and an “opt-out” model for HIV testing – where all ANC clients are tested for HIV unless they choose otherwise – has resulted in very high rates of HIV testing and counselling among ANC clients. However, facility births remained far below that of ANC attendance, and postnatal services for mothers and infants were consistently under utilised. As a

result, about a quarter of infected women in the Tanzanian project site and over half the women in the Malawi hospital still did not receive single-dose nevirapine, the antiretroviral prophylaxis available in both countries at that time, during labour, and two-thirds of exposed babies did not receive their corresponding dose of nevirapine within 72 hours of birth. The rift between antenatal and postnatal services and the small number of mothers using the services results in missed opportunities for essential newborn care as well as for introducing HIV-exposed infants to comprehensive care plans including prophylaxis for opportunistic infections, careful growth monitoring, and nutritional care.

FIGURE III.7.3 Integration of prevention of mother-to-child transmission and maternal, newborn, and child services: Important especially in antenatal and postnatal care



Source: References^{33,34}



PMTCT programmes that primarily rely on facility-based approaches may have limited reach, especially in settings where many women give birth at home. Programmes where PMTCT services have been implemented with a home-based approach have seen an increased uptake of single-dose nevirapine through self-administration by mothers and an increased administration of nevirapine to the newborn by the mother herself. One study showed that 85 percent of women took their nevirapine dose at the time of childbirth, 84 percent of women gave

nevirapine to their baby, and HIV transmission rate was reduced to 7.5 percent from 19.4 percent.³⁵

A review of the last six years of PMTCT implementation demonstrates progress in a number of areas. The most critical advances have been the increased global awareness of MTCT of HIV and the response of leadership within national governments, as shown in Box III.7.2. In spite of these encouraging signs, resources and local commitment to improve the quality and delivery of services across entire populations has been slow.

BOX III.7.2 Strong policy responses to the HIV/AIDS crisis

Global

- The United Nations General Assembly's 26th Special Session (UNGASS) in 2001 focused on HIV/AIDS and committed to reducing the proportion of infants and children infected with HIV by 20 percent by 2005 and 50 percent by 2010.
- The US Presidential Emergency Response in 2003 and other initiatives focused on increasing access to HIV prevention, care, and support services, with a special focus on HIV-infected women, their children, and families.
- The Group of 8 (G8) nations in 2005 renewed and broadened commitments for universal access to HIV prevention, treatment, and support services by 2010, aiming for an AIDS-free generation in Africa.
- The Global Campaign "Unite for Children, Unite against AIDS" launched by UNICEF in 2005 and the Joint United Nations Programme on HIV and AIDS (UNAIDS), and partners calls for 80 percent of HIV-infected pregnant women to have access to ARVs for the prevention of mother-to-child transmission (PMTCT).
- The PMTCT High Level Global Partners Forum in Abuja, Nigeria in December 2005 included representatives of governments, multilateral agencies, civil societies, and development partners. A call was made to eliminate mother-to-child transmission of HIV and achieve the goal of an HIV-free and AIDS-free generation across the globe. Emphasis was on the need to integrate PMTCT into maternal, newborn, and child health services by linking to other health and nutrition programmes.

National

- Ministries of Health are developing and implementing PMTCT policies and programmes, including the Global Strategy for Infant and Young Child Feeding³⁶ to promote breastfeeding for mothers who are not infected with HIV and optimal feeding choices for mothers who are HIV-positive.
- Some countries, particularly Botswana, Uganda, and Senegal, have led the way in showing high level commitment to PMTCT.

Civil society

- Strong civil society engagement has been a feature in countries that have reversed HIV trends. For example, the involvement of NGOs and churches in Uganda has broadened and strengthened the government's programme.
- In South Africa, civil society groups have sustained pressure on all quarters to improve access to affordable and effective treatment, including better nutrition. Joint civil society meetings have improved communication and collaboration between private and public health sectors, commerce, and industry, as well as providing a clearer voice for joint lobbying.

Opportunities to integrate PMTCT and MNCH programmes

Protecting newborns from HIV is critical, but keeping them safe from other common neonatal and childhood infections is just as important. Otherwise, babies who are HIV-free still risk death from other preventable conditions. Failure to do so means that while babies may be HIV-free, they may risk death from other preventable conditions.³⁷ Hence, PMTCT should be provided within the context of MNCH programmes as well as within services for babies and young children, such as the Integrated Management of Childhood Illness (IMCI), rather than as a vertical or parallel service. At a WHO Technical Consultation on the integration of HIV interventions with MNCH services, participants defined this form of integration as follows:³⁸

Integration of HIV interventions into maternal, newborn, and child health (MNCH) services involves the reorganization and reorientation of health systems to ensure the delivery of a set of essential interventions for HIV prevention, treatment and care as part of the continuum of care for women, newborns, children, and families.

The essential interventions of PMTCT and maternal and newborn care are depicted within a continuum of care approach in Figure III.7.4. The four components of the PMTCT framework target the same time periods and same clients as the essential MNCH packages and often rely on the same workers. Integration of MNCH and PMTCT and HIV care is essential especially in settings where HIV/AIDS prevalence is high.

FIGURE III.7.4 Integrating the four components of prevention of mother-to-child transmission programmes with maternal, newborn, and child care along the continuum of care

Pre-Pregnancy		Pregnancy	Childbirth	Postnatal/Newborn
For all women and newborns				
Pre-pregnancy health and family planning		Focused antenatal care	Skilled care in childbirth, emergency obstetric care and immediate newborn care	Postnatal care and promotion of safe infant feeding
COMPONENT 1: Preventing HIV infection in women	COMPONENT 2: Preventing unintended pregnancy among HIV-infected women	COMPONENT 3: Preventing transmission from an HIV-infected woman to her baby	COMPONENT 4: Providing care, treatment, and support for HIV-infected women and partners, babies and children	
For HIV-infected women and exposed newborns				

Programmatic opportunities along the continuum of care

Before pregnancy. Integration of PMTCT and maternal and newborn care begins before a woman becomes pregnant. It is critically important that young women have access to comprehensive and integrated reproductive health programmes to prevent both HIV infection and unintended pregnancy. Such an integrated programme would include counselling on safer sex practices and partner involvement, prevention of HIV transmission and other sexually transmitted infections (STI), prompt treatment of STIs, voluntary counselling and testing, disclosure to partners, and family planning services. (Section III chapter 1)

During pregnancy and childbirth. Focused ANC and early identification and treatment of maternal complications as well as early identification of maternal HIV status are central to integration. ANC services should incorporate family planning and birth preparedness, using messages specific to HIV-infected mothers. Among other essential interventions discussed in Section III chapter 2, integrated ANC should include detection and treatment of STIs, including syphilis, testing and counseling for HIV (opt out) and disclosure

to partners, and counseling on infant feeding, birth preparedness, family planning, and prevention of HIV and STIs (Section III chapter 2). During childbirth, integration should include minimal invasive procedures, use of the partograph, emergency obstetric care, universal infection precautions, and clean childbirth, active management of the third stage of labor, and counseling and testing for HIV (if not done earlier).

During the postnatal period. It is extremely important to ensure good care for the mother and newborn and continued PMTCT during this time period. HIV counselling within PMTCT programmes is currently focused largely on the test result, with limited discussion about follow up care, reproductive health, prevention of HIV infection, and family planning. Early and regular follow up of infants can improve adherence to either exclusive breastfeeding or replacement feeding and provide the opportunity to monitor nutritional status and growth (growth faltering is an early sign of HIV infection when other causes have been ruled out). Such follow up also can ensure immunisations and cotrimoxazole prophylaxis and facilitate referrals for prompt management and treatment of illnesses. Infection may also be reduced by improving breastfeeding techniques to decrease risks of breast inflammation and other



conditions that may increase the chance of HIV transmission.

Newborn care can and must be linked with improved PMTCT follow up. Danger signs for newborn infections typically manifest themselves within 72 hours of birth. Newborns who have been born at home can be checked for signs of illness when they are brought back to the health facility within 72 hours for nevirapine (ARV) prophylaxis. This visit also provides an opportunity for the newborn to be given his/her first immunisation and for the caregiver to be counselled on newborn care at home. Just as ANC is an entry point for PMTCT, the delivery of BCG immunisation allows postnatal care to be delivered to both HIV-exposed and non-exposed newborns and their mothers. Routine HIV testing of babies at immunisation clinics could offer a second chance for mothers to learn about their own status and determine if PMTCT interventions have been successful. The mothers of babies who are found to be HIV-infected

at this time can be advised to continue breastfeeding, while the knowledge that infants are uninfected can be a strong motivating influence for mothers to optimise feeding practices, whether exclusively breastfeeding or providing replacement feeds with no mixing of the two methods. Thus, the postnatal period provides an opportunity for synergy between PMTCT and MNCH services and also links newborns and infants to child health services and paediatric AIDS programmes.

While opportunities exist for PMTCT throughout the lifecycle, there are also opportunities for strengthening care throughout the various levels of service delivery. In order to understand the extent to which PMTCT and MNCH services are integrated, WHO conducted a needs assessment in Uganda and Mozambique in 2004 aimed at identifying and addressing barriers to integration. The assessment found many gaps in the continuum of care and identified several opportunities for strengthening (Box III.7.3).

BOX III.7.3 Integration of prevention of mother-to-child transmission (PMTCT) and maternal, newborn, and child health (MNCH) services in Uganda and Mozambique: Findings from a WHO baseline assessment

National level:

- Policies promote integration in theory. However, operational tools, such as protocols and training, function separately, resulting in weak coordination of services.
- No formal procedures articulated at the national level for following up postpartum women exist.
- No standard procedures for providing family planning services to HIV-positive women exist.

Health facility level:

- PMTCT programmes utilise maternal health programmes as a platform by offering PMTCT services in antenatal care (ANC) clinics, in hospitals during childbirth, and at the facility or at home during postnatal care. These programmes primarily emphasise counselling, HIV testing, and the provision of antiretroviral (ARV) medication. These services are often vertically implemented and do not address overall maternal, newborn, and child health and survival or primary prevention for women testing negative.
- Maternal and reproductive health services are not as well funded as PMTCT. Despite evidence of the interaction between HIV, pregnancy, and maternal and newborn complications such as malaria in pregnancy, syphilis, anaemia, and malnutrition, PMTCT funds are not used to strengthen health systems so that other MNCH health programmes also benefit.

Community level:

- There is neither a follow up system nor a referral and feedback system after the birth of a baby. As a result, there is no mechanism in place to identify HIV-exposed newborns in order to provide them with special care, including cotrimoxazole, early diagnosis and access to ARV, or support of infant feeding practices.

Crosscutting:

- Health worker training does not address integrated service delivery and therefore disables the possibility of integration.
- Infrastructure does not accommodate integration, therefore reducing its chances.



Lessons learned

- Develop policy and operational guidance for linkages with family planning and postnatal follow up of mothers and newborns and develop referral systems and monitoring cards. Guidance should include explicit operational direction to district management on integrated programme delivery.
- Incorporate indicators for newborn in PMTCT-related data collection.
- Improve access to antiretroviral therapy, care, and support for mothers.
- Use scale up of PMTCT interventions as an entry point for an integrated package of HIV prevention, care, support, and treatment in the post-partum and neonatal period.

Source: Adapted from reference³⁹

Challenges to integrating PMTCT and newborn care

Obstacles to effective PMTCT programming include inadequate human capacity, limited infrastructure, and poor programme management and coordination. This is compounded by a narrow focus for preventing vertical transmission (Component 3), with limited attention to primary prevention, family planning, ongoing infant feeding support, follow up care, support and treatment of mothers and their babies, and community, family, and partner involvement strategies.⁴⁰ One of the major limitations to current PMTCT practice is that it is primarily provided in clinics and hospitals, and these services do not reach the large numbers of women and newborns in rural areas or births that occur at home, which constitute the majority of births. Home visits for ANC and home-based essential newborn care using community approaches provide an opportunity for reaching these mothers and babies. Community networks can be mobilised to provide a vehicle for increasing utilisation of ANC, encouraging women to give birth in facilities, as well as home-based follow up care and support of the mother and newborn. Experience from various community projects indicates that where skilled attendants are not available, there are roles for community health workers in promoting the health facility or even in administering ARVs.⁴¹



One of the greatest programmatic challenges to PMTCT service delivery and integration is the provision of high quality counselling about infant feeding options to reduce postnatal transmission and support for mothers' choices after childbirth. As interventions to reduce peripartum transmission of HIV become more effective and accessible, transmission of HIV through breastfeeding will become proportionally more significant as a route of HIV transmission and may eventually account for the majority of all MTCT. Infant feeding practices, however, are influenced by many different factors, not all of which are within the control of the mother, and even fewer of which are within the control of health service providers. However, PMTCT programmes can reduce the virological risk factors for transmission through breastfeeding by improving the health of mothers. Rapid and effective referrals between PMTCT and ARV programmes will enable pregnant women with low CD4 counts to start antiretroviral therapy, which will reduce peripartum transmission and likely postnatal transmission as well. Well-informed and balanced counselling is needed to help women understand the biological and social consequences of different infant feeding practices and the feasibility of implementing such practices safely. Consistent and accurate support should be offered throughout health services to assist both infected and uninfected mothers in maintaining their feeding choice, particularly exclusive breastfeeding or replacement feeding among HIV-infected women. Similar challenges arise when assisting HIV-infected mothers to stop breastfeeding safely and provide adequate nutrition to promote the optimal growth and development of their children.

Successful PMTCT programmes in Africa that have accelerated progress share certain characteristics and solutions for overcoming challenges, ranging from policy revision to the achievement of high coverage of interventions (Box III.7.4). These characteristics are remarkably similar to the lessons learned from countries that have made progress in reducing neonatal mortality as outlined in Section IV.

BOX III.7.4 What works: Moving from policy to high coverage

The assessment of programmes in Uganda and Mozambique and programme experience from various countries, such as Zimbabwe and Zambia (Box III.7.5 and Box III.7.6), indicate that the following factors can contribute to improved uptake of interventions:

- High level of political leadership and commitment
- Commitment to national coverage
- Strong central programme management and technical leadership
- Effective decentralised management structures and systems
- Good health infrastructure
- High coverage of antenatal care and births attended by a skilled attendant
- Institutionalised routine provision of HIV testing (opt-out approach)
- Access to antiretroviral treatment
- Strong political commitment to strengthening policies on essential nutrition actions and the global infant and young child feeding strategy³⁶

Practical steps to advance integration

As shown in the examples from Zambia and Zimbabwe, political commitment and sound programme management through provision of simple tools, job aids, and health information registers can facilitate better integration of programmes. Some practical steps can be taken:

- **Policy:** Formalisation of health service policies and service delivery to include essential MNCH as well as PMTCT, with a specific review of policies for ANC and PNC
- **Programmes and supplies:** Harmonisation of protocols and revision of pre-service education and in-service training for a more integrated curriculum and service delivery approach (e.g. PMTCT interventions should link with ANC protocols malaria and STI management, anaemia prevention and control, and nutrition care). Also needed are postnatal follow up protocols that promote routine PNC with growth monitoring, infant feeding counselling and support, infection detection, and treatment with cotrimoxazole. The linking of supply logistics could also be of mutual benefit. For example, HIV testing kits tend to be effectively supplied in many countries, but syphilis tests are often unavailable – linking syphilis testing supplies to HIV testing logistics systems may be a key opportunity to improve coverage.
- **Planning:** Development of district implementation plans and training of district managers and coordinators on how to integrate policies and protocols into district operations.
- **Implementation:** Development and/or revision of integrated programme implementation tools and job aids. These include safe motherhood registers, maternity

counselling job aids, birth preparedness plans, and health information and health management cards for mothers and children, which have information on PMTCT services. For example, in both Zambia and Zimbabwe, community mobilisers were used to promote newborn care, PMTCT, and community support for safer infant feeding.

- **Monitoring and evaluation:** Better use of monitoring indicators to improve quality and coverage.

Boxes III.7.5 and III.7.6 illustrate how two countries have followed many of these practical steps and developed and/or adapted job aids and other tools for national use.

BOX III.7.5 Integrating HIV-related information with maternal, newborn, and child health (MNCH): The Zimbabwe experience

Programme

Zimbabwe declared prevention of mother-to-child transmission (PMTCT) a national priority in 2001 and embarked on the rapid scale up of PMTCT programmes across the country. It quickly became apparent that to achieve rapid and sustainable scale up of PMTCT services, it was necessary to adapt existing tools as well as monitoring and record keeping systems used at Ministry of Health and Child Welfare (MOHCW) services to ensure the inclusion of information across the spectrum of antenatal, intrapartum, and postnatal services. Of particular concern was the ability to manage

the ongoing care and follow up of HIV-infected mothers and their HIV-exposed babies. The MOHCW concluded that the integration of PMTCT interventions with existing MNCH services was urgently required at all levels of the health delivery system in order to provide a continuum of care for HIV-infected women and infants whenever and wherever they may go. Several tools were modified to include PMTCT information, including the antenatal booking register and birth register, the mother's card, and child health card. Revisions in the child card included updates on Integrated Management of Childhood Illness (IMCI), immunisation, growth, nutrition and infant feeding messages, male-friendly graphics, and the identification, care, and diagnosis of HIV-exposed infants as well as additional prompts for health workers. Revisions in the mother's card included counselling and testing for HIV of both mother and partner, space to record disclosure status of mother, counselling checklist, family planning, psycho-social and nutritional support, and ongoing HIV care. In 2002, these tools were put in place and accompanied by training in the use and dissemination of a standardised national PMTCT procedures and logistics manual.

Key lessons learned:

- A health system-based approach coordinated by the Ministry of Health is required to scale up HIV/AIDS services nationwide.
- The process of updating MNCH tools strengthens the quality of services because it presents an opportunity to provide technical updates and increases communication across sectors and the community to the national level.
- The tools strengthen MNCH service delivery by assisting health workers to provide integrated care at the service delivery interface for all individuals, including those who are HIV-infected/exposed.
- Hand held record cards for mothers are important tools for integrating MNCH and PMTCT services.

Source: Adapted from reference⁴²

BOX III.7.6 Integrated maternal, newborn, and child health (MNCH) and prevention of mother-to-child transmission (PMTCT) programme in Zambia

Programme

Linkage and integration with maternal, neonatal, and child health are the hallmarks of the Zambian national PMTCT programme. The goals of the Zambian National PMTCT strategic framework include improvement in child survival and development through the reduction of HIV related infant and childhood morbidity and mortality, as well as a decrease in maternal mortality through the strengthening of antenatal, childbirth, and postnatal care services. The Reproductive Health Unit of the Central Board of Health coordinates and harmonises all partners' activities, integrates PMTCT into MNCH services, and links these programmes to youth-friendly services as well as Tuberculosis and HIV/AIDS programmes. Today, PMTCT services are integrated in all 72 districts. PMTCT has strengthened the safe motherhood programme by utilising PMTCT funds to support systems for safe motherhood services such as the provision of tetanus toxoid immunisation, malaria and anaemia prophylaxis, postnatal care (PNC), and family planning. The staff at different service delivery points have been oriented to provide information and refer clients across services, and integrated tools and job aids have been developed and demonstrated to staff, including the safe motherhood register, maternity counselling job aids, mother's birth preparedness cards, mother's cards, and child's cards. The integrated antenatal and postnatal registers record indicates when women should be followed up for infant feeding counselling and checking the infant's HIV status. This targeted approach has allowed some facilities to initiate 6 and 18 month follow up, despite being short-staffed. The programme is

also utilising traditional birth attendants who have been trained in essential newborn care in two peri-urban districts. The traditional birth attendants promote PNC by encouraging women to visit health facilities within 72 hours after childbirth and through breastfeeding support groups.

Key Lessons Learned

- Integration of PMTCT in reproductive health programmes, including safe motherhood, family planning, adolescent reproductive health, and child health is feasible, and follow up of babies is possible, even with staffing constraints.
- Community participation and male involvement are crucial in supporting women who choose not to breastfeed and in facilitating access to paediatric follow up, care, and support.
- Scaling up from pilot projects to national programmes has not been easy since the pilot sites were carrying out vertical programmes that focused on Component 3 only (time of birth), while the national PMTCT programme integrated all four components of PMTCT into reproductive health, in particular adolescent health, family planning, safe motherhood, and community programmes for care and support.

Sources: Adapted from references^{43,44}

Conclusion

PMTCT programmes have received widespread global support and have contributed to innovative solutions for delivering complex interventions in resource-limited settings. Yet coverage continues to be low with only one in twenty mother-baby pairs being treated with ARVs. Investing millions to prevent HIV infection in babies makes little sense if the baby dies in the first weeks of life from pneumonia or another highly preventable cause of death. Identifying and strengthening weak or missing

links between PMTCT and MNCH programmes will increase the likelihood of meeting the basic health needs of mothers and newborns in this high risk time period just around birth. PMTCT programmes provide an opportunity to strengthen MNCH including newborn care using a holistic approach that prevents HIV infection *and* enhances maternal, newborn, and child health – working towards the goal of HIV-free survival.



Priority actions for integrating MNCH and PMTCT

- *Policies:* Review policies, especially those related to the antenatal and postnatal periods and integrate MNCH with PMTCT.
- *Programmes and supplies:* Develop an integrated curriculum, service delivery approach, and supply logistics system.
- *Planning:* Develop joint district implementation plans and train district managers and coordinators on how to integrate policies and protocols and logistics within district operations.
- *Implementation:* Develop or revise integrated programme implementation and monitoring tools and job aids.
- *Monitoring and evaluation:* Make better use of monitoring indicators to improve the quality and coverage of both MNCH and PMTCT and to advocate for more support.



Malaria control programmes

Magda Robalo, Josephine Namboze, Melanie Renshaw, Antoinette Ba-Nguz, Antoine Serufulira

Malaria is an important health and development challenge in Africa, where pregnant women and young children are most at risk. Each year approximately 800,000 children die from malaria. Malaria in pregnancy contributes to a vicious cycle of ill-health in Africa, causing babies to be born with low birthweight (LBW), which increases the risk of newborn and infant deaths.

Effective interventions exist to break this cycle, like insecticide treated bednets (ITN) and intermittent preventive treatment of malaria during pregnancy (IPTp). In recent years, increased attention to and funding for malaria control has resulted in a significant improvement in the coverage of malaria interventions, particularly for children. Further reduction of the burden of malaria and malaria-related problems, especially in pregnancy, requires strong linkages between malaria control programmes and maternal, newborn, and child health (MNCH) programmes as well as better communication between homes and health facilities. MNCH services offer the best mechanism through which malaria prevention and control interventions can have a significant impact on newborn health. The question remains, however, as to how these programmes can collaborate most effectively to save more lives, not only from malaria and its effects, but from other causes, too.



Problem

Africa bears the highest burden of malaria in the world, with approximately 800,000 child deaths and about 300 million malaria episodes per year.¹ Malaria costs Africa more than US\$12 billion annually and slows economic growth of African countries by 1.3 percent per capita per year.² High levels of malaria are not just a consequence of poverty; they are also a cause of poverty, as malaria-endemic countries have lower incomes and have experienced slower economic growth. Every year, 30 million women become pregnant. For women living in endemic areas, malaria is a threat to both themselves and their babies. Malaria-related maternal anaemia in pregnancy, low birthweight (LBW) and preterm births are estimated to cause 75,000 to 200,000 deaths per year in sub-Saharan Africa.³ Pregnant women are particularly vulnerable to malaria, whose effects are summarised in Figure III.8.1.

Effects on women: Pregnancy alters a woman's immune response to malaria, particularly in the first malaria-exposed pregnancy, resulting in more episodes of infection, more severe infection (for example, cerebral malaria), and anaemia, all of which contribute to a higher risk of death. Malaria is estimated to cause up to 15 percent of maternal anaemia, which is more frequent and severe in first pregnancies than in subsequent pregnancies.³⁻⁵ The frequency and gravity of adverse effects of malaria in pregnancy are related to the intensity of malaria transmission.

Effects on the fetus: Malaria is a risk factor for stillbirth, particularly in areas of unstable transmission, where malaria levels fluctuate greatly across seasons and year to year and result in lower rates of partial immunity. A study in Ethiopia found that placental parasitaemia was associated with premature birth in both stable and unstable transmission settings. The investigators also found that although placental parasitaemia was more common in stable transmission areas, there was a seven-fold increase in the risk of stillbirth in unstable transmission areas.⁶ Even in the Gambia, where malaria is highly endemic, the risk of stillbirth is twice as high in areas of less stable transmission.⁷

Effects on the baby: Malaria is rarely a direct cause of newborn death, but it has a significant indirect effect on neonatal deaths since malaria in pregnancy causes LBW – the most important risk factor for newborn death. Malaria can result in LBW babies who are preterm (born too early), small for gestational age due to in utero growth restriction (IUGR), or both preterm and too small for gestational age (See page 10 for more on the definitions of preterm birth and small for gestational age). Consequently, it is imperative that MNCH programmes address the problem of malaria in pregnancy while specific newborn care is also incorporated into malaria control programmes, especially in relation to extra care of LBW babies.

Additionally, malaria in pregnancy indirectly influences newborn and child survival through its effects on maternal mortality. If a mother dies during childbirth, her baby is more likely to die, and any surviving children will face serious consequences for their health, development, and survival.⁸ Several studies suggest that if a woman dies during childbirth in Africa, the baby will usually not survive.^{9,10}

Recent research on the interaction between malaria and HIV infection in pregnancy shows that pregnant women with HIV and malaria are more likely to be anaemic, and that the baby is at higher risk of LBW, preterm birth, and death than with either HIV infection or malaria infection alone.^{12,13} The same studies suggest that malaria infection may also result in an increased risk of postpartum sepsis for the mother. Some investigators have shown that malaria contributes to increased HIV replication and may increase the risk of mother-to-child transmission

(MTCT), while others have suggested that placental malaria has a protective effect in reducing MTCT of HIV.^{14,15} In any case, in areas with high prevalence of HIV and malaria, the interaction between the two diseases has significant implications for programmes. Effective service delivery to meet the demands of HIV/AIDS and malaria requires the strengthening of antenatal care (ANC) and postnatal care (PNC) for delivery of a comprehensive and integrated package of interventions (Section III chapters 2, 4 and 7).

TABLE III.8.1 Malaria intervention strategies during pregnancy, according to transmission intensity of malaria

	Insecticide treated bednets (ITN)	Intermittent preventive treatment during pregnancy (IPTp)	Case management
High/medium transmission Perennial (stable)	Begin use of ITN early in pregnancy and continue after childbirth	Provide pregnant women with a standard IPTp dose at first scheduled ANC visit after quickening. At the next routine provide an IPTp dose, with a minimum of two doses given at not less than one-month intervals	Limited risk for febrile illness and severe malaria • Screen and treat anaemia with antimalarial and iron supplements • Promptly recognise and treat all potential malaria illness with an effective drug
High/medium transmission Seasonal (stable)			
Low transmission (unstable)	Encourage the practice of young children sleeping under ITN	Based on current evidence, IPTp cannot be recommended in these areas*	Risk for febrile illness and anaemia is high • Risk of severe malaria illness is high • Promptly recognise and treat all potential malaria illness with effective drug • Asymptomatic malaria – Screen and treat anaemia with antimalarial and iron supplements. Consider P.vivax in East Africa

*In low transmission settings, the risk of malaria is low; therefore, the benefit from the presumptive use of drugs is likely to be reduced. And, because women in these settings are more likely to have symptoms with their malaria infection, control programmes should focus on case management strategies and use of ITN. Source: Adapted from reference¹¹

Prevention through insecticide treated bednets (ITN)

The effects of ITN on malaria in pregnancy have been studied in five randomised controlled trials. A recent Cochrane analysis showed that in Africa, the use of ITN, compared with no nets, reduced placental malaria in all pregnancies (relative risk (RR) 0.79, 95 percent confidence interval (CI) 0.63 to 0.98). Use of ITN also reduced LBW (RR 0.77, 95 percent CI 0.61 to 0.98), stillbirths, and abortions in the first to fourth pregnancy (RR 0.67, 95 percent CI 0.47 to 0.97), but not in women with more than four previous pregnancies.¹⁸ For anaemia and clinical malaria, results tended to favour ITN, but the effects were not significant. In conclusion, ITN beneficially influences pregnancy outcome in malaria-endemic regions of Africa when used by communities or by individual women. Given the evidence of efficacy of ITN for children and pregnant women in both stable and unstable transmission settings, combined with the opportunity to achieve high coverage of services for women and children through ANC services, recommended programmatic approaches include distribution of ITN to pregnant women in all transmission settings through ANC or similar platforms. This way, newborns benefit directly from ITN interventions, especially during the first few months of life, when they are particularly vulnerable to malaria.

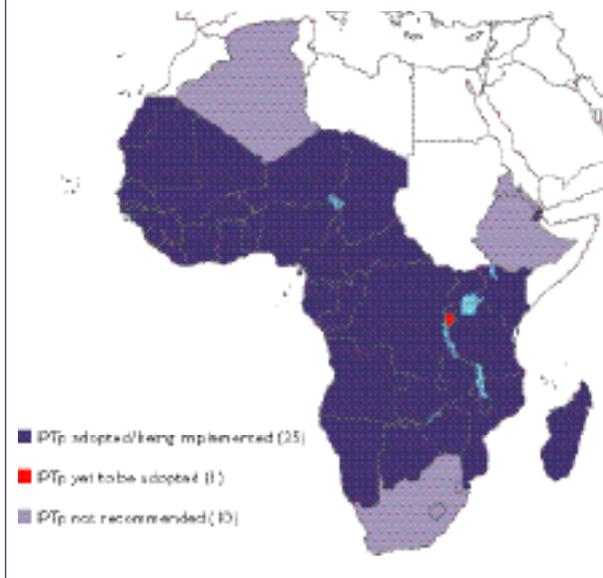
A few countries, such as Eritrea and Malawi, have reached ITN coverage rates of over 60 percent for both pregnant women and children (Box III.8.1). Rapid scaling up is happening in several countries such as Benin, Niger, Ethiopia, Kenya, Togo, and Zambia, and the prospects

for achieving the coverage targets in many countries are improving. The main reasons for low coverage appear to have been the high cost of nets and the historical lack of availability of ITN, especially in eastern and southern Africa. While social marketing and other activities have been successful in raising ITN coverage among the wealthier sectors of the community, they were less successful in targeting the poorest rural communities, which include those most at risk from malaria. This has led to a recent global shift in policy towards providing pregnant women and children with highly subsidised or free ITN. This is reflected in the revised Roll Back Malaria (RBM) ITN strategic framework.¹⁹ A recent WHO resolution called for the application of expeditious and cost-effective approaches, including free, or highly subsidised, distribution of materials and medicines to vulnerable groups, with the aim of at least 80 percent of pregnant women receiving IPTp and using ITN, wherever that is the vector control method of choice. Additionally, an increasing number of pregnant women, especially in areas of unstable transmission, are being protected from malaria infection through the expansion of indoor residual spraying programmes.

Prevention through intermittent preventive treatment during pregnancy (IPTp)

IPTp is the administration of full, curative treatment doses of an effective antimalarial medicine at predefined intervals during pregnancy, beginning in the second trimester or after quickening, and delivered through routine antenatal services. Currently, sulfadoxine-pyrimethamine (SP) is the only available drug for use in

FIGURE III.8.2 Intermittent preventive treatment of malaria during pregnancy (IPTp) adoption and implementation in the WHO African region (August 2006)



Source: WHO Regional Office for Africa, 2006.

IPTp. IPTp doses using SP should not be given more frequently than monthly. IPTp is recommended in areas of stable malaria transmission, where most malaria infections in pregnancy are asymptomatic and the usual case management approach of treating symptomatic individuals is not applicable. Current evidence on the effectiveness of IPTp in areas of low transmission, where symptomatic case management can be used, is insufficient to support its use in these settings.

The effectiveness of IPTp in reducing maternal anaemia and LBW has been demonstrated from studies in Kenya, Malawi, Mali, and Burkina Faso. In Kenya, a trial conducted with SP given twice during pregnancy at ANC visits reduced maternal anaemia in first pregnancies by about 39 percent, while lowering rates of LBW.²⁰ Another study in western Kenya demonstrated that the two-dose SP regimen was adequate in areas of low HIV prevalence, but more doses were needed in areas with higher HIV prevalence.²¹ From the programmatic perspective, IPTp

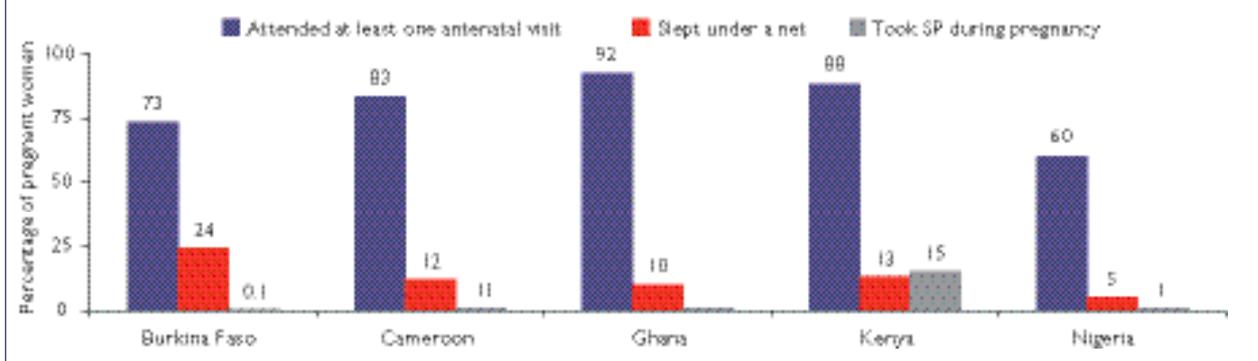
with SP is a feasible intervention because SP is administered as a directly observed treatment through scheduled ANC visits, and ANC reaches a high proportion of pregnant women in most African countries. However, the effectiveness of SP for IPTp is likely to be compromised due to the increase in resistance to SP, particularly in eastern and southern Africa. While pregnant women may currently benefit from IPTp with SP, there is an urgent need to identify alternative drugs that are safe, cheap, and easy to administer.

Figure III.8.2 illustrates the status of policy adoption and implementation of IPTp in the WHO African region. With the exception of one country, all countries in the region have adopted IPTp as a policy for malaria prevention and control during pregnancy where recommended, but implementation of this policy remains very low in most countries. In the remaining countries, given the transmission pattern, IPTp is not a recommended policy, based on current evidence of IPTp efficacy in areas of low transmission.

Data from 11 Demographic and Health Surveys (DHS) within the past three years indicate that although two-thirds of pregnant women attend at least one ANC visit, only 10 percent had taken at least one dose of SP (Figure III.8.3). Though slower than perhaps anticipated, IPTp uptake has increased in countries where IPTp has been adopted in national policy as a malaria control intervention (1993 in Malawi, 1998 in Kenya, Uganda, and Tanzania, and 2002 in Zambia). The ITN coverage in these countries ranges from about 5 to 35 percent.²²

Figure III.8.3 highlights the missed opportunities that exist when mothers who attend at least one ANC visit are not provided with effective, integrated services. This is a result of many factors, including a lack of perceived need for IPTp by pregnant women; late and few ANC visits; health system inadequacies, such as supply shortages of ITN, SP, or iron/folate; human resource limitations; reluctance among service providers to prescribe SP during pregnancy; weak laboratory services to support case management; and weak monitoring systems and health referral systems to support case management.

FIGURE III.8.3 Missed opportunities: Key malaria interventions absent in antenatal care



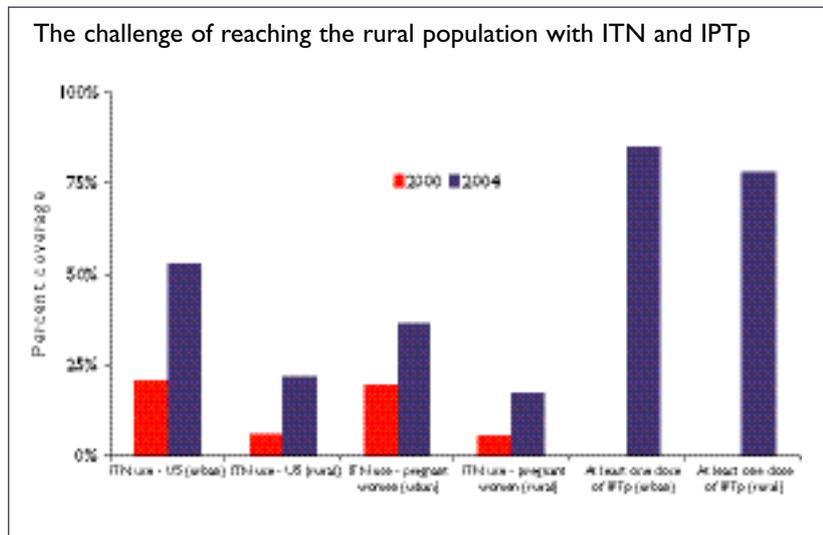
Source: Demographic and Health Survey data 2003-2004

Although knowledge of malaria and attendance at ANC services are both generally high among African populations, several studies have shown that this knowledge does not necessarily translate to increased demand for IPTp or improved IPTp coverage within ANC.²³⁻²⁵ These findings have been corroborated by several other studies, and low uptake appears to be related to unavailability of adequate SP supplies at the point of

service, negative perceptions among both health workers and pregnant women regarding the usefulness of the strategy, and concerns over the use of the drug during pregnancy.²⁵⁻²⁷ In addition, since SP is only taken in the second and third trimesters, poor timing of ANC visits and the recommended IPTp schedule may be adversely influencing implementation. (Section III chapter 2).

BOX III.8.1 Progress towards malaria prevention in Malawi: Rapidly scaling up use of insecticide treated bednets (ITN) and intermittent preventive treatment of malaria in pregnancy (IPTp)

According to the March 2004 National Household Malaria Survey in Malawi, 53 percent of urban and 22 percent of rural children under the age of five and 36 percent and 17 percent of urban and rural pregnant women, respectively, sleep under ITN. While inequity between urban and rural populations is still significant,



this marks progress since the year 2000 and a step in the right direction for reaching underserved populations. Overall, coverage is increasing. With the distribution of an additional 1.8 million nets since the March 2004 survey, the coverage of children and pregnant women using ITN is estimated to be 60 percent and 55 percent respectively. Overall, this demonstrates that coverage is increasing and Malawi has likely

achieved the Abuja targets for the distribution of ITNs. The Ministry of Health estimates that coverage of pregnant women receiving a second dose of IPTp has increased from 55 percent in 2004 to 60 percent by the end of 2005. These gains have come alongside massive amounts of effort. In addition to ITN distribution, four million treatment kits were procured and distributed in 2005 and three million nets were treated with insecticides during an annual net re-treatment campaign.

Malawi's increased attention to ITN and IPTp could be reflected in decreasing mortality rates. Between 1990 and 2000, infant and child mortality rates remained unchanged at 112 and 187 per 1,000 live births, respectively. Over the past four years (2000-2004), however, a remarkable decline has been observed. 2004 DHS data indicate that infant and child mortality rates decreased to 76 and 133 per 1,000 live births, respectively. Improvement has occurred in all age groups, most dramatically during the first month of life: DHS reported a decrease in the neonatal mortality rate (NMR) from 40 to 27 per 1,000 live births. There are some uncertainties around the NMR measurement, as DHS tends to underestimate NMR, but progress has certainly been made. While the association between increased malaria prevention efforts and declining MMR is an ecological level association, it is likely that scaling up malaria interventions contributed significantly to the observed decline in mortality rates.

Source: Malawi 2000 and 2004 Demographic and Health Surveys and 2004 National Household Malaria Survey
 For more discussion of NMR and under-five mortality rate, see Section I and the data notes as well as the country profile for Malawi (page 200). For more discussion of countries that are progressing towards NMR reduction, see Section IV.

Opportunities to integrate MNCH and malaria control programmes

Malaria control programmes target pregnant mothers and in doing so, benefit the mother and fetus, which contributes to improved health for the newborn and child. It has been noted that if mothers understand that interventions also protect their unborn babies, they put their own fears aside for the health of their unborn child. In Zambia, uptake of IPTp was found to be low because SP was perceived as being “too strong” and dangerous to the unborn baby. However, when health workers changed the message to focus on the unborn baby, better compliance to SP was noted.²² These messages demonstrate the importance of considering the health of mother and baby together and the potential benefit of stronger linkages between malaria programmes and MNCH. Several opportunities exist to benefit newborn health through malaria programmes. These include both direct and indirect approaches.

Direct benefit in saving newborn lives will result from increasing coverage of IPTp and ITN and improving case management of pregnant women with malaria. As ANC is the logical point of entry for malaria services (IPTp and ITN), strong collaboration is necessary between malaria and MNCH programmes, specifically in terms of training, procurement of drugs and supplies, health education, etc. For example, commodities needed for IPTp and ITN delivery are often procured under malaria control programmes, but interventions are normally delivered through reproductive health services. This could provide an opportunity for integration even beyond malaria programmes and MNCH, but lack of communication could minimise possible gains.

Another under-explored possibility is the use of private providers and community-based organisations to deliver more services. Historically, ITN distribution has been linked with community-based programmes, but IPTp is still limited to health facilities. Many mothers live far from these facilities and miss out on key services. Evidence emerging from community programmes in Uganda, Kenya, and Zambia shows that not only is community delivery of IPTp useful in improving coverage, but it also increases ANC attendance at an important time during pregnancy. Community outreach programmes should support and complement health facility services and vice versa. In particular, the development of three-way linkages between outreach services for newborn health, malaria programmes, and community Integrated Management of Childhood Illness (C-IMCI) should be encouraged.

Indirect benefit to newborns is possible when investment in malaria programmes leads to the strengthening of general health system vehicles for service delivery, such as ANC and PNC. The Global Alliance for Vaccines and Immunisation (GAVI) is leading the way in

promoting the investment in health system strengthening, using funds earmarked for immunisation, a more vertical programme. Even without this significant level of investment, a similar approach by otherwise vertical malaria programmes to strengthen local infrastructure, capacity, and supplies has the potential to benefit both malaria intervention coverage and other essential MNCH interventions.

There are also other opportunities for more innovative linkages.

- Where communities are being sensitised to early care seeking for babies with malaria, education about danger signs for pregnant women and newborns could be included
- Where community health workers (CHWs) are being trained in the case management of children with malaria, training in newborn care could also be undertaken
- Where supplies for malaria case management are being strengthened, pre-referral medicines for newborns could also be included for the management of sepsis, which also presents with fever
- Strategies for behaviour change communication could be expanded to include health messages that benefit both mother and newborn while incorporating malaria-specific messages, such as the importance of mothers sleeping alongside their newborns under ITN
- The case management of women with malaria or severe anaemia could be integrated with emergency obstetric care

Challenges to integrating MNCH and malaria control programmes

Malaria programmes have been extremely successful in focusing global attention and seizing policy opportunities. The RBM partnership in particular has garnered the attention of global and national policy agendas. Funding for malaria has increased, and coverage of essential interventions, particularly ITN, is beginning to accelerate. The linking of MNCH and malaria control programmes has a significant role to play in the achievement of Millennium Development Goals (MDGs) 4 and 5 for child and maternal survival as well as MDG 6 for HIV/AIDS, tuberculosis (TB), and malaria. For the biggest gains in both malaria control and MNCH, implementation of malaria-specific interventions must take place within an efficient, working health system that includes effective ANC, strong community health systems that emphasise the importance of the recognition of complications, and prompt case management and/or referral. However, lack of implementation of policies promoting these opportunities for integration as well as general health system weaknesses continue to pose challenges.

Policy challenges

At the level of national policy, malaria and reproductive health programmes are usually housed under different departments or directorates within Ministries of Health. This separation can impede collaboration and result in policy duplication or confusion. For example, in one country, the reproductive health programme is under the commission of community health, while malaria control is under the commission for the control of communicable diseases. These two departments have separate meetings; therefore, decisions are often made without due consultation on the implications for the other programme. The problem is magnified when the responsibilities of each programme are not clearly defined. Past approaches to malaria prevention have been vertical, fragmented, and not always integrated in MNCH services, resulting in limited access and public health impact. There is an urgent need for multilateral collaboration in every country to address malaria in pregnancy while strengthening routine MNCH services and linking with other related interventions, such as HIV and sexually transmitted infection (STI) care. Ongoing work towards the targets set out in the Abuja Declaration continues to reflect the kind of convergence of political momentum, institutional synergy, and technical consensus needed in order to combat malaria.

On a more programmatic level, there is a need to consider the challenge of malaria treatment policy in the particular context of malaria during pregnancy. Following

WHO recommendations, most African countries have moved from monotherapies to Artemisinin-based combination therapies (ACT). However, Artemisinin derivatives are not yet recommended for treatment of malaria during the first trimester unless there is no suitable alternative; ACTs are recommended for use in the second and third trimesters. Quinine is the drug of choice throughout pregnancy, but this poses adherence problems, as quinine has to be given over seven days. An additional issue is that treatment of malaria in children weighing less than 5 kg with ACTs is not recommended. The recommended treatment for these children is also quinine.

In situations where SP has been withdrawn for routine treatment of malaria, it is sometimes difficult to rationalise the approval of SP use for IPTp by national pharmaceutical boards or other regulatory authorities. The emergence of *P. falciparum* resistance to SP, which has now been documented in many African countries, has raised concerns about the efficacy of SP for IPTp. The fact that there are limited data to guide countries with moderate to high levels of SP resistance on use of SP for IPTp threatens the future of this strategy. A WHO consultative meeting held in October 2005 has now clarified this issue (Box III.8.2).

BOX III.8.2 Recommendations from World Health Organization (WHO) consultative meeting on SP use in settings with different levels of SP resistance

WHO recommends the following for malaria prevention and control during pregnancy in moderate to high levels of SP resistance:

In areas where up to 30 percent parasitological failure at D14 is reported, countries should:

- Continue implementing or adopt a policy of at least two doses of intermittent preventive treatment of malaria in pregnancy (IPTp) with SP; implement other malaria control measures, such as insecticide treated bednet (ITN) use as well as anaemia and malaria case management
- Evaluate the impact of SP for IPTp on an ongoing basis.

In areas where 30 to 50 percent parasitological failure at D14 is reported, countries should:

- Continue implementing or adopt a policy of at least two doses of IPTp with SP
- Emphasize the use of ITN
- Strengthen anaemia and malaria case management
- Evaluate the impact of SP for IPTp on an ongoing basis

In areas where 50 percent parasitological failure at D14 is reported, countries should:

- Emphasise ITN use as well as anaemia and malaria case management
- If an appropriate policy already exists, continue IPTp with at least two doses of SP; evaluate the impact on an ongoing basis
- In the absence of policy, consider adopting the use of IPTp with SP only after further evidence is available

Source: Reference²⁸



Weak health systems

Even where good policy is in place, health system weaknesses, particularly human resource shortages and commodity procurement and supply, can slow policy implementation. Malaria diagnosis, especially in high transmission settings, already presents a challenge. A combination of overburdened health workers and changing treatment policies without adequate in-service training can result in poor quality services. A quality assessment of public and private ANC services in Tanzania, for example, reveals that guidelines for dispensing medicines for anaemia and malaria prevention are not being followed.²⁹ Africa's current human resource challenges and possible solutions are covered in more detail in Section IV.

The inadequate or unreliable supply of medication and other commodities is a major challenge that threatens the health system overall. Several of the effective interventions proposed for significant and rapid improvement of maternal and newborn health and survival are reliant on the provision of commodities such as SP, ITN, tetanus toxoid vaccine, and antibiotics. The global manufacture and supply of ITN, especially Long Lasting Insecticidal Nets (LLIN), failed to keep pace with demand during 2004 and 2005, but these bottlenecks have significantly eased in 2006, with global production of nets estimated to exceed 70 million during the year. The need for accurate and timely procurement forecasting is evident.³⁰

Weak referral systems continue to impede care. The recognition of danger signs and complications at the community level needs to be complemented by an efficient referral process and backed up by high quality, effective care at health facilities. This will improve the management of malaria and ensure that obstetric emergencies and other complications identified at community level are managed with skilled care at a facility.

Health system strengthening requires stronger linkages at all levels between groups working for MNCH and groups focusing on specific causes such as malaria or HIV. The recent integration of global level partnerships to form the Partnership for Maternal, Newborn & Child Health (PMNCH) offers great potential for integration and improved communication with the RBM partnership and other specific initiatives. Mechanisms to ensure effective communication and information flow among the different partnerships are urgently required to facilitate the exchange of ideas, experiences, and best practices as well as streamline operations, increase funding, and ensure supplies, thereby avoiding duplication of effort and improving outcomes for the betterment of children's and mothers' health.

Practical steps to advance integration

This chapter has emphasised that the impact of malaria control programmes on newborn health is primarily realised through effective MNCH services. There is a fundamental need, therefore, for convergence between malaria programmes and MNCH; a process which can be strengthened with the following steps.

Advocate for a holistic approach that secures funding to strengthen the continuum of care. Ensuring that a holistic approach to MNCH is included in malaria funding opportunities is of paramount importance. A case in point is the potential for expanding services targeting malaria control during pregnancy to include neonatal interventions through support from the Global Fund for AIDS, TB and Malaria, the Presidential Malaria Initiative, and the World Bank Malaria Booster programme as well as other funds. Premature birth resulting from malaria parasitaemia can justify the inclusion of targeted interventions at both community and health facility levels within a malaria funding proposal.

Integrate policy, implementation guidelines, and delivery with MNCH services. The policies facilitating delivery and use of various strategies need to be harmonised across MNCH and malaria control programmes. In most cases, policies are developed and published by one programme without consultation or a review of potential negative effects on other programmes. A review of policy implementation guidelines will need to be undertaken to ensure that newborn health is addressed rather than implied.

Use the opportunity of strengthening malaria services to improve other care delivered through ANC and integrated management of childhood illness (IMCI) programmes. Addressing constraints in malaria management could also benefit mothers and newborns



with other conditions through ANC and IMCI. For example, while strengthening malaria services in ANC and IMCI, other aspects of ANC and IMCI may also be improved, especially in terms of advocating for the provision of other commodities and services. The distribution of ITN during ANC visits and other outreach opportunities has resulted in increased uptake of these services. Improved referral of neonatal sepsis could be integrated with efforts to improve case management of children with malaria. Malaria policies are often well regarded by decision makers, presenting an opportunity to utilise this goodwill by advocating for a minimum package to address the special requirements of malaria-related fever in newborns, for example.

Use the opportunity of strengthening laboratory facilities and supplies for malaria to improve overall logistics for supplies in emergency obstetric and newborn care and IMCI. Strengthening procurement of drugs and commodities, supplies management, and laboratory services would benefit not only malaria programmes but also management of neonatal sepsis and provision of emergency obstetric care. Linking with malaria programmes could strengthen IMCI by addressing the need for supplies of pre-referral drugs that can be used in the management of neonatal sepsis, in particular. (Section III chapter 5).

Use the opportunity of social mobilisation and behaviour change communication techniques to increase demand for MNCH services. Early recognition of danger signs in mothers, newborns, and children needs to be incorporated into social mobilisation and communication interventions at the community level, using a range of tools and approaches, from mass media to interpersonal communication. Recognition of malaria danger signs and home management of malaria programmes could be extended to include recognition of newborn danger signs and signs of obstetric complications. Communication interventions can create demand for newborn health care services, especially in countries where mothers and newborns traditionally remain in the home for several days. Another potential opportunity is the addition of clean birth kits to the pre-packaged drug kits provided for home management of malaria.

Conclusion

Improving newborn health in resource-poor settings is an enormous challenge but not an insurmountable one, particularly because newborn morbidity and mortality is not attributable to a single cause, but to a multiplicity of factors, of which many can be addressed through existing programmes. Malaria is one of these factors affecting the health of the mother and leading to ill health of the newborn. Effective interventions are available to address malaria in pregnancy - the use of ITN by pregnant

women and uptake of IPTp. However, coverage of both of these interventions currently remains relatively low compared to ANC, which can provide an optimum delivery platform. Challenges to scaling up IPTp implementation include the need to create demand among pregnant women for IPTp through ANC, increase recognition by families and communities that pregnant women and their unborn babies are at serious risk from malaria, and improve the supply and management of commodities. Other limiting factors include increasing resistance to SP, which may ultimately have a negative impact on the effectiveness of IPTp with SP. Alternative antimalarial prophylaxis for IPTp and for the treatment of pregnant women with malaria are urgently required.

With heightened policy attention and an increased availability of resources for malaria prevention and control from a variety of sectors, more pregnant women will be able to access IPTp, more pregnant women and their babies will be sleeping under ITNs, and the number of mothers and children receiving effective treatment for malaria will increase. The funding environment is currently supportive of greater integration of MNCH with malaria control programmes. Coordination among malaria control programmes and MNCH is required for implementation of integrated, effective services.

Priority actions for integrating malaria control programmes with MNCH

- Advocate for a holistic approach that secures funding to strengthen essential MNCH packages and programmes along the continuum of care
- Integrate malaria policy, implementation guidelines, and delivery with MNCH services
- Use the opportunity of strengthening malaria services to improve other care delivered through ANC and IMCI in particular
- Use the opportunity of strengthening lab facilities and supplies for malaria to improve logistics for supplies in emergency obstetric and neonatal care and IMCI
- Use the opportunity of social mobilisation and behaviour change communication techniques to increase demand for MNCH services

Immunisation programmes

Ahmadu Yakubu, Jos Vandelaer, Gezahegn Mengiste, Fouzia Shafique, Tedbab Degefie, Robert Davis, Tunde Adegboyega

Immunisation programmes have traditionally focused on preventing disease in infants or older children. However, these programmes also have the potential to save newborn lives by preventing tetanus or rubella through the immunisation of women. In sub-Saharan Africa, up to an estimated 70,000 newborns die each year in the first four weeks of life due to neonatal tetanus. This predicament exists, even though neonatal tetanus is eminently preventable through two US\$0.20 injections of tetanus toxoid (TT) during pregnancy or hygienic practices at birth. There has also been growing interest in preventing congenital rubella syndrome through vaccination.

In addition to preventing these life-threatening diseases, the immunisation of newborns and future mothers as part of programmes such as the Expanded Programme on Immunisation (EPI) and financially supported by the Global Alliance for Vaccines and Immunisation (GAVI) and others, provide opportunities to strengthen or deliver other maternal, newborn, and child health (MNCH) interventions. Novel strategies such as Child Health Days/Weeks or Immunisation Days, often offer a package of other interventions besides immunisation, thereby offering the opportunity to deliver interventions specifically targeted at neonates as well as crosscutting maternal and newborn health problems.

What are the opportunities to scale up current immunisation programmes to save newborn lives, and how can immunisation services enable the delivery of other important MNCH interventions?



Problem

Each year, over four million African children – including over one million newborns – die before their fifth birthday, many of whom die from vaccine-preventable diseases. Vaccination and immunisation programmes are crucial in reducing death, illness, and disability.¹ All countries have established immunisation programmes, but the level of vaccination coverage achieved is often linked to the developmental status of each country's health system, infrastructure, managerial capacity, and available funding. Failure to reach mothers and newborns, especially through antenatal care (ANC) and in the early postnatal period, contributes to gaps in immunisation coverage. Thus the goal of universal coverage, important for both immunity and equity, is still not achieved.² The burden of maternal and neonatal tetanus (MNT) and the cost-effectiveness of its prevention make maternal and neonatal tetanus elimination (MNTE) particularly relevant for maternal health and newborn survival. Lack of effective coverage of immunisations, especially tetanus toxoid (TT) vaccination, and missed opportunities within immunisation programmes negatively affect women, newborns, and children.



Effects on women: Because maternal tetanus infection is a condition of the poor, affecting women who have not been immunised and who give birth in unhygienic conditions, information about the size of the problem is lacking.³ The real tragedy is that deaths attributed to tetanus infection could have been prevented through focused antenatal care, immunisation, clean childbirth practices, and effective postnatal care. Immunisation programmes, however, fail to vaccinate many women with two or more doses of tetanus toxoid (TT2+), indicating an inadequate health system infrastructure and mostly affecting those with the least access to care, such as minority groups and rural populations.

Effects on newborns: Infections, which include tetanus, account for 39 percent of the 1.16 million newborn deaths occurring every year in sub-Saharan Africa.⁴ The region's high neonatal mortality rate (NMR), however, provides an opportunity for dramatic reductions in deaths due to infection, specifically tetanus. According to recent estimates, neonatal tetanus causes up to 70,000 deaths in 30 African countries, but because neonatal tetanus is a disease of the poor, whose deaths often go uncounted, there is uncertainty around such estimates. Case fatality rates for neonatal tetanus are high, and 70 to 95 percent of babies with the infection may die in the absence of intensive care.⁴

Effects on children: The protection that a newborn may have against tetanus, which is gained through the passage of tetanus anti-toxins from an immunised mother to the fetus during pregnancy, will not last through childhood, putting the growing child at greater risk of infection. Children should receive a full course of immunisations with vaccines that include TT. In most countries, immunisation schedules include Bacille Calmette-Guérin (BCG) vaccine, diphtheria, pertussis, and tetanus toxoids vaccine (DPT), oral polio vaccine (OPV), measles and Hepatitis B vaccine. The majority aim to reach children before their first birthday. To be fully protected against vaccine preventable diseases, children must have several contacts with the health care system in their first year of life.

Certain social and cultural practices may increase the risk of some conditions that are preventable by immunisation, adversely affecting immunisation coverage. For example, in some cattle-herding communities, putting cow dung on the umbilical cord is seen as a sign of blessing, ensuring the baby will grow up to own many cattle.⁵ This practice, however, invites a massive risk of infection from neonatal tetanus. In other cases, communities may fear and reject immunisation that specifically targets pregnant women because they interpret it as birth control.

Abena – every newborn counts

Abena – her name means “girl born on a Tuesday” – was born in a dark hut. Abena’s mother, Efua, had no money to go to hospital for the birth, and Efua’s aunt helped her, cutting the cord with a dirty blade and covering Abena’s cord with an old piece of cloth. Abena was able to suck well at first, but on the third day, Efua noticed that her sucking was weak. By the fourth day, Abena’s muscles were stiff, she could not suck at all, and her body went into spasms at any disturbance. Her life only lasted five days. Efua’s aunt buried the little body in the yam field and warned Efua not to cry, or the spirits would take away her next child, too. No one registered Abena’s birth or her death.

Package

- Immunising a high proportion of babies before, at, or soon after birth is integral to the success of many of the vaccines that reduce death or illness in infancy and later life. Immunisation programmes can safeguard the health of babies not only by vaccinating newborns during the postnatal period, but by administering the vaccines to the mother, thereby impacting the newborn. Most immunisations that target newborn health, such as TT and the rubella vaccine, are administered to the mother. Of these, TT has the greatest impact, but other vaccinations given prior to pregnancy, such as the rubella vaccine, also have the potential to save lives and reduce serious illnesses and disability. In addition, there are a number of vaccines given to babies just after birth, notably:
 - BCG vaccination to reduce the risk of tuberculosis
 - Hepatitis B vaccination to prevent hepatitis B infection
 - OPV to prevent polio infection

This chapter will focus on immunisations that directly save newborn lives, particularly from tetanus, but will also mention the rubella vaccine. It will briefly outline the immunisations delivered in the neonatal period and discuss opportunities to enhance existing immunisation services by delivering other MNCH interventions and collecting better data for decision making. Finally, it will list practical steps for integrating immunisation and MNCH programmes.

Prevention of maternal and neonatal tetanus

Recognising the importance of MNT, the public health community has called for MNTE. Elimination status is defined as less than one case of neonatal tetanus per 1,000 live births per year at the district level.⁶ This differs from eradication, which, as the efforts against smallpox exemplify, constitutes one concerted effort to stop the spread of a particular disease. Tetanus cannot be fully eradicated, and to achieve and maintain elimination, ongoing efforts are necessary to sustain the cases at less than 1 per 1,000 live births per year. The package for MNTE is built primarily on widespread delivery of the vaccine. It also includes the promotion of hygienic childbirth practices and active surveillance to identify and manage remaining or new cases of tetanus, even after a country attains elimination.

Provision of tetanus toxoid vaccination to women

Immunising the mother prior to childbirth with TT protects both her and her newborn against tetanus, and antenatal care is the main programmatic entry point for routine TT immunisation. A pregnant woman should receive at least two doses while pregnant, unless she already has immunity from previous TT vaccinations. Five doses of TT can ensure protection throughout the reproductive years and even longer. In areas where the health system is weak, however, supplemental immunisation activities (SIA) are used to deliver TT to all women of childbearing age in a campaign approach.

Promotion of clean childbirth services to all pregnant women

In areas with low TT coverage, health systems are usually too weak to provide women with skilled childbirth care, which can prevent MNT. With the majority of births in Africa taking place outside health facilities and slow progress in scaling up skilled care in the community, skilled attendance continues to be a challenge. However, certain community-based strategies have been successful at promoting clean childbirth and hygienic cord care outside the facility. One strategy of behaviour change addressing high risk habits after childbirth resulted in a 90 percent reduction of neonatal tetanus among the Masai in Kenya, even without increasing TT coverage.⁵

Implementation of active surveillance and response for maternal and neonatal tetanus

Surveillance of cases can be used to identify areas with specific disease burdens.⁷ Unfortunately, despite legal requirements, births and deaths are often not registered in African countries, and reliable cause-specific data are even rarer. Neonatal tetanus cases and deaths are therefore grossly under-reported, at less than 20 percent – sometimes less than 1 percent – of cases (see Table III.9.1). Where reliable surveillance is unavailable, models can estimate the impact of interventions on the neonatal tetanus burden. Different models and methods produce varying results and have diverse purposes, strengths, and weaknesses, as discussed in the data notes on page 226. The main point of such models is to estimate progress and guide decision making.

TABLE III.9.1 Under-reporting of neonatal tetanus in West Africa

Country	Reported	Efficiency of notification
Benin	10	7%
Burkina Faso	8	<1%
Cote d'Ivoire	95	6%
Gambia	1	7%
Ghana	105	4%
Guinea	272	16%
Guinea-Bissau	5	3%
Liberia	166	20%
Mali	31	1%
Mauritania	11	3%
Niger	27	1%
Nigeria	1871	4%
Senegal	16	1%
Sierra Leone	0	0%
Togo	39	11%

Source: From reference⁸. Based on reported and estimated cases of neonatal tetanus

Rubella vaccination and prevention of congenital rubella syndrome

Globally, approximately 100,000 babies are born with congenital rubella syndrome each year as a result of their mothers being infected with rubella during pregnancy.⁹ Congenital rubella syndrome may result in stillbirth, neonatal or child death, or long term disability due to growth restriction, heart defects, cataracts, and deafness. Congenital rubella syndrome is known to be under-reported in Africa,¹⁰ and awareness of the illness is often low, particularly as women may have very non-specific, unrecognised symptoms in the early weeks of pregnancy.¹¹

Congenital rubella syndrome in the newborn is prevented by avoiding rubella infection of the mother during the first trimester of pregnancy. This can be achieved if the mother has immunity to rubella prior to the pregnancy, either after natural infection or through vaccination. Vaccination against rubella during childhood will prevent rubella infection later in life, but if coverage cannot be maintained at high levels, adult women who have not been vaccinated will have a higher risk of infection, resulting in a greater susceptibility to congenital rubella syndrome. An alternative strategy, therefore, is to immunise adolescent girls and/or women of childbearing age, either as a routine immunisation strategy or as a campaign approach, for example in schools.

WHO recommends that in low coverage settings, governments consider a policy of immunising adolescent girls and/or women of childbearing age, and once routine DPT and measles coverage rises above 80 percent, the country should consider introducing rubella into routine child immunisation programmes.¹¹

Immunising newborns for protection later in life

Although TT is the most obvious example of a vaccine to reduce newborn deaths, there are other relevant vaccines that impact health throughout the lifecycle. These interventions require contact between health services and the mother and baby during the postnatal period. The most frequently used are BCG, OPV, and Hepatitis B vaccine.

Bacille Calmette-Guérin vaccination to reduce the risk of tuberculosis and leprosy:

The BCG vaccine has existed for 80 years and is one of the most widely used of all current vaccines. It has a documented protective effect against the most frequent causes of TB-related deaths in childhood, tuberculosis meningitis and disseminated tuberculosis in children, as well as leprosy. It does not however, prevent primary infection and, more importantly, does not prevent reactivation of latent pulmonary infection, the principal source of bacillary spread in the community. The impact of BCG vaccination on transmission of mycobacterium tuberculosis, the infective agent, is therefore limited. High coverage of BCG indicates that infants and their mothers are within reach of the health care system and opportunities exist to deliver additional newborn care.

Hepatitis B vaccination to prevent mother-to-child hepatitis B infection:

The outcomes of infection with hepatitis B virus are age-dependent and include acute (clinically apparent) hepatitis B, chronic hepatitis B infection, cirrhosis and hepatocellular carcinoma (liver cancer). The younger the child is infected, the higher the chance of serious complications later in life. It is estimated that globally, more than two billion people have been infected with hepatitis B, of which 360 million suffer from chronic infections with a risk of serious illness and death from cirrhosis and hepatocellular carcinoma. Cirrhosis and hepatocellular carcinoma cause an estimated 500,000 to 700,000 deaths annually worldwide. Common modes of transmission include mother-to-child transmission, child-to-child transmission, unsafe injection practices, blood transfusions, and sexual contact. Vaccination with 3-4 doses of hepatitis B vaccine induces protective antibody levels in over 95 percent of recipients, lasting at least 15 years and possibly for life. A variety of schedules are used for hepatitis B immunisation in national programmes, depending on the local epidemiological situation and programmatic considerations. In most African countries, mother-to-child transmission is less common, so immunisation can begin later, based on the feasibility and cost-effectiveness of the optimal vaccination schedule. However, in countries where a high proportion of hepatitis B infections are acquired during childbirth, the first dose of the vaccine should be given as soon as possible (within 24 hours) after birth.¹²

Oral polio vaccination to prevent polio infection:

Poliomyelitis is an acute communicable disease caused by poliovirus types 1, 2, and 3, transmitted through person-to-person contact. On average, only 1 out of 200 infected children develop paralysis.¹³ Poliomyelitis can be prevented through vaccination, either with an inactivated injectable vaccine (IPV) or with a live oral vaccine (OPV), both of which are usually effective against the three poliovirus types. The widespread use of the OPV vaccine, both in routine settings and in campaigns, has been a cornerstone of the global polio eradication programme. The routine immunisation schedule consists of four OPV doses in the first year of life, the first of which is given at birth.



Current coverage and trends

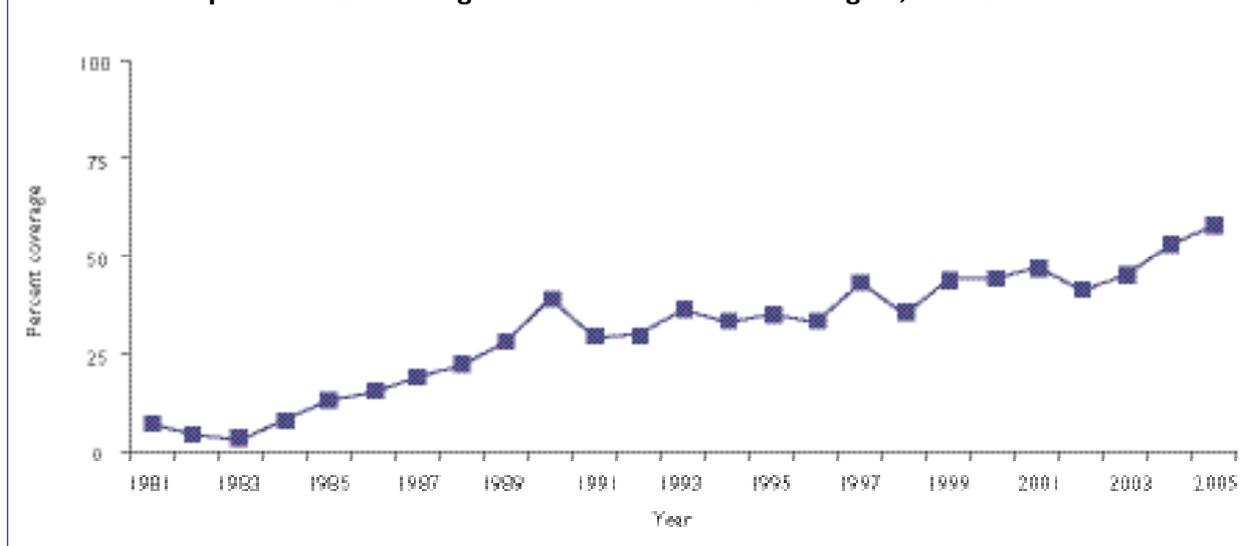
Immunisation programmes have been implemented since the 1970s and 1980s, and progress in immunisation coverage has led to a substantial reduction in the burden of childhood infectious diseases. However, according to 2004 data, only 65 percent of children under one year of age in sub-Saharan Africa received three doses of DPT3 vaccinations, compared to 78 percent globally.¹⁴ While immunisation saves millions of lives every year, there remains scope for improvement, particularly among populations that do not benefit from regular health services.

Tetanus

Routine tetanus immunisation among pregnant women, or TT2+ coverage in the African region, was 37 percent in 1990, 44 percent in 2000, and has been increasing recently to around 58 percent in 2005.^{14,15} (Figure III.9.1)

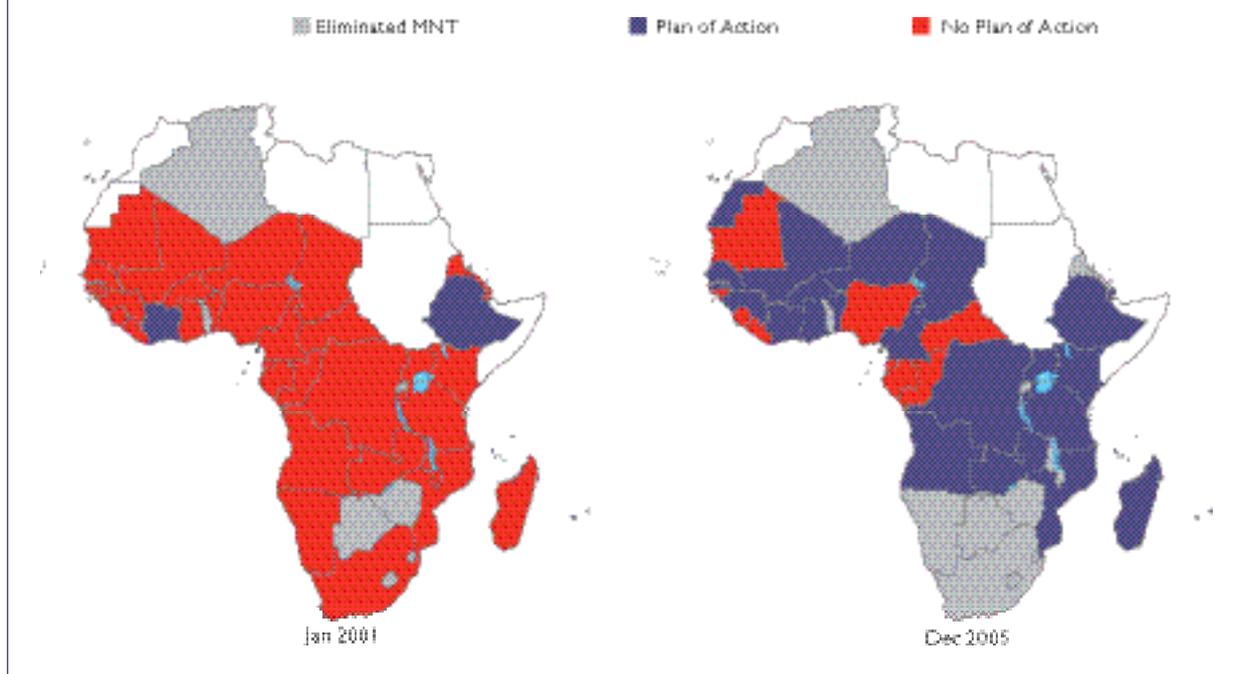
In addition to increased coverage, more governments are now committed to reducing MNT, as exemplified by the development of national action plans. (Figure III.9.2) In order to accelerate progress towards MNTE, SIA have been implemented across the region, targeting all women of childbearing age in high risk areas with three doses of TT. This approach has allowed the immunisation of over 20 million women in 21 African countries living in underserved areas. These women and their children would have otherwise remained at risk of MNT. As a result of this progress, seven African countries have been validated since 2000 as having eliminated MNT.¹⁶ In addition, improvements in childhood immunisation or DPT3 coverage will have an impact in the long term, as the childhood DPT doses will reduce the need for future mothers to receive multiple TT boosters in adulthood.

FIGURE III.9.1 Reported TT2+ coverage trend in the WHO/AFRO region, 1981-2005



Source: WHO, Global and Regional Immunization Profile: African Region, 2005

FIGURE III.9.2 Progress towards elimination of maternal and neonatal tetanus in Africa: development of countries' plans of action for MNTE



Source: WHO regional office for Africa, 2005

Rubella

Routine rubella vaccination remains the exception for most African countries. In 2004, only two African countries reported using a vaccine containing rubella in their childhood immunisation schedules.¹⁷ Very few cases of congenital rubella syndrome are reported annually to WHO, but studies suggest that rubella is often under-reported.^{9;18}

BCG, Hepatitis B, and OPV

In 2004, 76 percent of newborns received BCG in sub-Saharan Africa, a proportion that has remained stable in recent years.¹⁴ All countries in sub-Saharan Africa use the vaccine, and all except one administer it at birth. Of the 30 countries in sub-Saharan Africa that report the administration of the hepatitis B vaccine, four report including a birth dose.¹⁷ With polio, the global effort towards eradication has narrowed the occurrence of the disease to just a few countries, with around 1,000 to 2,000 cases occurring annually. OPV is used in all sub-Saharan African countries, and in 37 of them, an OPV dose at birth is part of the routine immunisation schedule.

Opportunities for integrating immunisation activities and MNCH

Immunisation and MNCH services are natural 'partners', given their similar target groups. It is now widely recognised that opportunities to link immunisation with other interventions must be further explored if health programmes are to generate maximum benefit. For

example, the Global Immunisation Vision and Strategy has described this integration as one of its four primary strategic areas, and the Global Alliance for Vaccines and Immunisation (GAVI) has made US\$500 million available to support health systems strengthening, which should benefit all health services, including MNCH. Immunisation services often have access to communities, enabling more equitable delivery of vaccines.^{2;19} The programmes are flexible and use a variety of approaches, including fixed posts, outreach services, and mobile teams, depending on the distance to be covered and the target population. There are few examples where immunisation and other interventions specifically aimed at improving newborn health have been linked. A number of countries are exploring the following four opportunities, which may serve as a basis for further integration initiatives.

1. Antenatal care and routine immunisation services

Several entry points exist for integrating MNCH and various immunisation programmes, specifically MNTE. This is especially evident in the opportunity to vaccinate pregnant women and women of childbearing age against tetanus. Africa's relatively high ANC coverage – 69 percent – presents an opportunity for both biomedical and behavioural interventions, including vaccinating women against tetanus, promoting skilled attendance at childbirth, and ensuring clean cord care practices. This opportunity is even greater where ANC coverage is high; in 15 countries in sub-Saharan Africa, the coverage of women attending at least one antenatal visit is 90 percent

or higher.¹⁴ (See Section II chapter 2) ANC services provide an excellent opportunity to deliver a package of health interventions that includes TT in health facilities.

2. Immunisation Plus Days, Child Health Days/Weeks, and similar interventions

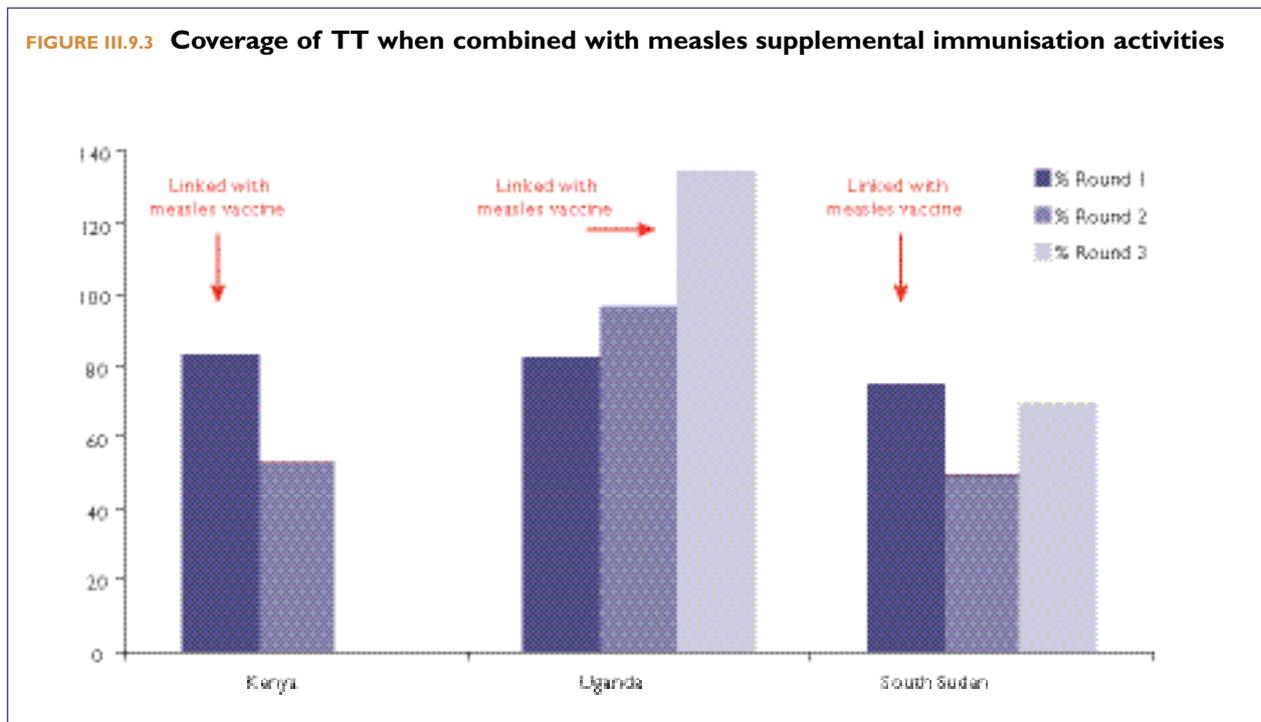
Several countries are currently implementing Child Health Days, Child Health Weeks or Immunisation Plus Days. While known by different names, these activities share a common goal of delivering a series of interventions on a regular basis (e.g. quarterly or semi-annually) by mobilising large numbers of health workers. They are more frequent but less vertical than immunisation campaigns. They are based in any combination of fixed posts, such as health facilities, temporary posts, like markets, schools, places of worship, and they use community approaches with house-to-house teams to deliver the interventions. These focused days provide additional opportunities to deliver MNCH messages as well as high impact preventative and curative interventions at the community level, including among remote populations. Packages can be tailored to country needs, available funding and supplies, and feasibility. For example, in addition to TT, intermittent preventive treatment for malaria during pregnancy, insecticide treated bednets, ANC messages such as birth preparedness, maternal antihelminthic treatment, and micronutrient supplementation can be provided to pregnant women during such outreach activities. Children can be offered a different package.

Incorporating relevant MNCH interventions with Child Health Days/Weeks not only makes a greater impact, but also reduces the overall delivery time and cost to individual programmes, because health care teams and community members converge so that the services are delivered at one well-advertised place and time.

3. Immunisation campaigns

Immunisation campaigns are used to achieve high coverage quickly in areas where routine immunisation has failed. They are also used to interrupt transmission and reduce the number of susceptible individuals. Throughout Africa, measles campaigns have reduced mortality, polio campaigns have interrupted poliovirus transmission, and TT campaigns have immunised women in high risk areas.

While all such campaigns provide opportunities to deliver interventions other than immunisation, such as vitamin A during polio campaigns or insecticide treated bednets during measles campaigns, SIAs for TT are especially suited to reach women in otherwise underserved areas. Districts where SIAs are to be implemented are identified using a series of indicators, such as neonatal tetanus incidence, TT2+ coverage, ANC coverage, and rates of clean childbirth. The aim is to select those districts where routine immunisation services are poor, and MNT has not yet been eliminated (see Box III.9.1). This way, the districts selected usually represent the worst-served areas in the country, and as such, they can also be labelled for other interventions.



Note: Coverage exceeds 100 percent because real population figures are unknown and target populations are based on estimates of census data and undercounting occurs in some countries.

Source: MNTE Programme Committee Meeting presentation. "The role of supplementary immunisation activities in achieving MNTE, The Example of Uganda," Gezahegn Mengiste, May 2004.

BOX III.9.1 Mobilising communities for tetanus prevention in Ethiopia

In 2000, nearly 147,000 babies in Ethiopia died in their first 28 days of life. At that time, tetanus was the cause of an estimated 14,000 to 20,000 newborn deaths each year. Tetanus is still a major problem in Ethiopia.

Since only one in four women come for antenatal care, and an even lower proportion of poor and rural women receive ANC, the government and UNICEF decided to conduct outreach campaigns in underserved areas to ensure those women not attending ANC received tetanus toxoid (TT) immunisation whilst also working to increase antenatal care (ANC) attendance. Because only six percent of women in Ethiopia give birth in health facilities, approaches that were not dependent on health facilities were required to promote clean births, at least in the short term.

Low TT coverage was a problem of both supply and demand. The supply of the vaccine and vaccination services was not always available or accessible to poor and rural communities. When the vaccine was available, women did not necessarily come to be immunised. Save the Children US worked with partners to undertake formative research in five regions to understand why demand for TT was low. This research examined the following aspects:

- Knowledge and recognition of tetanus
- Knowledge, attitude, and practices regarding TT immunisation and reasons for not accepting the immunisation
- Practices during pregnancy and childbirth
- Access to health prevention, care services, and preferred communication channels
- Quality of care, support, and challenges among health providers and in facilities
- Opportunities for social mobilisation
- Local system in support of TT immunisation – local administration as well as community and religious leaders

It was found that neonatal tetanus was well recognised but often attributed to evil spirits. Where families knew about TT immunisation, they were often suspicious of the reasons for immunising pregnant women – would the baby die? Would the woman become infertile? At the peripheral level, it was found that health workers were often unaware of the causes of neonatal tetanus and not actively promoting immunisation or clean birth. There were issues related to quality of service as well as misinformation about when to return and temporary soreness of the injection site.

Based on the findings, campaign messages and materials were developed and tested to target segmented audiences that included both the general public and health workers. A series of television adverts were included as well as posters, flipcharts, billboards, leaflets, storybooks for schools, packets containing key messages for community leaders, videos for showing with a mobile van unit, and other channels such as radio and public talks. Communities were mobilised through existing community-based organisations.

A post-campaign assessment by UNICEF found that over 60 percent of women of reproductive age received at least 2 doses of TT. The assessment also highlighted difficulties in maintaining community mobilisation and messages about clean birth in the absence of ongoing supervision. To reach the poorest and most marginalised communities, materials require further adaptation and translation. Key partners have already begun this process.

Source: Adapted from presentation by Dr. Tedbab Degefie, Save the Children. Newborn Health Stakeholders Meeting, Addis Ababa, March 2006.



TT SIAs, which target women of childbearing age in ‘high risk districts’, offer an opportunity not only to immunise the unreached with TT vaccine, but also to provide key messages and other interventions. For example, measles vaccine has been given to children in Kenya, southern Sudan and Uganda, during TT SIA (see Figure III.9.3). Uganda has also combined polio SIAs with TT with very encouraging results. Unfortunately, few countries have taken advantage of the potential that these additional outreach activities provide.

4. Linking with other services provided by immunisation programmes

4.1 Social mobilisation network

The Expanded Programme on Immunisation (EPI) has a robust social mobilisation network that facilitates awareness campaigns in schools and public spaces, while calling on the participation of public opinion leaders and various media to reinforce the messages. This multifaceted strategy has been useful in creating demand for immunisation in many countries. The network available through EPI can also deliver key messages for improving newborn care, such as vaccination against tetanus, birth preparedness, skilled attendance, essential nutrition actions, and others.

4.2 EPI data system

The monitoring system used for immunisation interventions (routine, surveillance, and survey) provides an opportunity to monitor other maternal, newborn, and child interventions as well. The immunisation system usually monitors its performance on an ongoing basis through a number of indicators, allowing for rapid readjustment of the programme where needed. Particularly for interventions delivered with vaccinations, consideration should be given to the revision of tally sheets so that these interventions can also be monitored. While the EPI data system is an important tool, all data need to be recorded in the national health information system, which may require further strengthening, for the most effective tracking of immunisation and other interventions.

4.3 Inter-Agency Coordinating Committee for EPI

Many countries have an existing Inter-Agency Coordinating Committee for EPI, through which partners provide strategic, technical, and financial support for immunisation activities. With more attention shifting towards overall MNCH strengthening, these committees should advocate for and commit resources to MNCH rather than exclusively supporting vertically implemented interventions.

Challenges

Funding. Funding is essential for the successful implementation and integration of all initiatives. As many initiatives have traditionally taken a vertical approach, so has their funding structure. Donors who support one specific intervention may be reluctant to add funds to support additional interventions. Yet, without such funds, opportunities for linking immunisation to other interventions may be missed. GAVI funds for health system strengthening may provide a partial solution, however, the fundraising and funding approach taken by many initiatives and programmes may require re-evaluation.

Access to hard-to-reach and underserved populations to reduce inequity.

Although immunisation is a successful programme overall, some societies and groups remain sceptical. Improved advocacy aimed at addressing socio-economic barriers and community involvement in decision making may be required to convince people of the advantages of immunisation. Lack of transportation, poor supply chains, inadequate personnel management, and similar problems may further compound the problems encountered in reaching the unreached. The high risk district approach is one way of reaching these groups. One example of this approach from Uganda is described in Box III.9.2.

Surveillance. Surveillance may be difficult to establish, yet it remains an important component of any health programme. The Acute Flaccid Paralysis (AFP) surveillance system, established for polio eradication, could provide a suitable infrastructure for other surveillance activities.

Sustaining gains. Once activities have been successfully implemented, the challenge is to continue high quality implementation. This is particularly the case when a campaign approach has been used to improve coverage rapidly and health systems are unable to provide ongoing coverage.

Coordination of activities. Where several departments or programmes are involved in delivering a series of interventions, coordination between them may be a challenge. Funding flows, logistical arrangements, supply and managerial issues and communication are just a few of the areas that may require special attention.

BOX III.9.2 High risk district analysis and action plans in Uganda

In the first quarter of 2005, a review of the districts in Uganda was undertaken. Three categories of districts were classified according to their risk status for tetanus, what activities needed to be implemented to achieve maternal and neonatal tetanus elimination (MNTE), or what would sustain the low risk status. In this exercise, the districts were classified in relation to two or more doses of tetanus toxoid (TT2+) and three doses of diphtheria, pertussis, and tetanus (DPT3) vaccine, but other indicators may be used in other settings. A similar approach could serve as a baseline to prioritise high risk districts for other maternal, newborn and child health (MNCH) interventions.

Low Risk Districts (38) with TT2+ coverage in 2004 of 50 percent or more, with 50 percent being the national average, were targeted as those able to improve TT2+ further through routine immunisation services. Sustaining their low risk status will be built on a combination of the following strategies:

- Promotion of routine immunisation of pregnant women with TT vaccine
- Promotion of clean birth practices
- Promotion of active surveillance for neonatal tetanus, case investigation, and response
- Promotion of TT-outreach immunisation for girls in secondary schools along with proper documentation and the issuance of cards
- Promotion of TT catch-up during the biannual Child Health Days in May and November

Low to Moderate Risk Districts (9) with TT2+ coverage below 50 percent were still considered to have the capacity to improve TT coverage if they had DPT3 coverage of 70 percent or greater, as these districts could provide access to and utilisation of routine immunisation services. Strategies to improve coverage include increasing awareness, community involvement, accelerating outreach, providing routine immunisation services using the Reach Every District (RED) approach, and utilisation of first antenatal contact when uptake of at least one ANC visit is at least 90 percent. The annual national Child Health Day was also to be used as an opportunity to increase mobilisation for TT.

High Risk Districts (9) with TT2+ coverage below 50 percent and DPT3 below 70 percent were considered weak in routine immunisation and without capacity to improve TT coverage easily. This is indicative of poor access, even if utilisation is good. These districts require three rounds of TT SIAs in addition to the activities in low to moderate risk districts. The high risk districts are few in number but account for almost all cases of NT in Uganda. Some of these districts are in the Northern Region, which suffers from instability. However, identification of these populations and a strategic partnership action plan allows for accelerated progress. Simultaneous to the TT SIAs, other strategies as outlined in relation to low risk districts need to be implemented and strengthened once the district moves from high or moderate to low risk.

Source: Adapted from Gezahegn Mengiste, Ahmadu Yakubu., Trip report on review of maternal and neonatal tetanus elimination in Uganda, March 2005.

Practical steps to advance integration

Despite ongoing challenges, the existing infrastructure, funding, and shared experience of various immunisation programmes offer opportunities to link with MNCH programmes to deliver integrated services. Some practical steps involved with this integration include:

- Ensure that roles and responsibilities between partners and departments are clearly stated and accepted. Establish a coordination body, or review and broaden the remit of an existing body (for example, the national MNCH partnership or the Inter-Agency Coordinating Committee for EPI) to coordinate the activities of partners and departments and to oversee the monitoring of implementation.
- Target high risk districts as a pro-poor strategy and harmonise activities between EPI, MNCH, and other relevant programmes. An analysis of available district-level indicators, combined with local knowledge, can be used to identify such areas. Review the interventions being implemented, key interventions to be added, and existing delivery mechanisms. Look for synergies and linkages between programmes, and take all necessary measures to ensure that necessary supply, funding, and supervision are in place.
- Resolve funding, logistical, supply, managerial, financial, and staffing issues. Utilise existing social mobilisation networks, including those of immunisation and other programmes, to deliver key health messages

and create and sustain demand for MNCH services, especially in areas where the majority of women give birth at home. Messages should emphasise how potentially harmful traditional behaviours can be changed.

- Review existing monitoring systems using selected key indicators to monitor activities. Revise tally sheets, reporting systems, and other tools. Analyse the data and observations after the activity, and use the coordination body to agree on how to further improve the implementation of joint interventions in the future.

Conclusion

There are many challenges associated with shifting the paradigm of primarily vertical services to one of integrated MNCH services. In strong, well-established programmes, such as those that carry out immunisation, initial consensus-building needs to occur between key players to overcome these challenges. The infrastructure and large scale of EPI activities presents a number of entry points and opportunities that should be studied carefully and utilised to improve maternal, newborn, and child survival.

Immunisation coverage, even in the poorest communities of the poorest countries in Africa, has increased over the last five years. This is a great success, especially given the loss of momentum in the 1990s. Much of the focus has been on illness prevention in the older child, but immunisation is now also preventing neonatal illnesses and deaths and immunisation of neonates is providing further protection later in life.

Priority actions for integrating immunisation programmes with MNCH

- Ensure effective coordination between partners, revitalise existing coordinating bodies
- Target high risk, under-served areas, and agree on linkages, packages of interventions, best delivery strategies, and age groups to be targeted
- Work out funding, logistical, supply, managerial, financial and staffing issues. Utilise existing social mobilisation networks
- Review existing monitoring systems and work to harmonise and link EPI and MNCH data, using selected key indicators. Evaluate progress and readjust accordingly

In recent years, immunisation programmes have demonstrated that innovative approaches not only provide an opportunity to increase immunisation coverage, but may also serve as a platform for delivery of other health interventions that benefit mothers, newborns and children. Now is the time to move on these opportunities to save lives.



Programme resources

The following guides and reference materials can be found on the accompanying CD

Chapter 1 – Care of girls and women before pregnancy

- Framework for repositioning family planning in reproductive health services: Framework for accelerated action, 2005-2014. WHO Regional Office for Africa, Brazzaville, 2004.
- Meeting the need: strengthening family planning programs. UNFPA, PATH. Seattle, 2006.
- Healthy timing and spacing of pregnancy: A pocket guide for health practitioners, program managers and community leaders. Extending Service Delivery. Washington DC, 2006.
- Pregnant adolescents: delivering on global promises of hope. WHO, UNFPA. Geneva, 2006.
- Hatcher RA, Ziemann M, Watt AP, Nelson A, Darney PD, Pluhar E. A pocket guide to managing contraception. Managing the Gap Foundation, Georgia, 1999.
- YouthNet. Country Needs Assessment Tool. Family Health International, New York, 2003.
- Reproductive health of young adults. Family Health International, New York, 2003.
- Management of pregnancy, childbirth and the postpartum period in the presence of female genital mutilation – Report of a WHO technical consultation, October 1997, 2001. WHO, Geneva, 2001.
- Report of a WHO technical consultation on birth spacing, Geneva, Switzerland. 13-15 June 2005. WHO, Geneva, 2006.

Chapter 2 – Antenatal care

- Antenatal care in developing countries: Promises, achievements and missed opportunities. UNICEF, WHO, New York, 2003.
- WHO antenatal care randomized trial: Manual for implementation of the new model. WHO, Geneva, 2002.
- Pregnancy, childbirth, postnatal and newborn care: a guide for essential practice. IMPAC, WHO, Geneva, 2nd edition, 2006.
- Managing complications in pregnancy and childbirth. A guide for midwives and doctors. IMPAC, WHO, Geneva, 2003.
- Standards for Maternal and Neonatal Care. WHO, Geneva, 2006.
- Basic maternal and newborn care: A guide for skilled providers. JHPIEGO/MNH Program, Baltimore, 2004.
- Focused antenatal care: Providing integrated, individualized care during pregnancy. Technical brief. ACCESS/JHPIEGO, Baltimore, 2006.

Chapter 3 – Childbirth care

- Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice. IMPAC, WHO, Geneva, 2nd edition, 2006.
- Managing complications in pregnancy and childbirth: A guide for midwives and doctors. IMPAC, WHO, Geneva, 2003.
- Basic newborn resuscitation: a practical guide. WHO, Geneva, 1997.
- Managing newborn problems: a guide for doctors, nurses and midwives. IMPAC, WHO, 2003.
- Klein S, Miller S and Thomson F. A Book for Midwives: Care for pregnancy, birth and women's health. The Hesperian Foundation, Berkeley, CA, 1st ed., 2004.
- Home-based life saving skills program where home birth is common. American College of Nurse Midwives, Washington, 2005.
- Maternity waiting homes: a review of experiences. WHO, Geneva, 1997.
- Birth preparedness and complication readiness. A matrix of shared responsibility. MNH/JHPIEGO, Baltimore, 2001.
- The critical roles of the skilled attendants: a joint statement by WHO, ICM and FIGO. Geneva, WHO, 2004.

- Guidelines for monitoring the availability and use of obstetric services. UNICEF, UNFPA, WHO, 1997. [Under revision 2006.]
- Beyond the numbers. Making Pregnancy Safer; Reviewing maternal deaths and complications to make pregnancy safer. WHO, 2004.
- Example of a maternity register combining maternal and newborn indicators [Draft].
- List of equipment for childbirth care at each service delivery level [Draft].

Chapter 4 – Postnatal care

- Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice. IMPAC, WHO, Geneva, 2nd edition, 2006.
- Basic maternal and newborn care: A guide for skilled providers. Kinzie B and Gomez P. JHPIEGO, Baltimore, 2004.
- Care of the newborn: reference manual. Beck D, Ganges F, Goldman S, Long P. Saving Newborn Lives/Save the Children. Washington, 2004.
- Managing newborn problems: a guide for doctors, nurses and midwives. IMPAC, WHO, 2003.
- Postpartum and newborn care: a self-study manual for trainers of traditional birth attendants and other community-level maternal and child health workers. Carlough M. PRIME, North Carolina, 1999.
- How to train Community Health Workers in home-based newborn care. Training manual. SEARCH and Save the Children. 2006.
- Saving Newborn Lives tools for newborn health: Qualitative research to improve newborn care practices. Save the Children, Washington DC, 2003.
- Strategic guidance note on the newborn. UNICEF and SNL/Save the Children, 2006 [Draft].

Chapter 5 – Integrated management of Childhood Illness (IMCI)

- IMCI planning guide: Gaining experience with the IMCI strategy in a country. WHO, Geneva, 1999.
- IMCI adaptation guide. WHO, Geneva, 1998. [Note: a specific adaptation guide for strengthening newborn care within IMCI is in preparation].
- Improving family and community practices: A component of the IMCI strategy. WHO, Geneva, 1998.
- Child health in the community: “Community IMCI” briefing package for facilitators. WHO, Geneva, 2006.
- IMCI training modules. In-service training. WHO, Geneva, 1997.
- IMCI training modules. Pre-service training. WHO, Geneva, 2001.
- Managing newborn problems: a guide for doctors, nurses and midwives. IMPAC, WHO, Geneva, 2003.
- Pocket book of hospital care for children: guidelines for the management of common illnesses with limited resources. WHO, Geneva, 2005.
- Kangaroo Mother Care: a practical guide. WHO, Geneva, 2003.
- Revised young infant chart booklet. WHO, Geneva, 2006 [Draft].
- Optimal feeding of the low birthweight infant: Guidelines. WHO, Geneva, 2006 [Draft].

Chapter 6 – Nutrition promotion

- Global strategy for infant and young child feeding. WHO, Geneva, 2003.
- Planning guide for national implementation of the global strategy for infant and young child feeding. WHO/UNICEF, Geneva, 2006.
- Evidence for the 10 steps to successful breastfeeding. WHO, Geneva, 1999.
- Using ‘Essential Nutrition Actions’ to accelerate coverage with nutrition interventions in high mortality settings. BASICS, 2004.
- Facts for Feeding series and Frequently Asked Questions series. LINKAGES Project, AED, Washington DC, 1997.

- Infant feeding in emergencies. Module 1 for emergency relief staff and Module 2 for health and nutrition workers in emergency situations. WHO, UNICEF, LINKAGES, IBFAN, ENN, 2001 and 2004.
- Optimal feeding of the low birthweight infant: Guidelines. WHO, Geneva, 2006 [Draft].

Chapter 7 – Prevention of mother to child transmission of HIV programmes

- Antiretroviral therapy of HIV infection in infants and children in resource-limited settings: towards universal access. WHO, Geneva, 2006.
- HIV and infant feeding: Framework for priority action. WHO, Geneva, 2002.
- Managing Newborn Problems: A guide for doctors, nurses, and midwives. Integrated Management of Pregnancy and Childbirth. WHO, Geneva, 2003.
- A Behavior Change Perspective on Integrating PMTCT and Safe Motherhood Programs. A Discussion Paper. The Change Project, Academy for Educational Development and the Manoff Group, 2003.
- Infant feeding options in the context of HIV. LINKAGES Project, AED, Washington DC, 2005.

Chapter 8 – Malaria control programmes

- World malaria report. WHO, UNICEF, Geneva, 2005.
- Strategic framework for malaria prevention and control during pregnancy in the African region. WHO Regional Office for Africa, Brazzaville, 2004.
- Malaria during pregnancy resource package: Tools to facilitate policy change and implementation. MNH, JHPIEGO, Baltimore, 2003.
- Guidelines for the treatment of malaria. WHO, Geneva, 2006.
- The use of antimalarial drugs: report of an informal consultation. Roll Back Malaria, WHO, Geneva, 2001.
- Assessment of the safety of artemisinin compounds in pregnancy. WHO, Geneva, 2003.
- Malaria and HIV interactions and their implications for public health policy: Report of a technical consultation, 23-25 June 2004. WHO, Geneva, 2004.

Chapter 9 – Immunisation programmes

- Field manual for neonatal tetanus elimination. WHO/V&B/99.14. WHO, Geneva 1999.
- Maternal and neonatal tetanus elimination by 2005: Strategies for achieving and maintaining elimination. UNICEF, WHO & UNFPA. Geneva, 2000.
- Saving Newborn Lives tools for newborn health: Communication for immunization campaigns for maternal and neonatal tetanus elimination. UNICEF and Save the Children, Washington DC, 2003.
- Report of a meeting on preventing congenital rubella syndrome: immunisation strategies, surveillance needs. Geneva, 12-14 January 2000. WHO, Geneva, 2000.
- WHO position papers for rubella, Hepatitis B, BCG and tetanus vaccines

Other collections of resources on the CD

SECTION I Count every newborn – reading and resources for newborn epidemiology and advocacy

SECTION II Continuum of care – reading and resources regarding the continuum of care, gaps and opportunities

SECTION IV Cross cutting policy and programme planning guides, including monitoring and evaluation

SECTION V More data for decision making, and PowerPoint presentation templates for adaptation for 46 countries

LIBRARY Key reading such as *The Lancet* series for child, neonatal and maternal survival, *Disease Control Priorities in Developing Countries* chapter on newborn health and *World Health Report* 2005 and 2006 and newborn care reference materials.

Reaching

every mother and baby in Africa with essential care

Doyin Oluwole, Khama Rogo, Mickey Chopra, Genevieve Begkoyian, Joy Lawn

Supportive regional and national policies are in place to accelerate maternal and child survival in Africa, including more recent focus on the 1.16 million newborn who die each year on the continent. The biggest gap is not in policies, but between policies and the action required to strengthen the continuum of care and increase coverage of essential maternal, newborn, and child health (MNCH) interventions in countries.

Yet some African countries are progressively reducing newborn death rates despite low gross national income. What can we learn from these examples, especially about overcoming key barriers such as inadequate investment, financing of MNCH and human resource challenges? Even if opportunities within existing programmes are maximised, gaps in access and utilisation will still exist, especially in countries with weaker health systems and especially for the poor. What, then, are the options in these settings, and what can be done now while working towards stronger health systems? Can the “second primary health care revolution” in Africa be useful in MNCH scale up? Integration between MNCH programmes is much easier to say than to do – how can integration be promoted? How will progress be monitored and governments and partners be held accountable?





Introduction

Each year in Africa, 1.16 million babies die, yet up to 800,000 newborn lives, as well as many maternal and child deaths, could be saved if essential interventions reached 90 percent of women and babies. Many of these interventions exist in policy in almost every African country, fit within existing programmes along the continuum of care and have delivery strategies already in place. The cost of putting policy into practice is affordable at an estimated US\$1.39 per capita in addition to what is already being spent.¹ The reason that so many babies, as well as mothers and children die every year is not a lack of knowledge or of policy, but our collective failure to implement these interventions, achieve high coverage, and reach the poor.

Recent focus on slow regional progress towards Millennium Development Goals 4 (child survival) and 5 (maternal health) particularly in Africa has generated new attention towards scaling up essential interventions for maternal, newborn, and child health (MNCH). Progress is impeded by cross cutting challenges some of which are beyond the scope of newborn health and even MNCH. These constraints are well described,² particularly the human resources for health crisis and the challenge of health care financing in a continent where the governments of 16 countries spend less than US\$5 per capita on health, and an additional 11 countries spend less than US\$10 per capita on health.³

This section will outline important regional policy frameworks, highlighting specific opportunities to save newborn lives, and how addressing newborn health can be a catalyst for MNCH integration. Good news does come out of Africa – we highlight a number of countries that are progressing towards a lower neonatal mortality rate (NMR) despite low gross national income (GNI),

and examine principles that can be learnt. The final part of the section walks through the policy and programme steps to accelerate action, including addressing human resource issues and financing MNCH.

Regional policy commitments are in place

Africa does not suffer from a lack of policy. Many key policies are in place, both broad based, such as health sector reform, and specific, such as prevention of mother-to-child transmission (PMTCT) of HIV. To reduce maternal, newborn, and child deaths and accelerate action towards Millennium Development Goals (MDG) 4 and 5, there are two main regional policy frameworks, both developed under leadership from the African Union:

- Road Map for accelerating the attainment of the millennium development goals related to maternal and newborn health in Africa – “Road Map” (Box IV.1)
- Regional strategy on child survival (Box IV.2)

The overlap between these two frameworks is the newborn. Newborn health may represent the “bridge” linking maternal and child health, but easily gets lost in advocacy and implementation devoted solely to either maternal health or child health. Ideally, these two policy frameworks will merge into one MNCH approach in countries and at the regional level. The formation of the African Regional MNCH Task Force, with secretariat based in WHO regional office for Africa office is a hopeful step in this direction (see Introduction, page 4).

The Road Map to accelerate progress towards MDG 4 and 5 in Africa

The Road Map has resulted in an unprecedented pace of policy uptake across countries, with at least 35 countries starting out on the process within 2 years. In most countries the process has been participatory and multi-sectoral (Box IV.1). High level commitment has been shown in several countries – in some cases, the President has even officiated at the national launch. The Road Map promotes an approach to care that addresses both supply and demand, in keeping with the household to hospital continuum of care. (See Section II) The real test of success will be if the coverage of essential interventions and packages, particularly skilled care and emergency obstetric care (EmOC), increases in coming years. While supply problems such as lack of human resources, infrastructure, and drugs are widely acknowledged, approaches to increasing demand are not as well defined in many countries, and community empowerment and behaviour change communication are rarely implemented systematically. At this point, most national Road Maps have not had adequate emphasis on the evidence based interventions that are possible at community level, particularly for the newborn.

BOX IV.1 The African Road Map for accelerating progress to the MDGs related to maternal and newborn health

In 2003, the African Regional Reproductive Health Task Force meeting called all partners to develop and implement a Road Map for accelerating maternal and newborn mortality reduction in Africa, advancing MDG 4 and 5. The guiding principles of the Road Map include:

1. Evidence based, phased planning and implementation at country level
2. Health systems approach with a focus on reducing inequity
3. Partnership with clear definition of roles and responsibilities, transparency, and accountability led by the regional Maternal, Newborn and Child Health Task Force

What's new?

- Highlights the inseparable dyad of mother and newborn
- Consensus on plans for the next decade, including long term commitment and opportunities to harness resources from all partners
- Focus on two levels to make a difference: skilled care in health facilities and demand creation at community level
- Special attention to emergency obstetric and newborn care, with emphasis on skilled attendance as the process by which a mother and baby are provided with adequate care during labour, birth, and the postnatal period, regardless of where the birth takes place

Process and strategies:

Objective 1 Provide skilled care during pregnancy, childbirth and throughout the postnatal period

- Improve provision of and access to quality maternal and newborn care, including family planning services, ensuring that services are user-friendly
- Strengthen the referral system
- Strengthen district health planning and management of maternal and newborn care and family planning services
- Advocate for increased commitment and resources
- Foster partnerships

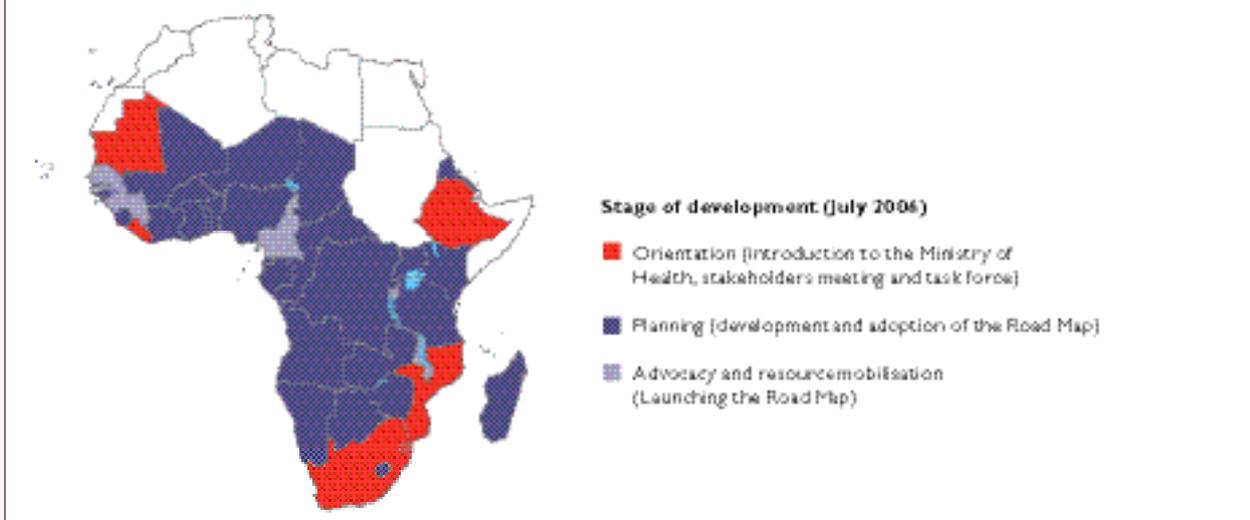
Objective 2 Strengthen the capacity of individuals, families, and communities to improve maternal and newborn health

- Promote the household to hospital continuum of care
- Empower communities to define, demand and access quality skilled care through mobilisation of community resources

Monitoring, evaluation and accountability

- Monitor country level and regional progress for the adoption and adaptation of the Road Map
- Track resource mobilisation and partner commitment for implementation of the Road Map
- Selected indicators for the different levels of care and services to be delivered, with phased implementation

Stage of development for the national Road Map for sub-Saharan Africa, 2003 to July 2006



Source: Updated data from WHO Regional Office for Africa up to October 2006, supplemented by UNFPA.
Note: Monitoring steps so far have only tracked until the launch. The steps to be tracked are under review.

Regional strategy on child survival

In 2005 the African Union, concerned about lack of progress towards meeting MDG 4 for child survival, called for an accelerated strategy on child survival for the continent (Box IV.2). The joint WHO/UNICEF strategy

was endorsed by WHO member states in the 56th Regional Committee in August 2006. WHO, UNICEF and the World Bank are currently translating this strategy into a joint implementation framework for endorsement by African Union heads of state.

BOX IV.2 The African regional framework for child survival

Priority areas. The framework developed by UNICEF, WHO and the World Bank in partnership with the African Union provides consensus on the importance of the MNCH continuum of care, health systems and financing, and essential interventions. Priority areas include newborn care, linking to maternal care and involving skilled care during pregnancy, skilled attendance during childbirth, postnatal care and improved care in the community, and at primary and referral facility levels. Other priorities include infant and young child feeding and micronutrient supplementation, immunisation, malaria prevention, management of common illnesses, PMTCT and care of HIV exposed or infected children.

Implementation plan. The plan for implementation outlines delivery approaches and phasing to achieve universal coverage through partnerships, accountability, clear roles and responsibilities, and monitoring and evaluation. Three service delivery modes – care in communities, through outreach services and clinical care at primary and referral facility levels – are proposed for packaging and implementing interventions: family-oriented community based services, population-oriented schedulable services, and individually-oriented clinical services. Three integration phases begin with implementation of the minimum package at scale, overcoming constraints to scaling up, and then bringing additional interventions into the expanded package. The goal is to achieve maximum coverage with the full package of interventions.

Investment case. The investment case details the estimated impact of reaching key milestones for neonatal and under-five mortality as well as phased costing of interventions and health systems strengthening. Keeping with a government-led focus, the inputs will be based on merging global support with nationally owned funding frameworks.

Health sector reform

Both of these regional frameworks are based on standard approaches that can be adapted, funded, and then implemented in countries, not in a vacuum but in the overall context of health sector reform. Health sector reform in countries varies from some decentralised decision making to a fixed health sector plan based on an agreed essential health package with annual external reviews. The health sector reform process provides an opportunity to scale up highly effective and feasible MNCH essential interventions. If these interventions are part of the national health package and linked to targets and budget lines with a regular review procedure, then national ownership, sustainability, and accountability are likely to follow. Several African countries now have an MNCH subcommittee of their health sector plan that focuses on MDG 4 and 5. Uganda, for example, recently added a subcommittee to the maternal and child health cluster to make recommendations for strengthening newborn care within the national health sector strategic plan.

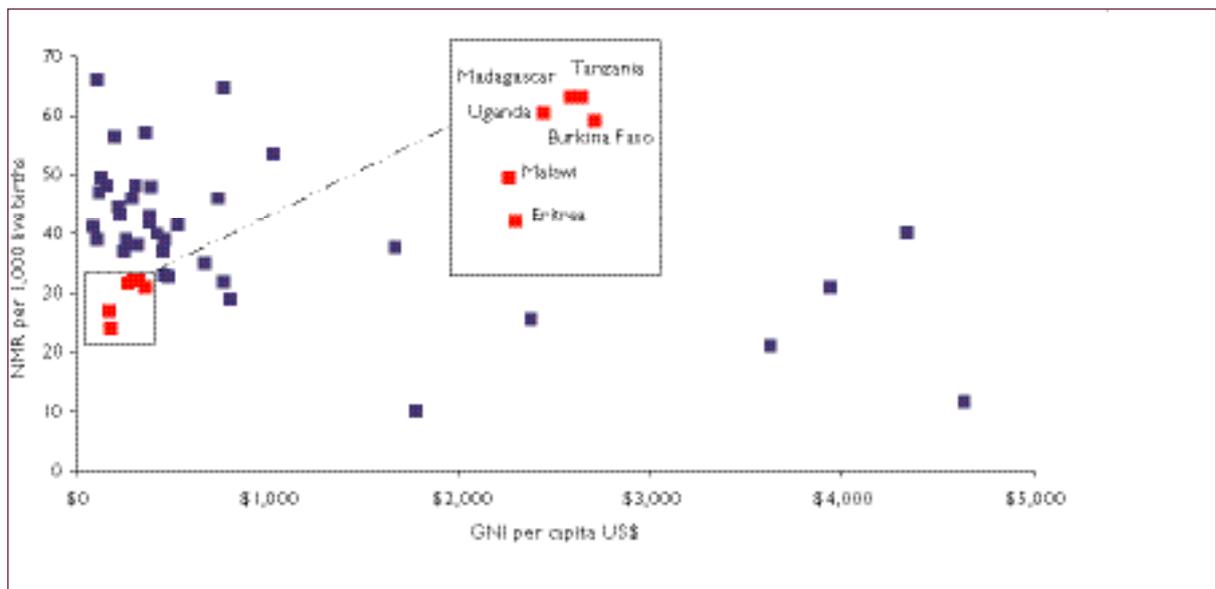
In Malawi, government and partners joined efforts to develop and cost an essential health package linked to the national Sector Wide Approach (SWAp), which as prompted increased investment into the national health sector plan from donors.

Some African countries are making progress in saving newborn lives

While news from Africa is often negative, there is a huge amount of variation between and within African countries and there are examples of success. A number of countries in Africa – Tanzania, Malawi, and Ethiopia – have recently shown dramatic reductions in under-five mortality rate (U5MR) according to new DHS data. There are also countries making steady progress in reducing U5MR, NMR as well as maternal mortality, such as Eritrea. (See Section I, figure I.2)

We expect that countries with low average incomes would have high mortality, and while that is often true, there are some positive surprises. Box IV.3 shows a plot of NMR compared to GNI per capita. We would like to examine further the positive outliers – countries that have progressed to a lower NMR given still low GNI per capita. We highlight these countries – Eritrea, Malawi, Burkina Faso, Tanzania, Uganda and Madagascar – to show that good news can come out of Africa. These countries are progressing, moving from very high NMR, U5MR, and in many cases, maternal mortality ratios (MMR), to lower rates. In some cases measurement of NMR may be a challenge but notwithstanding this, what can we learn from their experience so far?

BOX IV.3 Some African countries are making progress despite limited wealth: neonatal mortality rate by gross national income (GNI) per capita



Many factors may contribute to improvements in newborn health. However, for each of these countries with a lower NMR (31 per 1,000 live births or less) as well as low GNI per capita (less than US\$500 per year), it is worth highlighting key points that are likely linked to these successes. Also listed is each country's progress towards reaching the Abuja commitment of spending at least 15 percent of the general budget on health. An important caveat is that Demographic and Health Surveys (DHS) tend to underestimate neonatal deaths, so the true NMR in some of these countries is likely to be higher.

Eritrea: (NMR = 24, GNI per capita = US\$180, Abuja progress = 5.6%) Despite being one of the world's poorest countries, ranking 157 out of 173 countries in the UNDP Human Development Index, and despite challenges of wars and famines, Eritrea has achieved extraordinary child health gains. The steady reductions in the U5MR in this country have been highlighted already in Section I. How are these results being achieved? Firstly, by strong commitment to child health at all levels and secondly, through lack of corruption in Eritrea and strong donor collaboration, which multiply the impact of limited resources. Eritrea was one of the first African countries to be certified as having eliminated neonatal tetanus. Despite these successes, challenges remain. For example, the coverage of women who give birth with a skilled attendant – only 28 percent – is still low, while MMR is moderately high, at 630 per 100,000. Eritrea's national Road Map has been developed to address its high MMR, and innovative approaches are being explored to solve the human resource crisis in the country.

Malawi: (NMR = 27, GNI per capita = US\$170, Abuja progress = 9.7%) Although questions remain about the accuracy of the NMR estimate in the country's most recent DHS, Malawi has undoubtedly shown progress in reducing child deaths, as described in Section I. Many factors may contribute to this progress, despite few evident increases in coverage of most essential interventions in the same time period. Health sector reform in Malawi has been a participatory process that has resulted in a national consensus on the essential health package and increased investment in the health sector. Costing exercises have led to greater collaboration between Ministry of health and donors – two donors provided an additional US\$40 million after the Road Map was costed. The level of commitment to the Road Map is demonstrated by the fact that it will be launched by the President.

Burkina Faso: (NMR = 31, GNI per capita = US\$360, Abuja progress = 10.6%) Recent high level advocacy in Burkina Faso regarding maternal and newborn deaths with the REDUCE advocacy tool resulted in an 11 percent increase in government funding for maternal and newborn health. Advocacy also resulted in legislation to reduce family payment for caesarean sections, from US\$120 to a maximum of US\$20.

Tanzania: (NMR = 32, GNI per capita = US\$330, Abuja progress = 14.9%) Tanzania has shown consistent government commitment to invest in health and decentralise decision making for health spending based on district priorities. Now district health teams allocate local budgets based on local burden and the coverage of some high impact interventions has risen. The national Road Map is under development with additional emphasis on newborn health.

Uganda: (NMR = 32, GNI per capita = US\$270, Abuja progress = 9.1%) In Uganda, the current Health Sector Strategic Plan II includes a Maternal and Child Health Cluster, with a recently added newborn health sub-group. The focus is on scale up of essential interventions and reaching the poor. In addition, each year the health districts' results are published in national newspapers, promoting public accountability.

Madagascar: (NMR = 32, GNI per capita = US\$300, Abuja progress = 8.0%) Recent review of the national Medium Term Expenditure Framework provided an opportunity to integrate newborn health into the existing MNCH plan, especially as the last DHS showed that the percentage of under-five deaths in the neonatal period has risen. Focus is on family planning, antenatal care, and community strategies as well as addressing human resource constraints for skilled and emergency obstetric care. Madagascar has a strong tradition of community involvement and effective community-based programmes.

See Section V country profiles and data notes for more information on NMR, GNI per capita and other indicators used in this box.

What ingredients lead to progress in saving lives?

Every country differs, but there are four themes – the ABCD of progress – shared by countries experiencing gains in MNCH:

Accountable leadership: In many of these countries, consistent and accountable leadership and good stewardship of resources sets the direction and ensures action. Good leadership not only maximises teamwork within a country, state, or organisation, but also attracts investment from outside sources. The Paris Declaration on aid effectiveness set out the crucial principle of the government being in the leadership role and partners respecting the “Three Ones:”⁴

- One national plan
- One coordinating mechanism
- One monitoring and evaluation mechanism

Bridging national policy and district action: Almost all of these countries have poverty reduction strategy papers and health sector reform plans. Too often there is a gap between strategic planning and the national level and action in districts. Tanzania has developed a tool to enable districts to allocate local budgets according to certain identified categories of local burden of disease which has increased local spending on child survival and been associated with steady increases in coverage of essential interventions.

Community and family empowerment: Much of the care for mothers and their newborns and children occurs at home where women and families are not merely bystanders. If empowered, they can be part of the solution to save lives and promote healthy behaviours. In Senegal, a national committee on newborn health was established to target both the facility and community, developing and strengthening links between the two and involving key partners at the national and regional level. In one area, a BASICS-supported project strengthened health facilities through the training of health workers, supportive supervision, and supply of basic equipment. Counselling by community health workers (CHW) and volunteers and semi-skilled facility workers – the *matrones* – also improved. Along with use of mass media, these communication strategies resulted in improved family behaviours, such as birth preparedness, or setting aside funds for emergencies (from 44 percent to 78 percent), wiping the baby dry soon after birth when the baby is born at home (from 54 percent to 73 percent), initiating breastfeeding within one hour of birth (from 60 percent to 78 percent), and avoiding pre-lacteal feeds (from 39 percent to 71 percent).⁵

Demonstrated commitment to:

- *Making and encouraging policy to support MDG 4 and 5 and increasing coverage of MNCH essential interventions and packages.* The Road Map and the regional Child Survival Framework both focus on increasing the coverage of essential interventions. Continued

consistent focus on essential MNCH packages is required in 5 year and 10 year plans to reach universal coverage particularly for more challenging packages.

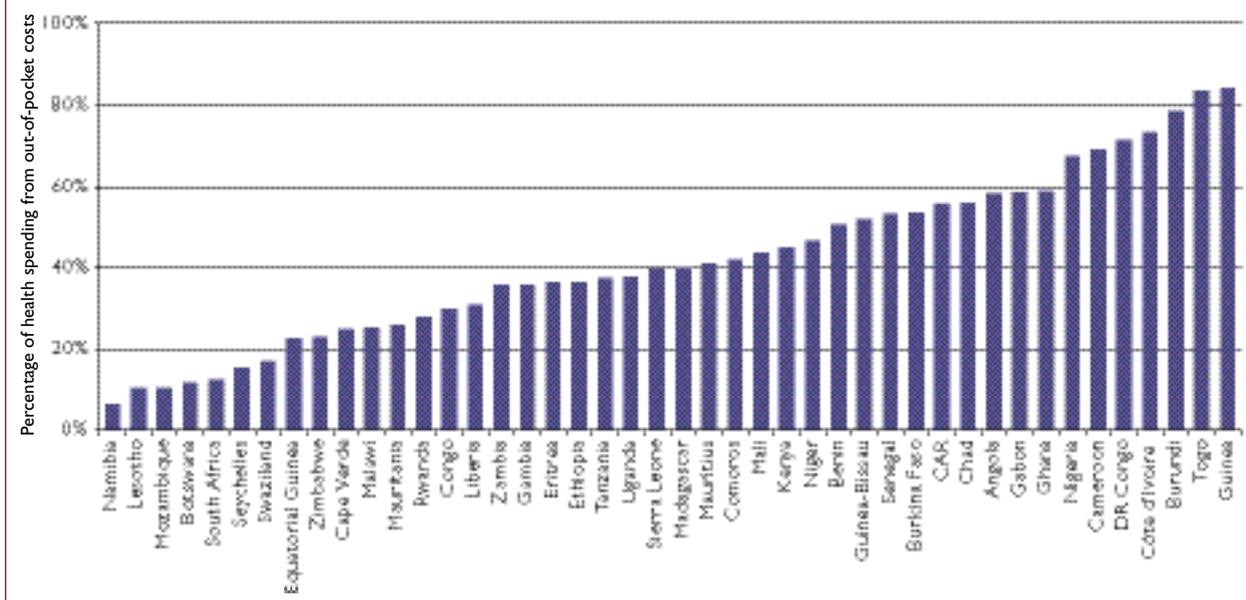
- *Maximising human resource potential, including the use of community cadres where appropriate.* Sustained commitment to increasing human resource capacity is particularly important for scaling up skilled attendance. The International Federation of Gynaecologists and Obstetricians (FIGO) have supported linkages between professional associations in developed and developing countries to strengthen capacity and improve quality of care. A success story comes from Uganda, where two districts demonstrated increased met need for EmOC through quality improvement in facilities and demand generation in communities.⁶ (See Section II, Box II.5)
- *Measuring progress and linking data to decision making, considering equity in monitoring and evaluating scale up efforts.* Some countries have employed novel approaches to use available data and promote public accountability. For example every year the newspapers in Uganda publish a league table of all the districts that reports progress for health and education and other key indicators. South Africa has instituted a national confidential enquiry into maternal deaths⁷ and also has a process to examine neonatal deaths and their causes.⁸
- *Mobilising resources to protect the poor.* Mobilising resources to protect the poor and moving towards a more equitable health system involves a careful consideration of user fees. Even with improved supply and quality of care, user fees reduce utilisation of health services.^{9,10} Out-of-pocket payments render some life saving care, such as caesarean sections, prohibitively expensive. One analysis of the cost of ‘near miss’ maternal death and associated obstetric costs in Ghana and Benin found that the cost of such care may be as high as one third of the entire annual family income.¹¹ Figure IV.1 shows the estimated percentage of out-of-



pocket spending on health care for 44 countries. In most southern African countries, less than 20 percent of health spending comes from out-of-pocket costs, largely due to stronger social security systems in these countries. However, the 17 countries with the highest out-of-pocket expenses are in the poorest African sub-region, west and central Africa, with 40 to 80 percent of health expenditure coming directly from families. Several analyses suggest that user fee exemptions based on socioeconomic status are very hard to implement^{12,13} and exemptions based on demographics (e.g. age, pregnancy) may be more effective.^{10,14} Removing user fees can dramatically increase demand for services, and could overwhelm the system at the same point at which regular income from fees would be lost. Careful

assessment and a phased fee removal strategy is required.¹⁰ A number of African countries have recently removed user fees or changed policies to try to reduce the effect of user fees on the poor. In light of the potentially catastrophic costs for obstetric and emergency care, the governments of Zambia and Burundi in 2006 joined at least twelve other sub-Saharan African countries that have full or partial user fee exemptions for pregnant women, newborns, and children. Zambia has abolished user fees altogether, while Burundi has instituted user fee exemptions for births and caesarean sections as well as for care to children under-five. Available information on MNCH user fees appears on each country profile in Section V.

FIGURE IV.1 Families bear the burden of health care costs in many African countries



Source: Reference⁹. For more information on out-of-pocket expenses and other financial indicators, see the country profiles and data notes in Section V.

Operationalising and moving to action

Successful plans that lead to action require both good policy and good politics. With good policy but no ownership, investment of time, money, and energy to sustain action is unlikely. With good politics but poor policy, the action may be misdirected, and fail to build a stronger health system over time, or may increase inequity. An effective participatory process should reach consensus on a phased operational plan and will catalyse MNCH integration by bringing together maternal and child health groups as well as those for malaria, HIV and others. In order to be effective two parallel and interdependent processes are involved (Figure IV.2).

A participatory political process that identifies and engages key stakeholders, promoting an enabling policy environment and resulting in agreement on the resources needed for implementation. The key players in this process include:

Stakeholder group – Ideally this includes the broad based national or local MNCH partnership group led by the national government and including the relevant Ministry of Health constituents for MNCH as well as other non-health Ministries, relevant partners and donors, non-governmental organisations (NGOs), and women’s advocacy groups. This approach promotes the acceptance of a national plan for MNCH and the harmonisation of donor and other inputs to encourage the building of a stronger national health system that responds to MNCH needs over time.

Core group – A team is identified and provided with terms of reference for conducting the situation analysis. It is important for this team to include individuals with an appropriate range of experience and skills in programme, policy, and data handling as well as representatives from varying MNCH constituencies.

A process to develop a strategic and operational plan using data to systematically work through the programme management cycle steps as follows:

Step 1. Conduct a situation analysis for newborn health in the context of MNCH

Step 2. Develop, adopt, and finance a national strategic plan embedded in existing national policy and plans

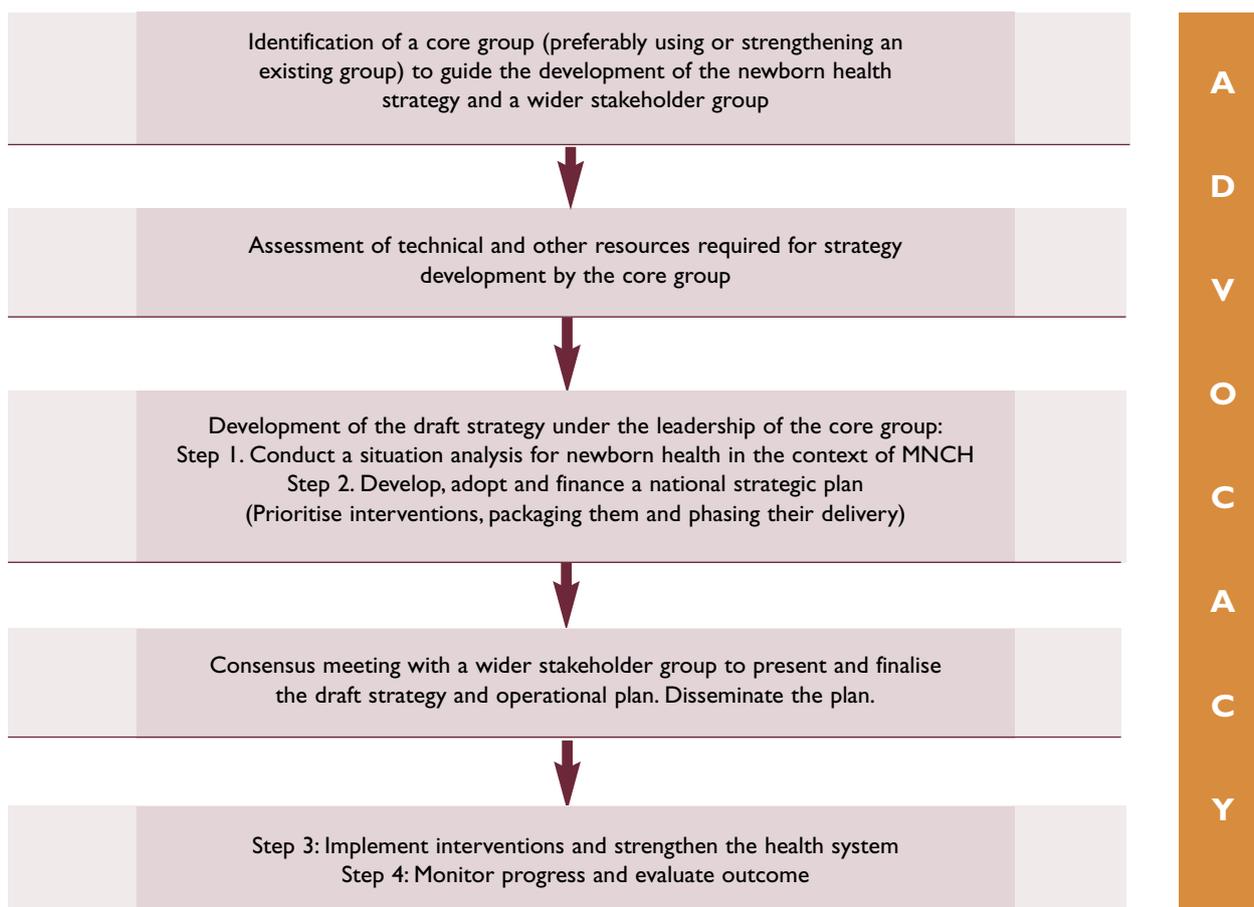
Step 3. Implement interventions and strengthen the health system

Step 4. Monitor process and evaluate outcomes, costs, and financial inputs

These steps can be adapted for the specific country or setting, depending on the status of the existing MNCH planning process. For example, if the Road Map is already an active policy document, the priority may be an integrated operational plan for strengthening newborn

health that links the Road Map, the Integrated Management of Childhood Illness (IMCI) strategy, and other relevant existing policies into a phased implementation plan. Steps 1 and 2, then, would be less important, primarily ensuring that no major gaps existed once the content of existing policies had been reviewed. It is useful to set a time limit for completing each of the steps as well as for the completion of the report. A situation analysis guide and some draft group guides to help work through these steps are given on the CD accompanying this publication. These are being used in a series of facilitated workshops to help teams from countries advance the process of strengthening newborn health in their countries.¹⁵ In addition some examples of national situation analyses and plans are provided on the CD.

FIGURE IV.2 Outline of the process to develop and implement a strategy and operational plan



Source: Adapted from reference¹⁶

Step I. Conduct a situation analysis for newborn health in the context of MNCH and set national targets for NMR reduction linked to MDG targets

Evidence based information not only strengthens policy and programmes, but also furthers advocacy dialogue. The same data may be used in different ways for different audiences. Often, mortality rates alone do not influence policy makers, but changing the rates into numbers of deaths per year or per day, helps to translate statistics from abstract concepts to everyday reality. It is difficult to ignore the fact that a quarter of a million babies in Nigeria die every year, for example. MNCH data for policy dialogue, programming, and advocacy is provided in the 46 country profiles at the end of this publication. In addition, applying models that provide data on economic losses due to morbidity and mortality, such as the advocacy PowerPoint presentations regarding maternal health (REDUCE!) and newborn health (ALIVE!), can help to link these events to overall national development.

Additionally, identifying champions and working with them to deliver targeted MNCH messages and data can

help accelerate change. In West Africa, the First Ladies (wives of the presidents) have been very active supporters of scaling up maternal and newborn health.¹⁷ In Mauritania, the First Lady used data and information generated from the REDUCE! advocacy model to sensitise policy makers, community leaders, and the general population on the magnitude of maternal and newborn mortality. This has enhanced government and civil society actions to improve MNCH in the country. In Burkina Faso advocacy at high level has resulted in increased funding for MNCH and reduction in user fees for caesarean sections (see Box IV.3)

Once a situation analysis is complete (Box IV.4), it is important to set or revise national level targets related to newborn health. For MDG 4, it makes more programmatic and policy sense to track U5MR and NMR rather than U5MR and infant mortality rate (IMR). The availability of data is the same, and there is usually little difference in the trends or solutions for U5MR and IMR, whereas U5MR and NMR tend to differ in rate of change and potential solutions, as discussed in Section I.

BOX IV.4 Assessing the status of newborn health in the context of MNCH

Task 1: Describe the status of newborn health in the context of MNCH

- Report on key MNCH outcomes such as MMR, U5MR, NMR, stillbirth rate, causes of neonatal death, LBW rate. Disaggregate key outcome indicators by geographic region, ethnic group and income quintile to look for under served populations

Task 2: Examine the coverage and quality of essential interventions

- Coverage of MNCH packages, essential interventions and quality of care. Disaggregate key coverage indicators by geographic region, ethnic group and income quintile to look for under served populations
- Integration between different health service delivery points or programmes
- Home behaviours and cultural practices
- Further examine the reasons (supply and demand) for low coverage

1. Assess supply barriers to accessing care

- Access (long distance, limited transport, geographic terrain issues)
- Human resources (lack of skilled personnel due to brain drain, absenteeism)
- Commodities (poor management of supply chain, cold chain failure),
- Quality of care (lack of standards or knowledge of standards or low motivation)

2. Assess demand barriers to seeking care

- Knowledge of danger signs for newborn illness, or maternal complications
- Acceptability (compare profiles of users and non-users considering distance, cultural, or other barriers)
- Affordability (user fees, ineffective fee exemptions, hidden or “under the table” costs)

Task 3: Review current policies, commitment and opportunities

- Policy plans and goals of relevance, e.g. Road Map, Child Survival Framework, health sector reform
- Current health spending on MNCH essential interventions by government and key partners

Task 4: Synthesise strengths and weaknesses of health system

- Early opportunities to save lives
- Major gaps in service provision, either for certain packages or for certain ethnic or socioeconomic groups

Source: Adapted from reference¹⁸

Step 2. Develop, adopt, and finance a national plan embedded in existing policy

Develop an integrated operational plan with a focus on bridging gaps in the continuum of care

Often the strategies to address newborn deaths are present in multiple existing maternal and child health plans and programmes, as outlined in Section II and throughout the programmes and packages addressed in Section III. It is possible that countries already have multiple operational plans in place; in Tanzania, for example, there is a strategy for health sector reform, the Road Map, the IMCI plan, and a Poverty Reduction Sector Plan as well as specific plans for the Expanded Programme on Immunisation (EPI), malaria, and HIV, all of which relate to MNCH. A separate strategic plan that only addresses newborn health would take time and energy away from action. The need, then, is to develop practical operational linkages between existing plans and activities (e.g. health sector reform, Road Map, and IMCI) to accelerate progress in scaling up high impact interventions with phased coverage targets, ensuring a seamless continuum of care.

Identify and address missed opportunities within the health care system

As highlighted throughout this publication, there are many opportunities to reduce newborn deaths through existing programmes and packages within the continuum of care where adding, adapting, or strengthening interventions linked to an existing package could rapidly result in relatively high coverage. Prime examples include



adapting IMCI to incorporate care of the sick newborn in the first week of life and ensuring every skilled attendant is able to provide essential newborn care and resuscitation. Linking home newborn care with well-established immunisation and malaria prevention messages would also reach large audiences in a short time. Maternal death audit has been well promoted in Africa, particularly through WHO's "Beyond the Numbers" which helps programme planners generate the right kind of information to prevent maternal deaths.¹⁹ Where women die or nearly die, there are usually many associated stillbirths and newborn deaths. Maternal death audits could include or link to a review of fetal and neonatal deaths since the system failures that lead to both mother and newborn deaths are often the same.

Phasing to address major gaps in service provision

As highlighted in Sections II and III, and as shown clearly in the country data along the continuum of care in the African country profiles in Section V, health service gaps in most countries include:

- Low coverage of skilled attendance and EmOC, especially for poor and rural communities (See Section III chapter 3)
- Low coverage of postnatal care and little concrete knowledge about the quality of care provided at home or in facility (See Section III chapter 4)
- Lack of systematic community empowerment through implementation of behaviour change and possible community based interventions, particularly for newborn and child health

Skilled care during childbirth is a well defined package that is most effectively scaled up through a facility based approach.²⁰ This is a high impact package for saving the lives of mothers and babies, and for preventing stillbirths. It requires consistent commitment to bringing facilities closer to families, producing and retaining more midwives and more obstetricians, and empowering communities to demand and access quality care. An estimated 180,000 additional midwives are required in the next ten years in order to reach universal coverage in sub-Saharan Africa.²¹ This increase in human resources will take immediate planning, investment, and concerted action. This is a long term solution, and while interim plans are needed, they should not come at the expense of future investment in skilled care.²²

Postnatal care and community-based packages are not as well defined as other packages, and much of the information comes from Asia and needs to be adapted, tested, and refined in different African settings. In addition, the available cadres of community level health workers in African countries are much more variable than in Asia. An extremely careful evaluation regarding sustainability should be undertaken before generating new cadres of health workers at any level.

Table IV.1 presents ideas for phasing strategies according to baseline NMR and health system capacity. In the

highest mortality setting, where NMR is greater than 45 per 1,000 live births, the majority of births occur at home, and while skilled attendance is low (33 percent), reported coverage of traditional birth attendants is even lower (20 percent).²³ More than half of all births take place with no one assisting at all. The *World Health Report 2005* describes this as “massive deprivation.”²¹ In these settings, more than half of neonatal deaths are due to infections, including tetanus.²³ Rapid reductions in NMR are possible with tetanus toxoid immunisation and healthy home behaviours. According to a new analysis completed for this publication, based on methodology used in *The Lancet* newborn survival series,²⁴ up to a third of newborn deaths could be averted at the community and family level whilst strengthening human resources and facility based skilled care. If policy makers and programme managers do start not work now towards building a stronger health system, especially scaling up skilled care, opportunities to make more substantial progress towards saving maternal, newborn, and child lives will be lost.

The middle two settings, with NMR ranges between 30 to 44 and 15 to 29, are what the *World Health Report 2005* describes as “marginalised.”²¹ While richer, urban populations in these countries have access to skilled care, poorer and other marginalised populations do not. The solution lies in addressing bottlenecks to scaling up. At the lowest levels of NMR, higher inequity in coverage may still exist, particularly for very expensive interventions. In these situations, the focus should be on improving quality of care and long term outcomes such as disability.

If the 12 highest mortality counties in Africa were to start with community level and outreach, whilst strengthening more complex clinical care packages, and progress through phased scaling up through three incremental increases of 20 percent coverage, to reach 90 percent coverage of the essential interventions, then even with the first increment of 20 percent increase up to 171,000 newborn lives could be saved each year. Half of the newborn deaths in Africa preventable through essential interventions (409,000 of 800,000) are in these 12 high mortality countries (Table IV.2). The additional running costs of the interventions in these 13 countries for phase 1 is estimated at than US\$0.12 billion rising to US\$0.22 billion for 90 percent coverage, when three-quarters of the cost is the provision of clinical care.²⁵ For more details on this analysis, see data notes in Section V.

Cost the plan and fill the resource gap

Countries that estimate the cost of specific MNCH programmes and then link this cost to an estimate of lives saved are more likely to see more resources invested in MNCH. In addition, building consensus around an operational plan with associated costs contributes to government leadership and partner harmonisation. If all partner resources in a given country were harmonised,

TABLE IV.1 Ideas for phasing strategies to save

Mortality setting		NMR >45
Health system coverage & function	Place of birth (median % of births in facilities)*	Majority at home (33%)
	Antenatal care	Moderate coverage (median 66%)
	Skilled attendance at birth (Median TBA coverage)*	Median 41% (20%)
	Emergency obstetric & neonatal care	Very limited services
	Postnatal care	Very low coverage
Priorities for scaling up in the first 2-3 years	Principles for phasing coverage targets for the next 2-3 years	Initiate systematic plans to increase coverage of skilled care. Aim to increase priority family behaviours and coverage of outreach services.
	Family and community – examples for faster scaling up	Promote birth preparedness, clean childbirth practices, demand for care & optimal neonatal care practices. Consider extra care for LBW infants through routine postnatal home visits. Consider clean birth kits for home births.
	Outreach and first level health facility – examples for faster scaling up	Increase coverage of Tetanus Toxoid (at least 2 immunisations during pregnancy) ANC, birth spacing interventions, IMCI, routine postnatal care.
Medium term investment	24-hour clinical care and hospital care – examples for faster scaling up	Initiate systematic plans to increase coverage of skilled personnel, EmOC, and neonatal care, at least in district hospitals.
	Principles for the medium term	Develop an implementation plan for human resources, including delegation of tasks where appropriate, finances, and commodities to increase coverage of skilled attendance, outreach services, and family care. Strengthen linkages between communities and facilities and promote community participation.
Lives saved	Lives saved in the 12 very high (>45) NMR countries progressing through 4 phases of NMR reduction with increasing coverage of essential packages	Baseline coverage of essential interventions increased by 20% Up to 171,000 newborn lives saved in 13 countries in sub-Saharan Africa from baseline.

newborn lives within existing programmes, according to baseline NMR and health system capacity

NMR 30-44	NMR 15-29	NMR >15
Mix of home and health facility (48%)	Majority in health facility (65%)	Almost exclusively in health facility (98%)
Moderate to high coverage (median 77%)	High coverage, but inequities (median 82%)	High coverage (median 98%)
Median 50% (TBA 18%)	Median 85% (TBA 9%)	Median 98% (NA)
Moderate coverage, poor access / affordability	Moderate to high coverage, quality variable, inequities remain	Universal coverage
Low coverage	Moderate coverage	High coverage
Aim for faster increases in the coverage of skilled care. Continue to increase coverage of priority family behaviours and outreach services.	Aim for universal coverage of priority family behaviours, outreach services, and skilled care.	Ensure equity and promote higher quality of care.
Promote demand for skilled care and optimal neonatal care practices. Consider extra care for LBW infants by routine postnatal home visits.	Promote healthy home behaviours and care seeking.	Promote healthy behaviours and address unhealthy behaviours, e.g. smoking and drug abuse.
Increase coverage and quality of ANC, IMCI, and routine postnatal care.	Aim for universal coverage of high quality ANC, IMCI, routine postnatal care.	Aim for universal coverage of high quality ANC, routine postnatal care
Increase skilled care at birth, functional EmOC, and neonatal care in district and sub-district hospitals.	Ensure universal coverage of skilled care at birth, EmOC, and neonatal care in peripheral facilities.	Ensure universal coverage of skilled care at birth, EmOC, and neonatal care.
Implement plans to increase coverage of skilled personnel, especially in hard-to-work places. Develop guidelines, training, supervision, and Monitoring and Evaluation tools. Design financing mechanisms to protect the poor.	Improve quality of obstetric and neonatal care and introduce maternal-sillbirth/neonatal death audits. Address residual inequities (socio-economic, geographic, rural/tribal etc.). Prepare for full coverage of neonatal intensive care.	Consider establishing regionalized referral system. Provide long term follow up of babies with major complications.
Essential interventions coverage increased by an additional 20% Up to 280,000 newborn lives saved	Essential interventions coverage increased by an additional 20% Up to 355,000 newborn lives saved	Essential interventions coverage increased to 90% Up to 409,000 newborn lives saved

Source: Adapted from references^{23,26}
 * Based on DHS analysis as described in reference²³. See data notes in Section V for details on lives saved analysis for sub-Saharan Africa using the assumptions and models described in The Lancet newborn survival series.^{24,27} The 12 countries in Africa with NMR greater than 45 per 1,000 live births are Angola, Central African Republic, Côte d'Ivoire, Democratic Republic of the Congo, Gambia, Guinea-Bissau, Lesotho, Liberia, Mali, Nigeria, Sierra Leone, and Somalia.

allowing MNCH and donor investments to follow country-led priorities, progress would be greatly accelerated - the founding principle of The Partnership for Maternal Newborn and Child Health. An effective example is Malawi's essential health package and Road Map, which generated additional funding from several donors after costs were estimated (see Box IV.3)

A range of programmatic tools are available (see Table IV.2), some for costing, some for more detailed programme planning and some which estimate cost and impact for maternal, newborn, and child health in a

number of simulated coverage scenarios and through various service delivery modes.²⁶ These tools all require local information to be input particularly regarding the choice of interventions, baseline and target coverage, demographic and epidemiological data, health system information (number of facilities, human resources) and local drug prices and salaries. Some of the tools have linked drug prices and salaries as a default if this information is not available locally. Work is in progress to better harmonise these tools.

TABLE IV.2 Summary of some relevant programme tools which include cost estimates

	WHO Child Health Costing Tool	Essential Health Technologies Package (EHTP)	UNFPA Reproductive Health Costing Tool	Marginal Budgeting for Bottlenecks (MBB) (UNICEF, World Bank, WHO)
Purpose	To estimate running costs for varying coverage levels for selected child survival interventions	To plan resources (human and supplies) needed to deliver a selected set of health care interventions	To estimate running costs and/or scaling up	To compare the predicted lives saved and marginal cost of essential interventions at varying levels of coverage, focusing on overcoming key supply and demand bottlenecks to coverage
Use	Can be used for medium term planning at the national or sub-national level once strategy is designed	Can be used for detailed planning and logistics in a programme using defined interventions	Can be used to cost and create budgets for existing sector strategies and plans (e.g. Road Map) at country or district-level	Can be used to help guide priority setting and phasing in the context of national or regional planning and policy dialogue
MNCH remit	Child health only, but possible to expand	Reproductive and child health	Reproductive and maternal health	Maternal, newborn and child health, malaria, immunisations, HIV/AIDS
Costing remit	Currently does not include systemic or overhead costs	Currently does not include systemic or overhead costs	Cost of activities and health system improvement (training, equipment, referral system, etc.)	Cost of activities and health system improvement required to overcome specific bottlenecks to scaling up
Outputs	Cost and resources (human resources, facilities, drugs and supplies, equipment)	Resources (drugs and supplies, equipment, HR and facilities) and logistics to provide a user-defined package of interventions	Cost of providing an essential package of reproductive health interventions (family planning, ANC and childbirth care, EmOC, STI/HIV management)	Estimated lives saved (impact) for mothers, newborns and children Estimated costs (per capita) to expand coverage of agreed package(s) of MNCH interventions
Software	Linked Excel spreadsheets	Customised software and interface	Linked Excel spreadsheets	Comparison of various interventions and delivery approaches and options for phasing including health system strengthening costs Linked Excel spreadsheet to be customised for application
User friendliness	Fairly simple to use and can be done with support in a few weeks	Requires in-depth training to use and is time consuming	Fairly simple to use and can be done with support in a few weeks	Technically complex, with a range of assumptions and requires training and expertise to use and is time consuming

Source: Adapted from reference¹⁵ with specific additional inputs from UNFPA

Step 3. Implement interventions and strengthen the health system

Countries and programmes that have succeeded in achieving high coverage have focused on select interventions and packages, rather than trying to do all at once. While there is a strong justification for a focus on fewer, high quality interventions, the other ingredients for success are often missing: leadership, management, and effective use of data for decision making. Over time, interventions requiring greater skill and more expensive supplies can be added to the essential packages. For example testing and treating pregnant women for asymptomatic urinary infections is evidence based but is more complex and expensive than the simpler ANC interventions in focused antenatal care. However, as capacity increases, or perhaps in referral settings, this intervention may be added to the essential package.

In carrying out a programme, key questions to ask are:

- **What?** Essential interventions
- **Where?** Home or at a primary care facility, depending on the intervention
- **With what?** Supplies, commodities, and drugs
- **Who?** The skills required and which cadre can do what
- **When?** Through an integrated delivery strategy during pregnancy, childbirth, and the postnatal period

Global guidelines should be nationally adapted, and include job aids for in-service training, supervision, and regulation. Ongoing audit is a powerful tool for quality improvement.⁸

Strengthen supply

Where and with what? Infrastructure, supplies, and commodities

Despite the fact that newborn care is often associated with advanced technology, the majority of newborn deaths can be averted with simple technology and treatments or no technology at all. In Europe and North America the NMR was less than 15 before neonatal intensive care was scaled up. Examples of effective but simple interventions possible with weak infrastructure include breastfeeding promotion and tetanus toxoid immunisation (Table IV.1). However in order to achieve MDG 4, facility care, although not intensive neonatal care, is necessary – this should include skilled childbirth care and EmOC, requiring an operating theatre, safe blood transfusion supplies, and a wider list of essential drugs. These are very important investments for any country serious about saving the lives of mothers and babies.

Who? Human resources

To save both mothers and babies, the “who” (human resources) is the most crucial ingredient for success.²⁸ WHO identified 32 countries in sub-Saharan Africa with critical shortages of skilled staff and very low workforce density where urgent action is needed in order to meet the health related MDGs.³ In almost all African

countries there are service provision gaps, usually in rural areas, due to the difficulties associated with retaining and deploying skilled staff.

Building teams of health workers with a balanced skill set is an approach to reaching higher coverage and maximising effectiveness. Time and motion assessment of on the job functioning suggests that midwives spend a lot of time completing administrative tasks such as record keeping. If midwives are already in short supply, how can their time be prioritised to perform skilled tasks such as childbirth care? Removing clerical tasks from midwives’ duties is likely to increase job satisfaction as well as increase efficiency. In some cases, this will necessitate legal changes to support the delegation of responsibilities. In a recent survey of EmOC services, for example, Tanzania found that less than 10 percent of their basic obstetric care facilities met the expected standards, largely because no one could provide vacuum extraction. Consequently, national regulations are being revised to allow midwives to perform vacuum extraction.

Too often, human resource challenges are tackled in a piece-meal fashion that merely prolongs the existing crisis. For example, while increasing uptake of antiretroviral (ARV) therapy is crucial in many African countries, the salaries and other incentives offered by ARV programmes have been much greater than other programmes, leading to a departure of staff from routine health services and slowing the scale up of other high impact interventions. Malawi has made a concerted attempt to develop a comprehensive human resources plan (Box IV.5).

BOX IV.5 Malawi’s emergency human resources programme

Malawi has had a medical school only since the early 1990s and suffers a chronic shortage of doctors, nurses, and skilled workers, a situation exacerbated by the brain drain and AIDS. A survey of health facilities in 2003 indicated that of about 617 health facilities in the country, only 10 percent satisfied the requirements for delivering essential health services based on availability of services and staff levels. After the government launched the Essential Health Package in 2004, it became clear that improving staffing levels is the single biggest challenge to implementation. An emergency human resources programme was developed by the government and partners to:

- Improve incentives for recruitment and retention of staff through salary top-ups
- Expand domestic training capacity, temporarily using international doctors and nurse tutors
- Provide international technical assistance to strengthen management capacity and skills and establish monitoring and evaluation of human resource flows

Source: Adapted from reference²⁹.

An overarching plan for human resources is therefore essential and should include TRAIN, RETAIN, SUSTAIN strategies.³⁰

TRAIN – Produce more workers, especially skilled workers

- Increase capacity of training schools. This may require reaching out to private education training institutions. For example, South Africa is planning to outsource the training of thousands of lay health workers to NGO and private training organisations that have been accredited by the Department of Health. The Department of Health has also set out strict competence outcomes based upon a standardised training curriculum. Fast-tracking such training initiatives is required to address the human resource crisis
- Promote North-South partnerships for fast-track training of health workers
- Develop ‘return to work’ packages for those who are out of the current workforce, either caring for children or overseas
- Increase the fiscal space to save lives – a significant increase in health budgeting is required to address the human resource crisis in Africa

RETAIN – Keep workers

- Improve pay and terms and conditions of employment
- Improve staff motivation through incentives and job satisfaction (prestige, salaries, working conditions, promotion, performance-based remuneration)³¹

- Provide HIV prevention services and care and support for infected workers
- Allow flexible working hours for families and HIV positive staff

SUSTAIN – Make better use of available workers

- Use good management techniques, such as clear job descriptions, matching abilities to tasks, and balancing a mix of skills across a team³
- Ensure skilled and supportive supervision of staff
- Redeploy staff to reflect utilisation patterns and fill priority posts; budget for hardship allowances for rural postings
- Increase efficiency by upgrading existing staff through in-service and distance learning courses. In South Africa for example, an innovative approach using a distance learning package has helped upgrade the skills of over 30,000 midwives at about US\$5 per person^{32:33}
- Back up teamwork and delegation with appropriate policies and legislation, e.g. Mozambique where surgical assistants can do caesarean sections.³⁴ In Ghana, nursing aides do many of the simpler tasks, allowing nurses and midwives to focus on more skilled, higher impact tasks.
- Explore the best use of CHWs to bring care as close as possible to the people

The current “second primary health care revolution” (Box IV.6) in Africa presents an opportunity to incorporate high impact MNCH interventions into CHW tasks and training in several countries – but there is a need to learn from the first primary health care revolution.³⁵

BOX IV.6 The second primary health care revolution – an opportunity for MNCH

The first primary health care revolution peaked with the Declaration of Alma Ata in 1978, which envisioned health for all by the year 2000 using primary health care as the main vehicle with a focus on Maternal and Child Health (MCH). There were many reasons that this vehicle broke down, including the lack of sustained focus as global health policy swung to focus on disease eradication. In addition, CHWs were allocated multiple tasks but received little or no supervision, or pay. Despite the massive wave of workers who were trained, little careful evaluation was published.

After a series of vertical programmes, including the ongoing polio eradication and heightened HIV, malaria and tuberculosis activities have occupied centre stage for health service delivery approaches, attention is now shifting towards the acceptance of MNCH as the backbone of health care. Communities and CHW are being seen again as vital agents for scaling up care. In sub-Saharan Africa, the human resource crisis has accelerated the speed of policy change towards CHW; Ethiopia, for example, is training 30,000 female community based Health Extension Workers to focus on MNCH, malaria, and HIV.³⁶ Kenya, Ghana, and South Africa are planning national CHW programmes. Nigeria is also strengthening the capacity of Community Health Extension Workers with a curriculum that includes lifesaving skills for MNCH.

Yet a search of available literature to guide policy shows a lack of mortality impact studies. Most evaluations are regarding process rather than impact, and many relate to special interest programmes – increasing coverage of insecticide treated bednets, measles vaccine, or Guinea worm eradication, for example. Few

publications discuss process evaluation of MNCH services, such as breastfeeding and nutrition promotion, and none were identified that relate to integrated child health or MNCH programmes, even though such programmes are being scaled up. Programmes like the high profile Accelerated Child Survival Programme, led by UNICEF and funded by the Canadian International Development Agency, and the community IMCI (C-IMCI) work of UNICEF exist in several African countries,²⁶ but they lack rigorous external evaluation assessing mortality impact, let alone associating these outcomes to key choices regarding how to implement such programmes.

South Asia has contributed many more studies demonstrating mortality reduction, but mainly in small scale programmes. More rigorous evaluation of community level interventions is urgently needed especially in Africa. As these programmes are rolled out, there is a need to assess their process, markers of success at scale, cost and mortality impact. Doing so will ensure that investment is safeguarded and the opportunity to save lives by linking CHW systems to the formal health system is maximised.

Source: Adapted from reference³⁵

Increase demand

Expanding coverage of interventions involves more than simply increasing the supply of services. In many African countries, low coverage of skilled attendance is not only an issue of supply. Families may have access to a health facility for childbirth, but many remain at home for a variety of reasons, including:

- Poor adherence to referral recommendations due to lack of information or misunderstanding,
- Impediments to access such as distance and difficult terrain
- Low quality or absence of health services and service providers, disrespect for women or the poor
- Cultural, ethnic, and gender based barriers
- Inability to cover direct costs (official or under the table) or opportunity costs, such as missed days at work, or both
- Local obstacles to supply and demand, e.g. user fees

When careful, systematic attention is given to addressing demand for care, especially skilled care, utilisation will rapidly increase.³⁷ Suggested solutions for some of the constraints listed above can be found in Table II.1 in Section II. For example, community loans or participatory plans to address emergency transport for obstetric and newborn care could facilitate the use of stretcher teams, bicycle ambulances, and community reimbursement of vehicle owners in local transport cooperatives.^{38;39}

Integrate MNCH services with other key programmes

Integration is easier to preach than to practice. Successful integration of services requires a clear outline of roles and functions, such as protocols and care guidelines, clear referral pathways, supply management, and information

and supervision systems.⁴⁰ All of these activities are dependent upon strong technical leadership at the central level. Maintaining management skills of high quality requires a structured programme of human capacity development through regular updates, training, and postgraduate educational opportunities. Furthermore, stewardship by the central government needs to be complemented by operational managers at the district level to ensure an effective link between the central body and health facilities⁴¹, as shown by experiences from large scale programmes. A review of 15 successful tropical disease programmes found that effective programmes decentralise and integrate operations but retain a central policy making authority.⁴²

Facilitating integration, and especially to ensure that this reaches the district level, will take time and has challenges as shown by experience of integration of PMTCT and MNCH in Uganda (Box IV.7). Using a phased approach for the future, therefore, may prove more successful. At the very least, it will engage a wider range and number of health workers, supervisors, and managers, especially at the district level, and foster a greater sense of the ownership necessary to provide effective newborn interventions.



BOX IV.7 Promoting an integrated approach to HIV-free survival in Uganda

The Ministry of Health and partners in Uganda recognised that integration of HIV prevention with existing programmes for family planning, antenatal, childbirth care, postnatal care, and IMCI would benefit both HIV prevention and MNCH. The objectives of the integration strategy were to:

1. Develop tools and guidelines for planning, implementation, supervision, and monitoring & evaluation of the integrated approach
2. Strengthen the health system to deliver integrated MNCH and HIV/AIDS services within existing programmes
3. Document experiences of integration from the learning sites at various levels.

The process involved a technical working group that convened meetings with stakeholders engaged in child health, reproductive health, malaria, PMTCT, academics, professional organisations, and other development partners.

A needs assessment was undertaken at various levels:

National level: A supportive policy environment existed for integration, with many partners willing to get involved and technical capacity available, but there were no integrated training materials and no high level process to implement policies.

District level: There was a willingness to integrate, but teamwork was difficult across the programmes (reproductive health and HIV), capacity was inadequate for implementation of programme components, supervision occurred vertically, and data for reproductive health and PMTCT were received separately, without joint analysis.

Facility level: Family planning and postnatal care was a weak link in the chain, and infrastructure, personnel and inputs such as infection control supplies and essential drugs were inadequate in all facilities assessed.

Community Level: Communities were aware of the services provided but perceived them to be of poor quality, while many respondents lacked knowledge about services and healthy behaviours. Collaboration between providers and communities was inadequate. Gender based violence and lack of male involvement are ongoing challenges.

Achievements

- Established a coordination team to guide the implementation of integration activities and central trainers for training and supervision activities
- Finalised the integration of PMTCT, ANC, EmOC and postnatal care management guidelines, protocols, and training materials; revised integrated counseling booklet for pregnant women and initiated some postnatal care clinics
- Evaluated baseline data related to integration, and integrated PMTCT into the current health management information system



Challenges

- Poor collaboration among individual programmes for planning and sharing resources
- Maintaining confidentiality regarding HIV status when ANC and PMTCT registers are harmonised
- Weak postnatal care services
- No systematic implementation or evaluation is planned for the community interventions

Source: Adapted from Dr. Lukoda Ramathan, Ministry of Health/WHO Uganda. Experiences on Integration of HIV into MNCH in Uganda. Geneva. 5 – 7 April 2006.

Step 4. Monitor coverage and evaluate effect and cost

While scaling up services is crucial, increasing the availability and quality of information is equally as important in order to gauge progress and inform decision-making. A recent estimate suggests that the cost of scaling up a comprehensive integrated Health Management Information System is less than US\$0.50 per capita.⁴³ The selection of indicators for monitoring and evaluation depend on how the data will be used. The underlying purpose of data collection must be to monitor the increase of essential intervention coverage as well as its determinants and barriers. There are several choices that have to be made in the selection of indicators:

- Identify which indicators are needed to monitor implementation towards goals and objectives
- Decide how these selected indicators will be collected and how often, ideally using existing data collection systems
- Determine how to ensure systematic attention to equity assessment in addition to overall coverage

Data for action at the national level should be collected more frequently than through DHS every five years. Section I has already provided specific recommendations on how to make newborns count in district, national and global data. Data are often available, but not used for decision making. The country profiles included in this book provide a basic dataset for country use.

Table IV.3 lists indicators for tracking child survival through the MDG tracking, and core lists for child survival and reproductive health as well as the Countdown process, based on the first Countdown to 2015 meeting in December 2005.⁴⁴ There is much common ground between these lists and one harmonised MNCH core list would be helpful to countries and to partners.

In addition to tracking deaths and coverage while keeping equity in mind, it is important to track human and financial resources. This is fundamental in holding leaders and partners accountable for commitments.⁴⁵ For example, the target commitment of 15 percent of general government spending on health made by all African Union governments in Abuja provides a good framework for accountability.

Another important accountability mechanism is the Maternal, Newborn and Child Health (MNCH) Task Force for Africa. The MNCH Task Force began the Road Map and is now supporting the wider remit of MNCH, including linking with the African Framework for Child Survival and the Maputo Plan of Action for Sexual and Reproductive Health.

As well as addressing monitoring and evaluation gaps, it is important to address knowledge gaps in terms of applied health systems research – especially regarding adaptations to reach the poor with essential services.

Conclusion and call for integration and accelerated action

In many African countries, essential interventions reach less than half of women, babies, and children – yet thousands of lives could be saved with higher coverage. To accelerate progress, there is a need for systematic, country-owned decision making, improved partner collaboration, and phasing of priority interventions to build stronger health systems. A call for action should be driven by a sense of urgency to achieve higher coverage, especially for the poor (See Box IV.8). Competition between saving the lives of newborns, children, or mothers or between MNCH and other health priorities is a lose-lose situation: if one loses, all lose. The child starts as a newborn, and the survival of the newborn and healthy development of the child links to that of the woman. Integration of services along the continuum of care is a key foundation to accelerating action for MNCH and saving the lives of more mothers, newborn and children.



TABLE IV.3 Tracking reproductive, maternal, newborn and child health

Indicators	MDG monitoring indicators	Reproductive health core indicators	Child survival consensus indicators	Countdown to 2015 indicators
Outcome indicators				
Under-five mortality rate	●		A	●
Neonatal mortality rate			A	●
Infant mortality rate	●		B	
Maternal mortality ratio	●	●		
Perinatal mortality rate*		●		
Total fertility rate		●		
Low birthweight prevalence		●	A	●
Underweight prevalence	●			●
Coverage of essential interventions indicators				
Prevalence of female genital mutilation		●		
HIV knowledge prevention practices		●		
Contraceptive prevalence rate		●		
Anaemia in women of reproductive age (15 – 49)		●		
Prevalence of infertility in women (15 – 49)		●		
Obstetric and gynaecological admissions due to abortion		●		
Incidence of urethritis in men		●		
Antenatal care coverage (one visit)		●		
Skilled attendant at childbirth	●	●		●
Prevalence of syphilis in pregnant women		●		
Prevalence of HIV in pregnant women		●		
Tetanus protection at birth			A	●
Emergency obstetric care (basic and comprehensive)		●		
Postnatal visit within 3 days of childbirth				●
Antiretroviral course for PMTCT of HIV				●
Timely initiation of breastfeeding (within one hour)			A	●
Exclusive breastfeeding (to 6 months)			A	●
Timely complementary feeding (6-9 months)			A	●
Continued breastfeeding (20-23 months)			A	●
Measles immunisation	●		A	●
Diphtheria, pertussis and tetanus (3 vaccinations)			A	●
Haemophilus Influenza B vaccination			B	●
Vitamin A supplementation			A	●
Use of improved drinking water sources	●		A	●
Use of improved sanitation facilities	●		A	●
Insecticide treated bednet coverage for under-fives	●		A	●
Antimalarial treatment for under fives	●		A	●
Care seeking for pneumonia			A	●
Use of solid fuels for cooking	●		A	
Antibiotic treatment for pneumonia			A	●
Oral rehydration therapy (oral rehydration solution or appropriate household solution or increased fluids) plus continued feeding			A	●

Sources: MDG monitoring indicators from reference⁴⁶. The child survival consensus indicator list was developed by WHO and UNICEF, from reference⁴⁷. A is high priority and B is secondary list.

Reproductive health core indicators from reference⁴⁸.

Countdown to 2015 indicators from reference⁴⁵. The Countdown to 2015 conference focused more on child survival. Subsequent processes will include newborn and maternal and the indicators are being reviewed accordingly.

*Suggested change to stillbirth rate.

BOX IV.8 Call for action to save Africa's newborns

Call for action at national level

- By the end of 2007, produce and publish a plan of action to reach set national neonatal survival targets to be implemented within maternal health and child survival programmes and to be linked to the Road Map. This plan should be based on situation analyses, include a defined baseline NMR, be evidence based, and specify strategies to reach the poorest families
- Finance the implementation of the plan by identifying and mobilising internal resources, seeking external support where necessary
- Implement the plan with defined targets and timelines, phasing progress towards universal coverage of essential interventions
- Monitor progress and publish results regularly, linked to existing processes such as health sector review, with the involvement of civil society. Count every newborn and make every newborn count.

Call for action at international level

- Include NMR as an indicator for MDG 4, with a target of 50 percent reduction between 2000 and 2015. Publish national NMR in global, annual reports on an annual basis.
- Leverage resources to meet the additional needs identified (US\$1.39 per person in Africa) in order to achieve high coverage of interventions
- Advocate for partner and donor convergence at country level, as promoted by the Partnership for Maternal Newborn and Child Health, in order to increase efficiency and reduce the reporting load on national governments
- Invest in health systems research for the “how” questions particularly regarding postnatal care, and in new research on stillbirths, and non-fatal outcomes around the time of birth

Challenges

- Perceived competition between newborn and maternal or child survival – a false choice, because if one loses, all lose
- Potential conflicts between community level and facility level interventions – another false choice, as both are required
- Maternal, newborn, and child health programmes experience a quiet, ongoing stream of 11 million deaths a year. Attention and funding remain inadequate for the task, lost in a world of emergencies such as Avian flu and HIV/AIDS
- Response to country requests for support to address newborn deaths has been slow and countries will not go on asking indefinitely

Source: Based on references^{27,36} and adapted for Africa.



More information

- WHO. World Health Report 2005: Make every mother and child count and World Health Report 2006: Working together for health.
- Freedman LP, Waldman RJ, de Pinho H, Wirth ME, Chowdhury AM, Rosenfield A. Who's got the power? Transforming health systems for women and children. UN Millennium Project Task Force on Child Health and Maternal Health. 2005. New York: Millennium Project.
- *The Lancet* child survival series 2003.
- *The Lancet* newborn survival series 2005.
- *The Lancet* maternal survival series 2006.
- Lawn JE, Zupan J, Begkoyian G, Knippenberg R. Newborn Survival. In: Jamison D, Measham A, editors. Disease Control Priorities. 2 ed. The World Bank and the National Institutes of Health; 2005.
- Save the Children. State of the World's Mothers 2006: saving the lives of mothers and newborns. 2006. Washington, DC: Save the Children.

Programme and planning guides

- WHO, Saving Newborn Lives/Save the Children and UK Department for International Development for the Healthy Newborn Partnership. Framework for Newborn Health Planning in the Context of Maternal, Newborn and Child Health: Overview for Policy-Makers, facilitated workshop manual. (Draft)
- WHO and Saving Newborn Lives/Save the Children for the Healthy Newborn Partnership. Guide for situation analysis for newborn health in the context of MNCH. (Draft)
- UNFPA. Road Map step-by-step guide. (Draft)
- WHO/Making Pregnancy Safer. District planning guide. (Draft)
- UNICEF. Saving Newborn Lives/Save the Children. Strategic guidance note on the newborn. (Draft)



Information for action

Data that is used in the proper context and makes sense to the user is powerful – for strengthening policy, assessing progress, directing programmes, protecting the poor and mobilising commitment and resources.

This Section brings together important new and previously published data for maternal, newborn and child health (MNCH) for 46 countries of sub-Saharan Africa.

Included in this section:

- 46 country MNCH profiles with a focus on newborn health
- Sub-Saharan Africa summary profile
- Summary tables for the 46 countries
 - Tracking the money
 - Tracking coverage
 - Tracking the deaths
- Data notes and sources for data used in the publication and country profiles/tables

This information can be used to help make the lives of mothers, newborns and children count.

Quick reference for acronyms used in the country profiles

ANC	Antenatal care
ARI	Acute respiratory infection
BF	Breastfeeding
CPR	Contraceptive prevalence rate
DPT3	Three doses of diphtheria, pertussis and tetanus vaccine
EmOC	Emergency obstetric care
IMCI	Integrated Management of Childhood Illness
IMR	Infant mortality rate
IPTp	Intermittent preventive treatment for malaria during pregnancy
MDG	Millennium Development Goal
MNCH	Maternal, newborn and child health
NMR	Neonatal mortality rate
PMTCT	Prevention of mother-to-child transmission of HIV
PNC	Postnatal care
U5MR	Under-five mortality rate

Definitions, sources and analyses used in this publication

General note regarding the data

The partners contributing to this publication worked together to gather the most recent and best quality data available from a number of sources. Every effort has been made to be consistent with data and estimates from UN sources and note those data from other sources. Data are mainly from surveys such as Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS) and in many cases reflect an average over the previous five years. Data quality may be lower in countries that have suffered natural disasters or instability.

Data used in this publication

Neonatal mortality rates

Inputs for neonatal mortality rate (NMR) used in this book include the following sources:

- WHO country level NMR estimates for the year 2000¹ were used except for countries with DHS data published since 2001. For the 19 countries with such a DHS, the NMR reported in the DHS has been used directly, without regression or time series adjustment.
- The WHO 2000 estimates¹ are derived from the following:
 - o Vital registration data for countries with high coverage (greater than 90 percent) vital registration, which applies to one country in sub-Saharan Africa, Mauritius.
 - o Survey data, of which DHS is the most common as MICS currently do not usually measure NMR.
 - o For countries without vital registration or survey data, the NMR was estimated using a model developed by the WHO Evidence for Information and Policy department. Estimates were derived using the under-five mortality rate with a dummy variable for HIV prevalence and other variables that predict the risk of death in the neonatal period.
- The numbers of neonatal deaths in each country are calculated using the annual number of births in each country multiplied by the NMR. This publication uses birth estimates published in *State of the World's Children 2006*,² based on demographic assessments prepared by United Nations Population Division.

Limitations: Neonatal deaths are less likely to be recorded if the baby dies in the first hours or days after birth³ or is very small.⁴ Misclassification between stillbirths and early neonatal deaths may also occur. Neonatal mortality is likely to be underestimated in DHS.⁵ Several assessments in South Asia examining the performance of retrospective surveys compared to

prospective pregnancy surveillance suggest that retrospective surveys may underestimate neonatal deaths.⁶ Reporting of time of death is prone to inconsistencies in recording of deaths in the first 24 hours, which may be coded as day 0 or day 1 and by “heaping” on certain days (7, 14, 21 and 30).

Causes of neonatal deaths

Background: Only one country in sub-Saharan Africa has full vital registration coverage and reliable, recent data on causes of neonatal deaths. For the remaining countries, facility-based data are often used, but can be misleading as the proportion of deaths attributed to birth asphyxia tends to be higher (since complicated births come to the hospital). The proportion of infections tends to be lower, with neonatal tetanus often missed because these deaths occur later and mostly at home. This publication uses estimates developed by the Child Health Epidemiology Reference Group (CHERG)⁷ in association with WHO.⁸ These national estimates have been cleared for use by WHO and this is the first time they are being published, although sub-regional estimates were published in the *World Health Report 2005*.⁹ The estimates of causes of death published here have been updated for 46 African countries, and use the latest data for NMR and other predictors in the equations, particularly for tetanus. Estimated tetanus deaths have reduced due to increased tetanus toxoid vaccination coverage and improved methods developed by WHO to account for protection at birth from tetanus.

Inputs: The extensive estimation exercise⁷ used two sources of data on causes of neonatal deaths: vital registration datasets for countries with high coverage (greater than 90 percent); studies identified through systematic literature searches and unpublished study datasets. Global data from vital registration systems and studies were included and mapped onto seven cause categories (sepsis/pneumonia, tetanus, diarrhoea, asphyxia, preterm birth, congenital and “other”). Multinomial regression was used to model the proportion of deaths due to each cause. A study-based model was applied to obtain estimates for most African countries. Uncertainty estimates were derived using the jack-knife approach.

Limitations: Allocation of each death to a single cause is artificial when multiple causes act in concert, and the methods applied by different coders for allocation of co-existing causes are not always clear. To be programmatically useful, recorded causes of death should relate to prevention or management – for example, if a moderately preterm infant dies of infection, then



infection is the key cause to address. However in a very preterm infant, infection management alone is unlikely to avert their death. The limited quantity and quality of the input data result in inherent uncertainty. Two different approaches have been used to estimate the number of neonatal tetanus deaths (the CHERG all-cause neonatal model and the WHO Vaccines and Biologicals model based on neonatal tetanus mortality rates). These give slightly different results, but with overlapping uncertainty ranges. Both sets of estimates agree on countries where elimination of neonatal tetanus has been achieved.

Estimating lives saved

To estimate the number of lives that could be saved in each country, this publication provides a new analysis for 46 African countries, based on methods developed for the *The Lancet* newborn survival series, which includes the following inputs:

- Neonatal deaths by cause from the updated CHERG/WHO estimates used throughout the publication, based on the most recent data⁷
- Current coverage of interventions or packages and the increase in coverage from current levels to target (90 percent) coverage
- Estimates of intervention effectiveness based on the range of impact of interventions on cause-specific mortality.¹⁰ This involved taking a range of the effect estimates from meta-analyses (such as Cochrane reviews) and the literature;¹¹ however, in the case of skilled care at birth and emergency obstetric care, evidence of impact size was insufficient, and expert opinion was sought from WHO, UNICEF, and academics. Since a given intervention may affect more than one cause of death, and deaths due to a specific cause may be averted by more than one intervention, estimates of the impact of interventions on specific causes of death were used in order to derive impact estimates. Since few studies give cause-specific effects, cause-specific effects relied also on expert opinion. With few exceptions, empirical data on effectiveness of the interventions in a health systems context was lacking so a range of effectiveness estimates was derived by taking the low, middle point and high end of the estimated range of effect of each intervention on each cause of death.

The number of deaths due to a given cause and prevented by the intervention was then subtracted from the current number of deaths, before calculating the impact of the next intervention, so that each death could only be averted once, either through prevention or through treatment.

Estimating the cost of interventions

Estimates of cost are based on the running cost and detailing the facility costs, personnel, supervision, drugs and all supplies necessary to provide the intervention to the target group at 90 percent coverage as described in

cost calculations in *The Lancet* newborn survival series^{10;12;13} and child survival series.¹⁴ The calculation takes the gap from current coverage to reaching 90 percent coverage and adds the costs for each intervention for each country. Unit costs for service delivery were used from the WHO CHOICE model. Unit costs increase as coverage increases to reflect the increasing marginal cost of providing services to hard-to-reach populations. The cost estimates of facility care do include amortised cost of buildings but estimations do not include the cost of building new facilities or new midwifery training schools or important infrastructure in other sectors, such as roads.

Other data inputs

Numbers of births and most coverage data are from UNICEF *State of the World's Children 2006*,² updated with the most recent DHS data. Analyses of DHS data regarding time of death, attendance at birth, socio-economic status, and gender were based on downloadable DHS datasets. Financial tracking data comes from the World Health Organization *World Health Report 2006*.¹⁵ Other data which are captured in the country profiles and summary tables are detailed below.

Country profiles and summary tables – definitions and sources

The one-page country profiles highlight select maternal, newborn and child health indicators for 46 African countries, as well as a summary profile for sub-Saharan Africa as a whole. Particular emphasis is placed on newborn health, the focus of this publication, as well as on missed opportunities in existing programmes. Inequities along the continuum of care are also highlighted. The indicators have been chosen to align with existing commitments to goals and monitoring, such as the Millennium Development Goals (MDG) and the Countdown to 2015 for Child Survival.¹⁶ These profiles are compatible with but do not duplicate the Countdown profiles which include more on the older child.

The boundaries and the designations included in the country profile map do not imply the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

BIRTHS, DEATHS AND INEQUITY

Total population and Annual births: Based on demographic assessments prepared by United Nations Population Division as presented in *State of the World's Children 2006*.²

Maternal Mortality Ratio (MMR) per 100,000 live births and annual number of deaths: Annual number of deaths of women from pregnancy-related causes per 100,000 live births, evaluated by UNICEF, WHO, and UNFPA and adjusted to account for well-documented problems of underreporting and misclassification. From the 2000 WHO/UNICEF estimates as presented in *State*

BIRTHS, DEATHS AND INEQUITY	
Total population	13,124,000
Annual births	647,000
MOTHERS	
Maternal mortality ratio per 100,000 live births	1,200
Annual maternal deaths	7,800
BABIES	
Stillbirth rate per 1,000 deliveries	24
Annual number of stillbirths	15,900
Neonatal mortality rate per 1,000 live births	57
Annual neonatal deaths	36,900
Excess NMR for poorest vs. least poor	34%
CHILDREN	
Under 5 mortality rate per 1,000 live births	219
Annual under 5 deaths	141,700
Annual postnatal deaths	104,800
NMR as percentage of U5MR	26%

of the *World's Children 2006*.² Where a recent DHS includes maternal mortality, this estimate has been used, and has not been adjusted. The DHS definition of a maternal death is any death that occurred during pregnancy, childbirth, or within two months after birth or termination of a pregnancy. Countries with MMR reported in a recent DHS are: Chad, Ethiopia, Guinea, Lesotho, Malawi, Senegal and Tanzania. For more detailed methodology regarding MMR calculations, see **More Reading** at the end of this section.

Stillbirth rate per 1,000 births and annual number of stillbirths: Babies born dead during the last trimester of pregnancy, per 1,000 total births. Estimates are for the year 2000 based on modelling using vital registration, DHS, and study data.¹⁷

Neonatal Mortality Rate (NMR) per 1,000 live births and annual number of deaths: Probability of dying within the first four weeks of life, expressed per 1,000 live births. WHO estimates for the year 2000¹ are used except for 19 countries where a DHS has been released since 2001. See **Neonatal Mortality Rates** on page 226 for more detail on sources and limitations of the NMR estimates used in this book.

Excess Neonatal Mortality Rate (NMR) for poorest vs. less poor: DHS final reports incorporate a wealth index derived from questions on ownership of assets and housing characteristics.¹⁸ Population quintiles, identified from the index, are used to assess the disparity in NMR between first (poorest) and fifth (least poor) wealth quintile expressed as a percentage of NMR in the poorest compared to the least poor. Countries with DHS datasets that include fewer than 100 neonatal deaths were excluded from the analysis. A separate analysis was applied for DHS prior to 2003 which did not have the wealth index included in the final report.

Under-Five Mortality Rate (U5MR) per 1,000 live births and annual number of deaths: Probability of dying between birth and exactly five years of age, expressed per 1,000 live births. UNICEF, *State of the World's Children 2006*.² Where a DHS has been released in the past year, these data have been used: Chad, Ethiopia, Guinea, Lesotho, Malawi, Senegal and Tanzania.

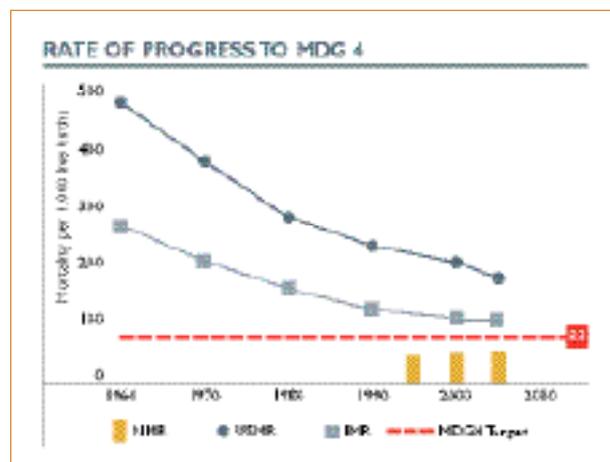
Annual number of postnatal deaths and Neonatal Mortality Rate (NMR) as percentage of Under-five Mortality Rate (U5MR): Calculated from above NMR and U5MR.

RATE OF PROGRESS

Under-five Mortality Rate (U5MR) and Infant Mortality Rate (IMR) 1960-current: *State of the World's Children 2006*², www.childinfo.org and recent unadjusted DHS data for the following countries: Chad, Guinea, Ethiopia, Lesotho, Malawi, Senegal, and Tanzania, demarcated by a dotted line.

Neonatal Mortality Rate (NMR) 1995-current: WHO estimates for 2000¹ and DHS conducted since 2001. See **Neonatal Mortality Rates** on page 226 for more details.

Millennium Development Goal (MDG) 4 Target: Country-specific target for meeting MDG 4: Reduce the 1990 under-five mortality rate by two thirds by 2015. From *UN Millennium Project 2005*.



NEWBORN LIVES SAVED

Refers to the number and range in percentage of newborn deaths that could be prevented that could be saved at 90 percent coverage of all essential packages. See **Estimating lives saved** on page 227 for more details.

IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES	
Newborn lives saved	up to 27,600
Range of NMR reduction	41-72%



FINANCING	
Gross national income, per capita (US\$)	\$360
Government spending on health, per capita (US\$)	\$9
Government spending on health	9%
Out-of-pocket spending on health	38%
User fee protection for women and children	-
Line item for newborns in national budget	-

FINANCING

Gross National Income, per capita (US\$): Gross national income divided by mid-year population, converted to US dollars using the World Bank Atlas method as presented in *State of the World's Children 2006*.² Estimates are for 2004.

Government spending on health, per capita (US\$): General government health expenditure in per capita terms expressed in US dollars at average exchange rate (the observed annual average or year end number of units at which a currency is traded in the banking system). World Health Organization, *World Health Report 2006*.¹⁵ Estimates are updated and revised figures for 1999-2003.

Government spending on health (%): General government health expenditure is estimated as the sum of outlays by government entities to purchase health care services and goods and is expressed as percentage of total government expenditure for the year. World Health Organization, *World Health Report 2006*.¹⁵ Estimates are updated and revised figures for 1999-2003.

Out of pocket spending on health (%): Household out-of-pocket spending used to directly purchase health care, expressed as a percentage of total health care spending. Total health care spending is the sum of general government expenditure on health (commonly called public expenditure on health), and private expenditure on health. World Health Organization, *World Health Report 2006*.¹⁵ Estimates are updated and revised figures for 1999-2003.

User fee protection for women, newborns and children and line item for newborn health in national budget: Personal communication with individuals in each country facilitated by the UNICEF African regional offices and the UNICEF country offices from February-May 2006.

POLICY AND IMPLEMENTATION

Stage of Road Map and establishment of MNCH task force: WHO Regional Office for Africa, 2006, with inputs from UNFPA October 2006.

POLICY AND IMPLEMENTATION	
Stage (of 10) of Road Map	3
Establishment of national MNCH task force	No
Birth registration coverage	48%
Number of baby-friendly hospitals	12
Midwives per 1,000 population	0.04
Districts with IMCI	14%
Elimination of neonatal tetanus	No

Percentage of birth registration coverage: Refers to the percentage of children less than five years of age that were registered at the time of the survey. The numerator of this indicator includes children whose birth certificate was seen by the interviewer or whose mother or caretaker says the birth has been registered. DHS, MICS and other national surveys as presented in *State of the World's Children 2006*.² Refers to most recent data from 1998-2004.

Number of baby-friendly hospitals: Maternity services that have passed external assessment according to the Global Criteria for the Baby Friendly Hospital Initiative. UNICEF, *Current status of Baby Friendly Hospital Initiative*, March 2002. <http://www.unicef.org/programme/breastfeeding/baby.htm>.

Number of midwives per 1,000 population: Auxiliary midwives and enrolled midwives, some countries do not clearly distinguish between nurses and midwives. From the *World Health Report 2006*.¹⁵

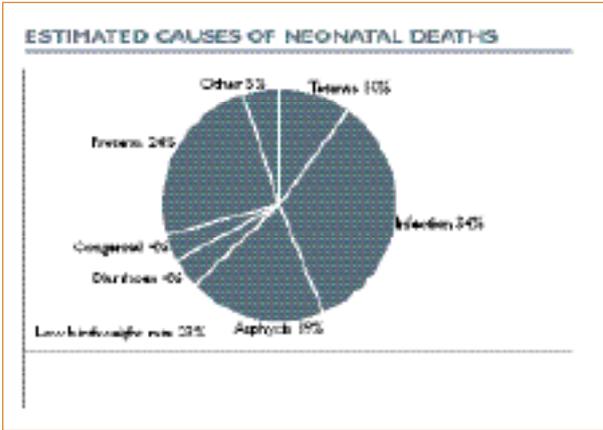
Percentage of districts with IMCI: Percentage of districts that have initiated IMCI training. WHO Regional Office for Africa, August 2005.

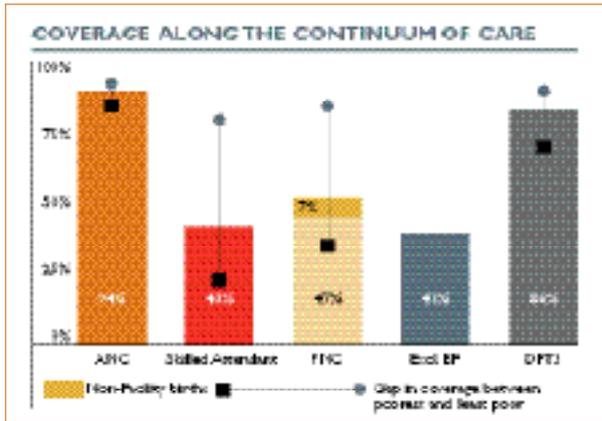
Elimination of neonatal tetanus: The reduction of neonatal tetanus cases to less than 1 case per 1,000 live births in every district of every country.^{19;20}

ESTIMATED CAUSES OF NEONATAL DEATHS

Causes of neonatal death: Proportion of neonatal deaths due to seven groups of causes of death. See **Causes of Neonatal Deaths** on page 226 for more details.

Low birthweight rate: Babies who weigh less than 2,500 grams. DHS, MICS, other national household surveys and data from routine reporting systems as presented in *State of the World's Children 2006*.² Refers to the most recent data from 1998-2004.





COVERAGE ALONG THE CONTINUUM OF CARE

In this publication coverage is defined as the proportion of individuals who need an intervention who actually receive it, measured at the population level. This graph looks at coverage for key packages within maternal and newborn health (antenatal care, skilled birth attendant, and postnatal care), a key behaviour for MNCH (exclusive breastfeeding), and a child health intervention (three doses of diphtheria, pertussis, and tetanus vaccine, or DPT3). The gap in coverage between the poorest and the richest is shown where available for antenatal care (ANC), skilled attendant, postnatal care (PNC), and DPT3. Data is primarily from DHS, MICS, other national household surveys, and WHO and UNICEF estimates, as presented in *State of the World's Children 2006*² and DHS where more recent.

ANC (Antenatal care): Percentage of women aged 15-49 years who received antenatal care from skilled health personnel (doctors, nurses or midwives) at least once during pregnancy. DHS, MICS, WHO and UNICEF, as presented in *State of the World's Children 2006*² and DHS where more recent.

Skilled attendant: Percentage of births attended by skilled health personnel (doctors, nurses or midwives). DHS, MICS, WHO and UNICEF, *State of the World's Children 2006*² and DHS where more recent.

PNC (Postnatal care): Proportion of women who gave birth to their last child in a health facility (DHS assumes that all women giving birth in a facility receive PNC) or who received a postnatal check-up within two days of their last birth, and applied to all births. Most recent DHS 1998-2005.

Excl. BF (Exclusive breastfeeding): Percentage of children <6 months exclusively breastfed, where the infant receives only breast milk from the breast, or expressed breast milk, and receives no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines. DHS, MICS and UNICEF, as presented in *State of the World's Children 2006*² and DHS where more recent.

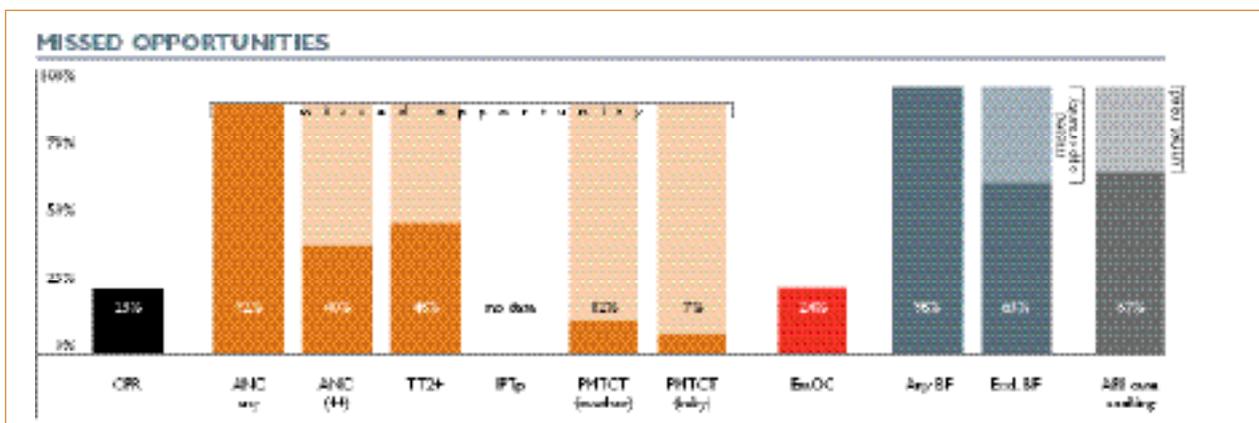
DPT3: Percentage of one-year old children having received three doses of diphtheria, pertussis, and tetanus vaccine. From *State of the World's Children 2006*² and DHS where more recent.

Coverage for poorest/least poor: Recent DHS use a wealth index derived from questions on ownership of assets and housing characteristics.¹⁸ Population quintiles, identified from this index, are used to assess the coverage of ANC, skilled attendant, PNC, and DPT3 in the first (poorest) and fifth (least poor) wealth quintiles, expressed as a percentage.

MISSED OPPORTUNITIES

This describes the gap in coverage between the contact opportunity and delivery of the essential intervention.

CPR (Contraceptive prevalence rate): The percentage of currently married or in-union women age 15-49 years who are currently using a modern method of contraception. *State of the World's Children 2006*²





ANC (Antenatal care): Percentage of women aged 15-49 years who received antenatal care from skilled health personnel (doctors, nurses or midwives) at least once during pregnancy. DHS, MICS, WHO and UNICEF, as presented in *State of the World's Children 2006*² and DHS where more recent.

ANC4+: Four or more antenatal visits to a skilled provider. From *World Health Report 2005*⁹ and DHS where more recent.

TT2+: Pregnant women immunised with two or more doses of tetanus toxoid. From *World Health Report 2005*⁹ and DHS where more recent.

IPTp (Intermittent preventive treatment in pregnancy for malaria): Proportion of women who took two or more doses of Sulphadoxine Pyrimethamine (SP)/Fansidar during the second and third trimester of pregnancy of their last pregnancy resulting in a live birth. It should be noted that obtaining information about drugs can be difficult, and some respondents may not know or remember the name or even the type of drug that they received. Most recent DHS 2003-2005.

PMTCT: Percent of all HIV positive pregnant women and their babies who received antiretroviral prophylaxis. Unpublished data, UNICEF New York, 2006.

EmOC (Emergency obstetric care): Percentage of expected obstetric complications treated in emergency obstetric care facilities (or all facilities, which is higher than met need in EmOC facilities). Based on national and UN assessments of emergency obstetric care services and need, 2004-2006.

Any breastfeeding: Percentage of children ever breastfed. From most recent DHS 1998-2005.

Excl. BF (Exclusive breastfeeding): Percentage of children <6 months exclusively breastfed, where the infant receives only breast milk from the breast, or expressed breast milk, and receives no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines. DHS, MICS and UNICEF, as presented in *State of the World's Children 2006*² and DHS where more recent.

ARI care seeking: percentage of children (0-4 years) with ARI in the last two weeks taken to an appropriate health provider. As presented in *State of the World's Children 2006*² and DHS where more recent.

Additional indicators reported in the summary tables

Institutional births: Percentage of live births in the last five years that took place in a public or private health facility. Most recent DHS 1998-2005.

Female literacy: Percentage of women aged 15 and over who can read and write. Data from UNESCO Institute for Statistics as presented in *State of the World's Children 2006*².

PAB (Protected at birth from tetanus): Percentage of newborns protected at birth against tetanus, reflecting the percentage of mothers protected against tetanus at childbirth through immunisation. This may include protective doses of tetanus toxoid received during campaigns or during previous pregnancies. UNICEF and WHO data as presented in *State of the World's Children 2006*².

Immediate breastfeeding: Percentage of children born in the five years preceding the survey, surviving and dead, who started breastfeeding within one hour and one day of birth. Most recent DHS 1998-2005.

More reading

- UNICEF State of the World's Children 2006²
- WHO World Health Report 2005⁹ and 2006¹⁵
- Neonatal mortality¹ and stillbirth estimates¹⁷
- Causes of neonatal death methodology and estimates^{7,9,22}
- Maternal mortality estimates^{23,24} and limitations²⁵
- Cost and impact estimation
 - Newborn survival series impact and costing^{10,12}
 - Bellagio child survival series costing¹⁴
 - Increasing resources to save newborn lives¹³
- DHS wealth index¹⁸
- The DHS stats guide and more information on DHS data can be found at www.measuredhs.com.

Sub-Saharan Africa



BIRTHS, DEATHS AND INEQUITY

Total population 697,561,000
Annual births 28,263,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 940
Annual maternal deaths 247,300

BABIES

Stillbirth rate *per 1,000 deliveries* 32
Annual number of stillbirths 890,000
Neonatal mortality rate *per 1,000 live births* 41
Annual neonatal deaths 1,155,800
Avg excess NMR for poorest vs least poor 63%

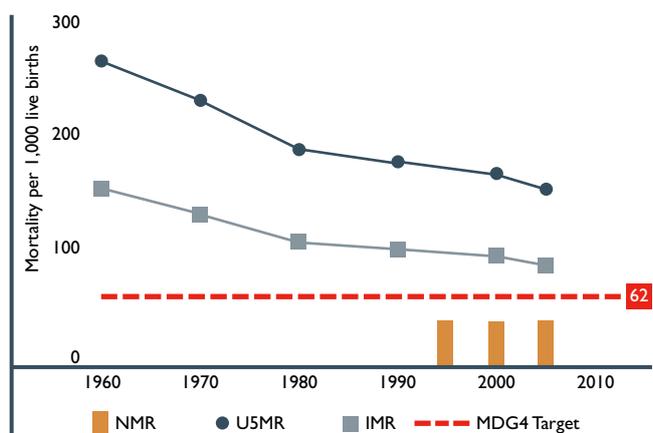
CHILDREN

Under 5 mortality rate *per 1,000 live births* 164
Annual under 5 deaths 4,636,900
Annual postnatal deaths 3,482,200
NMR as percentage of U5MR 25%

POLICY AND IMPLEMENTATION

Countries starting the Road Map 35
Countries with national MNCH task force 20
Birth registration coverage 38%
Number of baby-friendly hospitals 2,098
Midwives per 1,000 population 0.04
Countries with IMCI pilot districts 27
Countries with neonatal tetanus elimination 7

RATE OF PROGRESS TO MDG 4



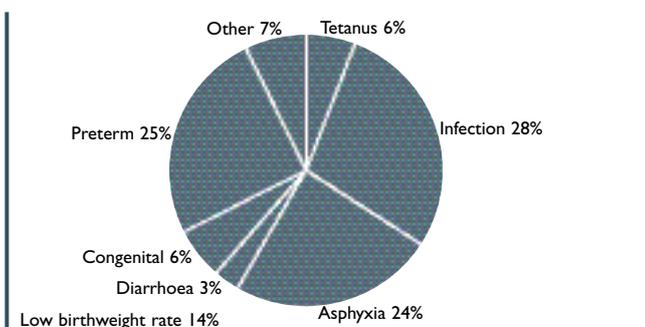
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 796,000
Range of NMR reduction 37-67%

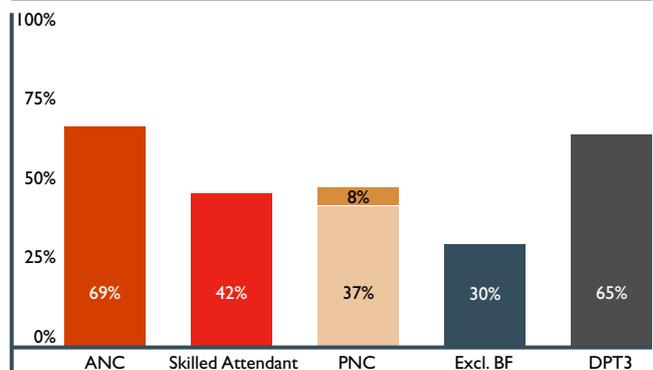
FINANCING

Gross national income, per capita (US\$) \$611
Avg gov't spending on health, per capita (US\$) \$14
Avg gov't spending on health as % of total gov't spending 9%
Out-of-pocket spending on health 40%
User fee protection for women and children 10 out of 20
Line item for newborns in national budget 2 out of 7

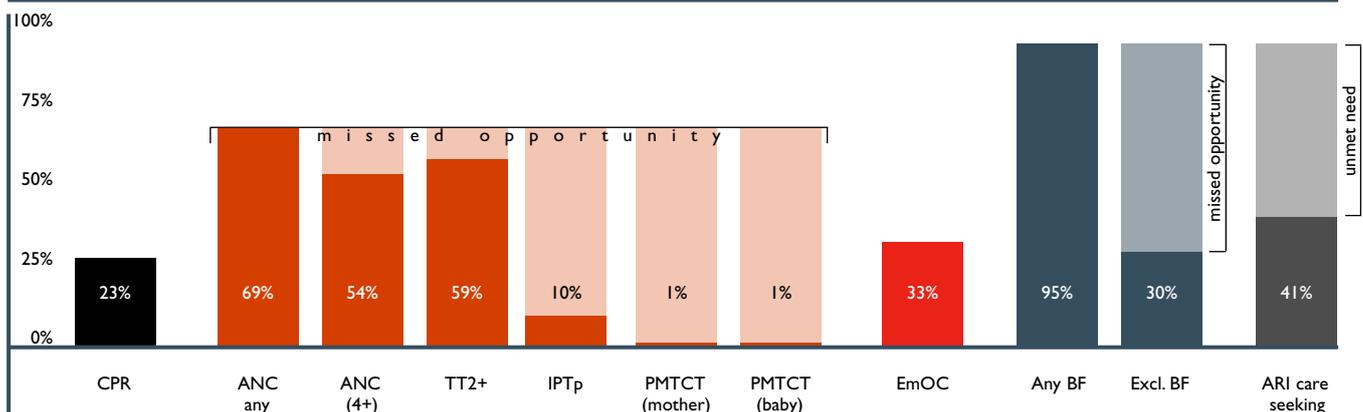
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



Weighted NMR, IMR and U5MR include 8 countries where unadjusted DHS data are used.

Angola



V

BIRTHS, DEATHS AND INEQUITY

Total population	15,490,000
Annual births	749,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,700
Annual maternal deaths	12,700

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	33
Annual number of stillbirths	25,200
Neonatal mortality rate <i>per 1,000 live births</i>	54
Annual neonatal deaths	40,100
Excess NMR for poorest vs. least poor	-

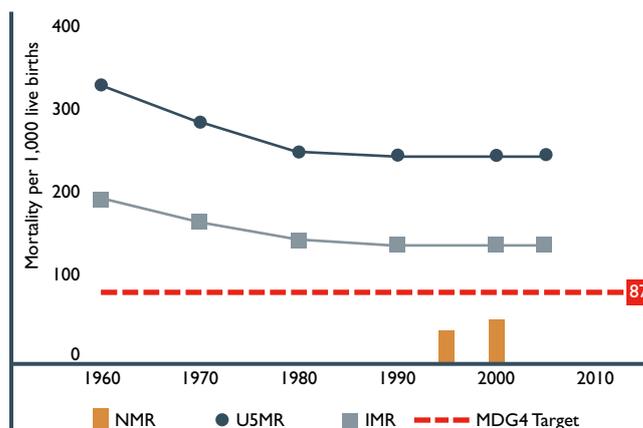
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	260
Annual under 5 deaths	194,700
Annual postnatal deaths	154,600
NMR as percentage of U5MR	21%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	4, in process
Establishment of national MNCH task force	In process
Birth registration coverage	29%
Number of baby-friendly hospitals	3
Midwives per 1,000 population	0.04
Districts with IMCI	2%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



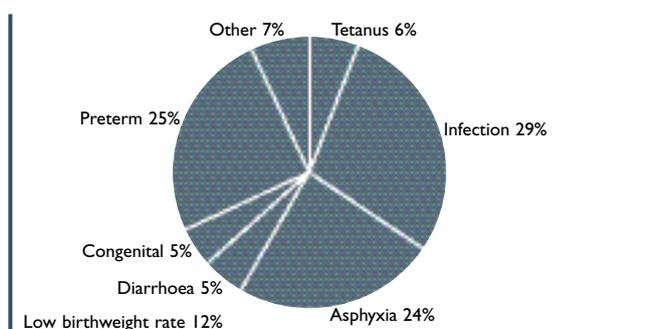
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 30,300
Range of NMR reduction	42-72%

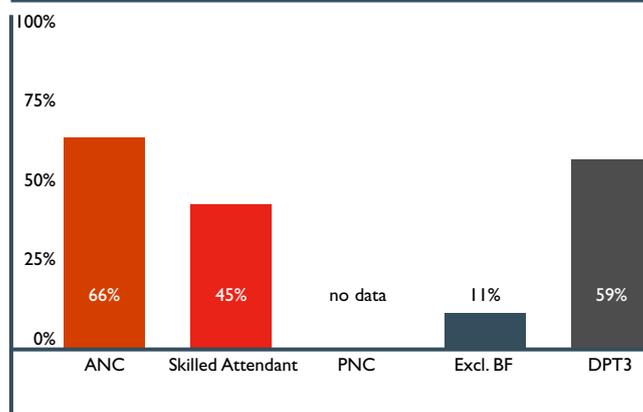
FINANCING

Gross national income, per capita (US\$)	\$1,030
Government spending on health, per capita (US\$)	\$22
Government spending on health	5%
Out-of-pocket spending on health	16%
User fee protection for women and children	No
Line item for newborns in national budget	-

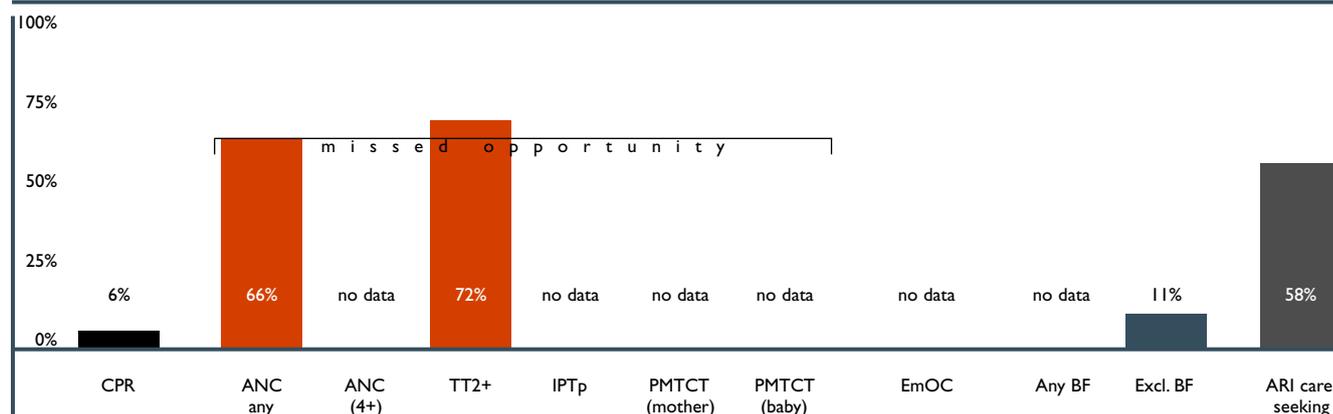
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

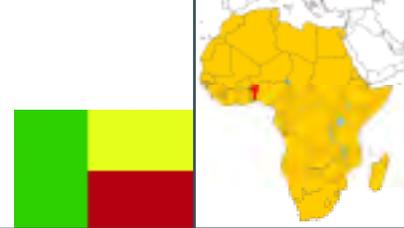


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Benin



BIRTHS, DEATHS AND INEQUITY

Total population 8,177,000
Annual births 341,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 850
Annual maternal deaths 2,900

BABIES

Stillbirth rate *per 1,000 deliveries* 30
Annual number of stillbirths 10,400
Neonatal mortality rate *per 1,000 live births* 41
Annual neonatal deaths 14,100
Excess NMR for poorest vs. least poor 43%

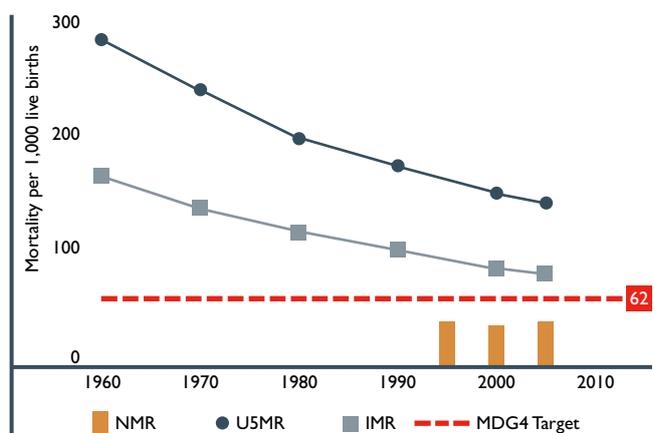
CHILDREN

Under 5 mortality rate *per 1,000 live births* 152
Annual under 5 deaths 51,800
Annual postnatal deaths 37,700
NMR as percentage of U5MR 27%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 4, in process
Establishment of national MNCH task force In process
Birth registration coverage 70%
Number of baby-friendly hospitals 23
Midwives per 1,000 population -
Districts with IMCI 26%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



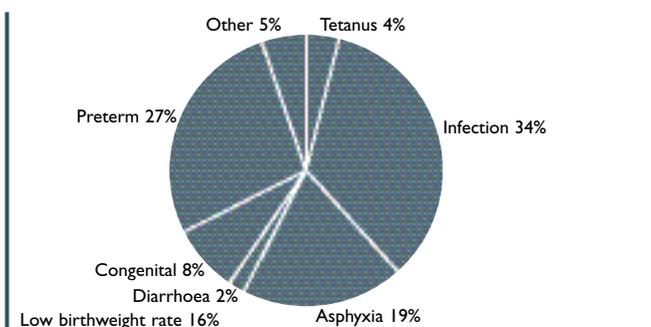
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 8,100
Range of NMR reduction 26-55%

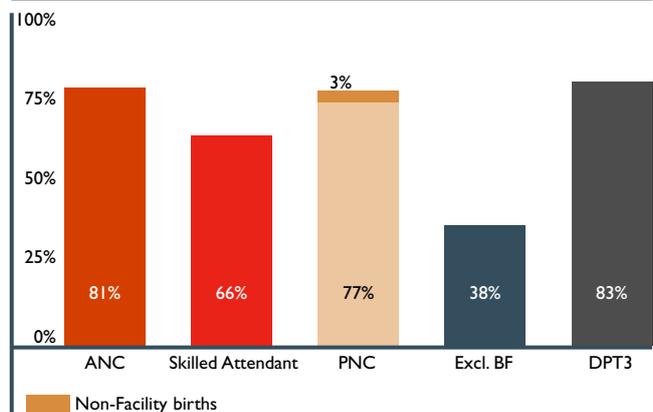
FINANCING

Gross national income, per capita (US\$) \$530
Government spending on health, per capita (US\$) \$9
Government spending on health 10%
Out-of-pocket spending on health 51%
User fee protection for women and children Partial
Line item for newborns in national budget -

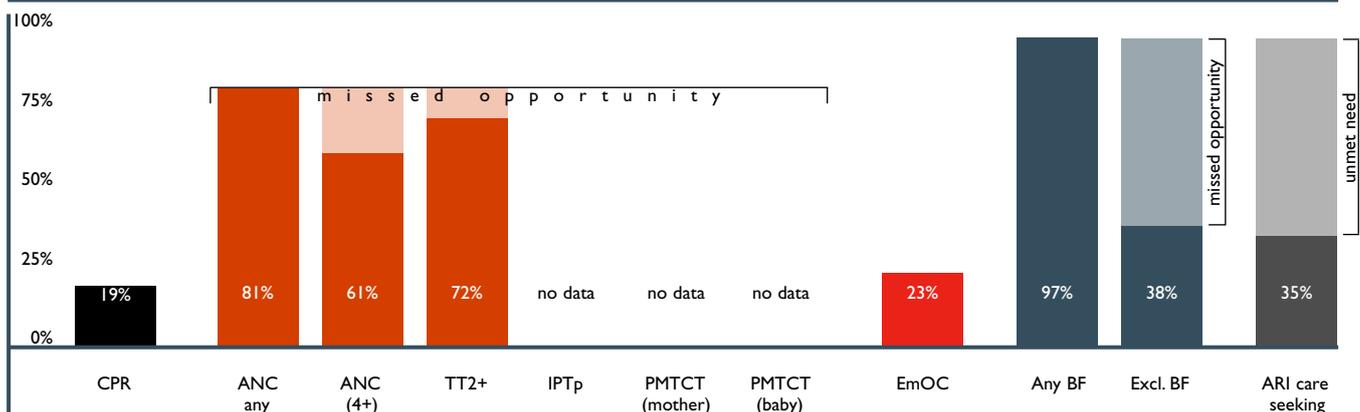
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

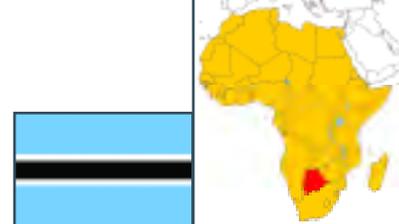


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Botswana



BIRTHS, DEATHS AND INEQUITY

Total population	1,769,000
Annual births	46,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	100
Annual maternal deaths	-

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	19
Annual number of stillbirths	900
Neonatal mortality rate <i>per 1,000 live births</i>	40
Annual neonatal deaths	1,800
Excess NMR for poorest vs. least poor	-

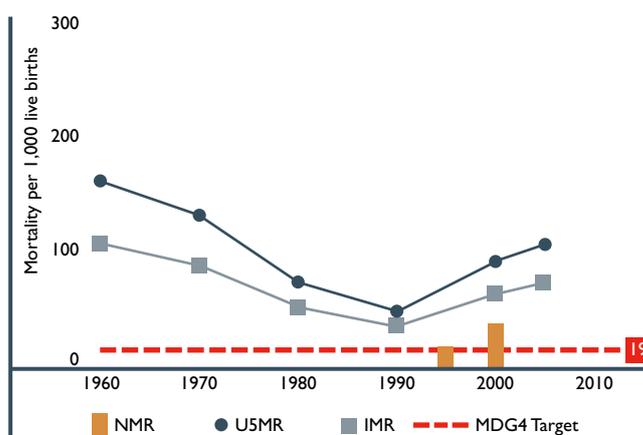
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	116
Annual under 5 deaths	5,300
Annual postnatal deaths	3,500
NMR as percentage of U5MR	34%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	4, in process
Establishment of national MNCH task force	In process
Birth registration coverage	58%
Number of baby-friendly hospitals	7
Midwives per 1,000 population	-
Districts with IMCI	46%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



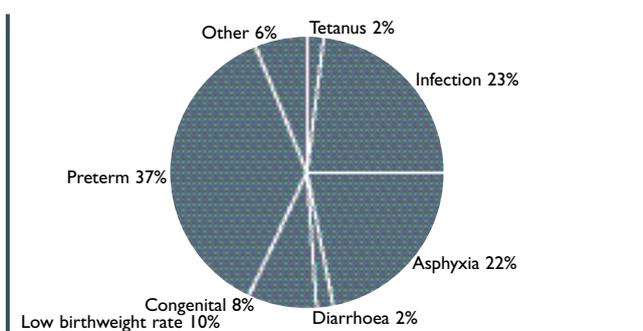
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 900
Range of NMR reduction	24-53%

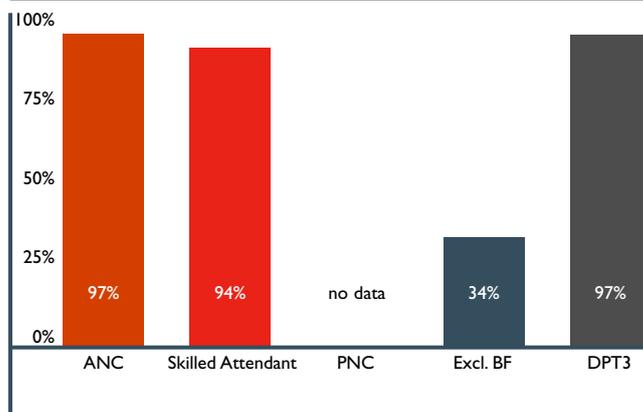
FINANCING

Gross national income, per capita (US\$)	\$4,340
Government spending on health, per capita (US\$)	\$135
Government spending on health	8%
Out-of-pocket spending on health	12%
User fee protection for women and children	Yes
Line item for newborns in national budget	-

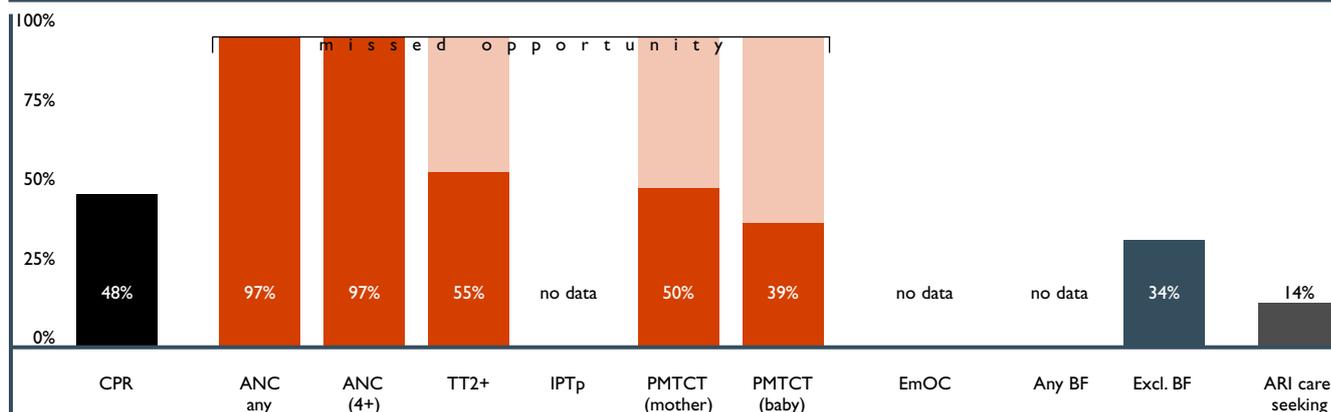
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Burkina Faso



BIRTHS, DEATHS AND INEQUITY

Total population 12,822,000
Annual births 601,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 1,000
Annual maternal deaths 6,000

BABIES

Stillbirth rate *per 1,000 deliveries* 26
Annual number of stillbirths 16,000
Neonatal mortality rate *per 1,000 live births* 31
Annual neonatal deaths 18,600
Excess NMR for poorest vs. least poor 11%

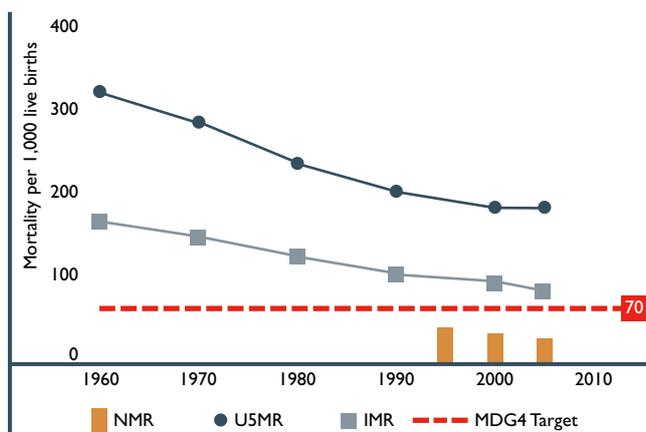
CHILDREN

Under 5 mortality rate *per 1,000 live births* 192
Annual under 5 deaths 115,400
Annual postnatal deaths 96,800
NMR as percentage of U5MR 16%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 2
Establishment of national MNCH task force No
Birth registration coverage -
Number of baby-friendly hospitals 6
Midwives per 1,000 population 0.13
Districts with IMCI 5%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



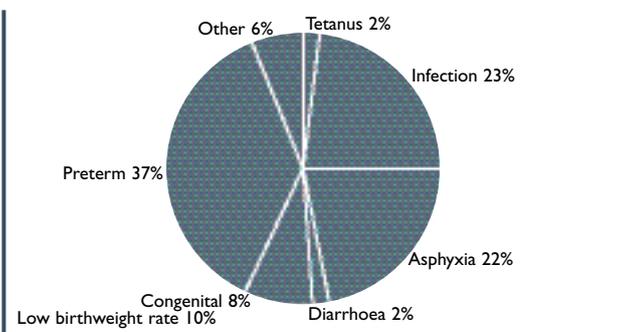
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 14,000
Range of NMR reduction 40-72%

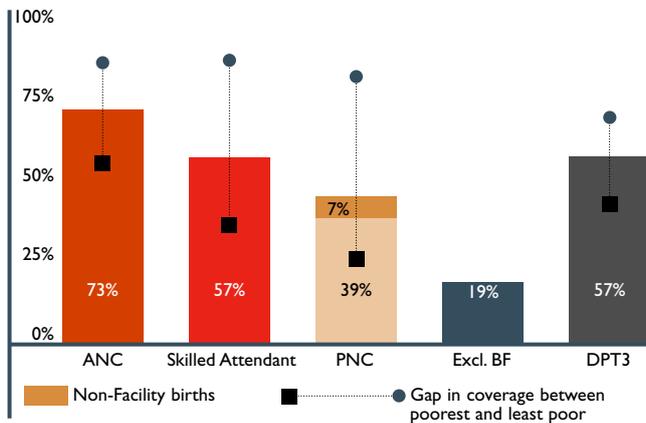
FINANCING

Gross national income, per capita (US\$) \$360
Government spending on health, per capita (US\$) \$9
Government spending on health 13%
Out-of-pocket spending on health 52%
User fee protection for women and children Yes
Line item for newborns in national budget -

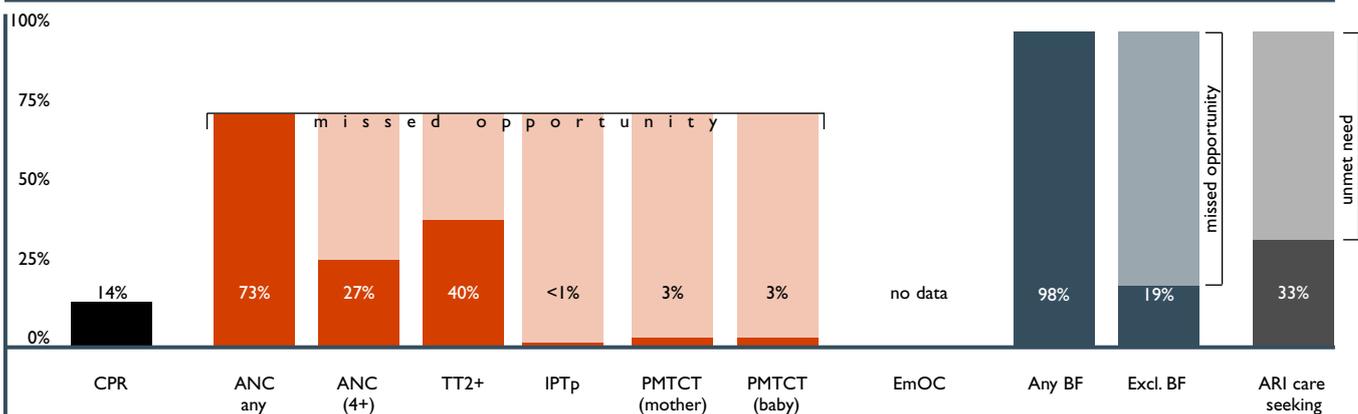
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



Burundi



BIRTHS, DEATHS AND INEQUITY

Total population	7,282,000
Annual births	330,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,000
Annual maternal deaths	3,300

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	34
Annual number of stillbirths	11,600
Neonatal mortality rate <i>per 1,000 live births</i>	41
Annual neonatal deaths	14,600
Excess NMR for poorest vs. least poor	-

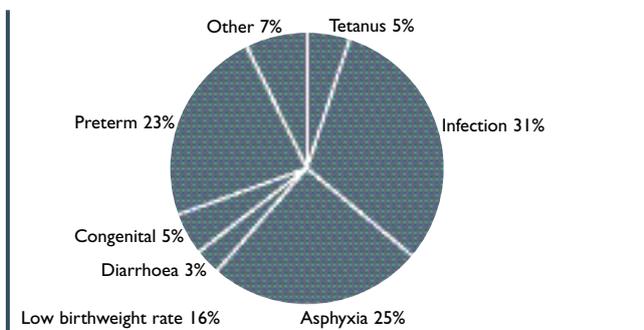
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	190
Annual under 5 deaths	62,700
Annual postnatal deaths	49,000
NMR as percentage of U5MR	22%

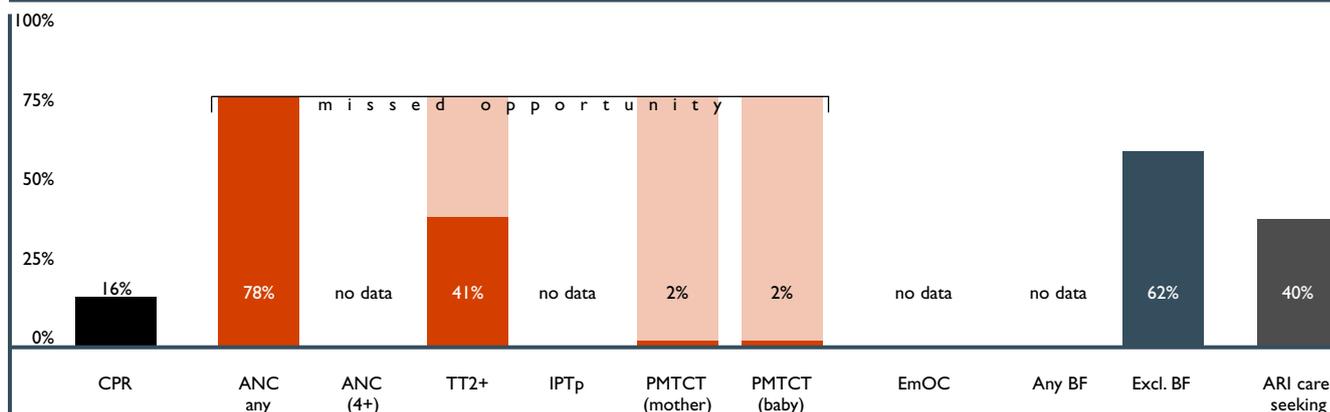
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	8
Establishment of national MNCH task force	Yes
Birth registration coverage	75%
Number of baby-friendly hospitals	1
Midwives per 1,000 population	-
Districts with IMCI	-
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS

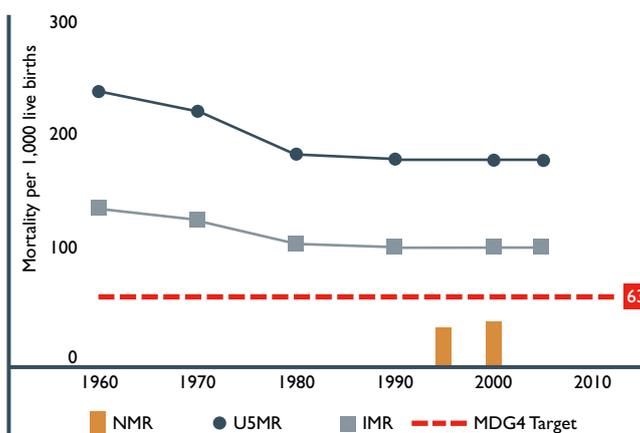


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

RATE OF PROGRESS TO MDG 4



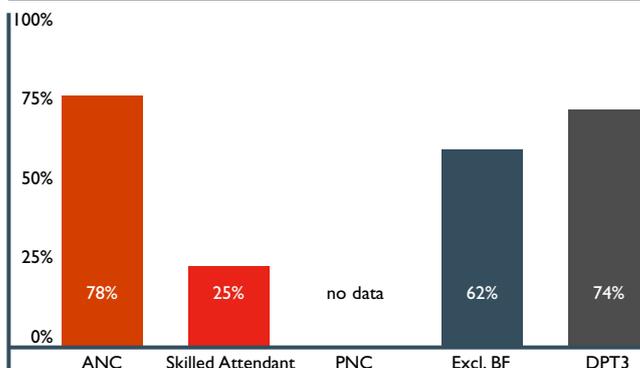
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 10,600
Range of NMR reduction	40-71%

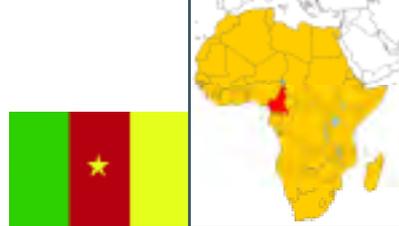
FINANCING

Gross national income, per capita (US\$)	\$90
Government spending on health, per capita (US\$)	\$1
Government spending on health	2%
Out-of-pocket spending on health	77%
User fee protection for women and children	No
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



Cameroon



BIRTHS, DEATHS AND INEQUITY

Total population	16,038,000
Annual births	562,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	730
Annual maternal deaths	4,100

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	27
Annual number of stillbirths	15,600
Neonatal mortality rate <i>per 1,000 live births</i>	29
Annual neonatal deaths	16,300
Excess NMR for poorest vs. least poor	55%

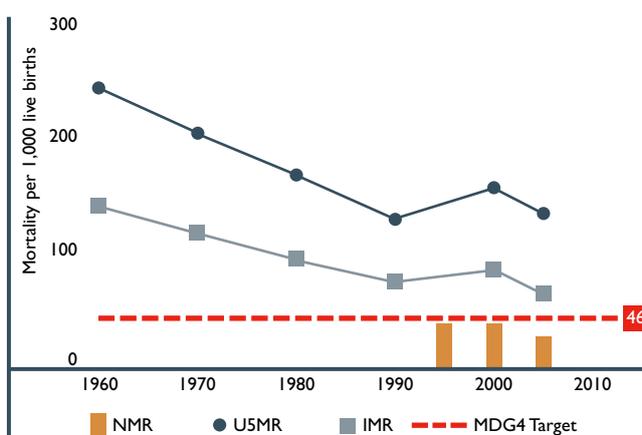
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	149
Annual under 5 deaths	83,700
Annual postnatal deaths	67,400
NMR as percentage of U5MR	19%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	5
Establishment of national MNCH task force	Yes
Birth registration coverage	79%
Number of baby-friendly hospitals	1
Midwives per 1,000 population	-
Districts with IMCI	6%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



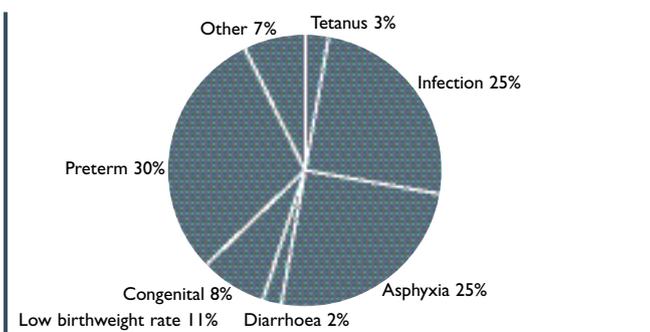
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 9,300
Range of NMR reduction	28-57%

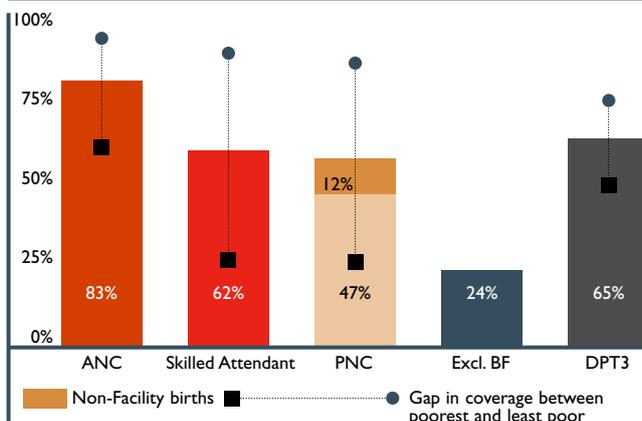
FINANCING

Gross national income, per capita (US\$)	\$800
Government spending on health, per capita (US\$)	\$11
Government spending on health	8%
Out-of-pocket spending on health	70%
User fee protection for women and children	No
Line item for newborns in national budget	-

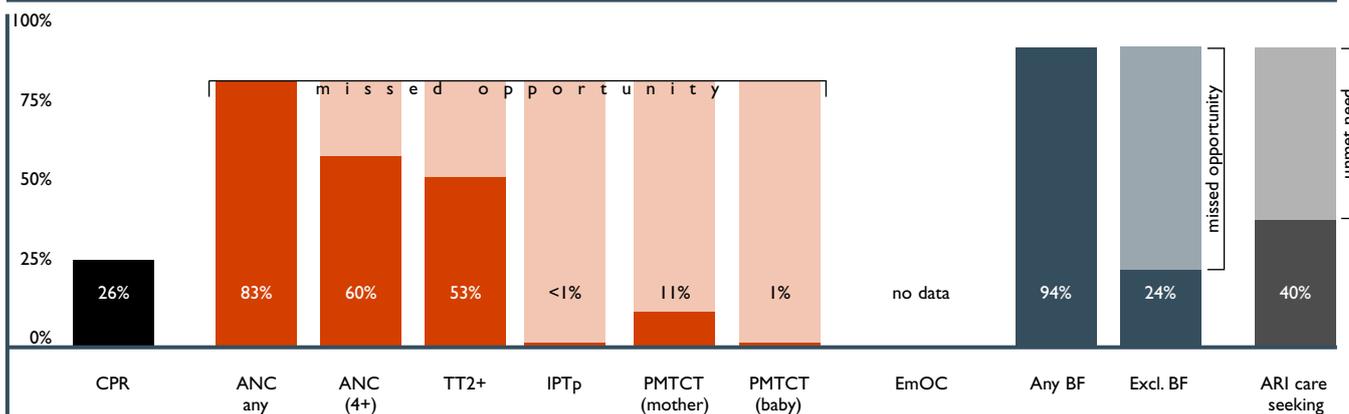
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Cape Verde



BIRTHS, DEATHS AND INEQUITY

Total population	495,000
Annual births	15,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	150
Annual maternal deaths	-

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	16
Annual number of stillbirths	200
Neonatal mortality rate <i>per 1,000 live births</i>	10
Annual neonatal deaths	200
Excess NMR for poorest vs. least poor	-

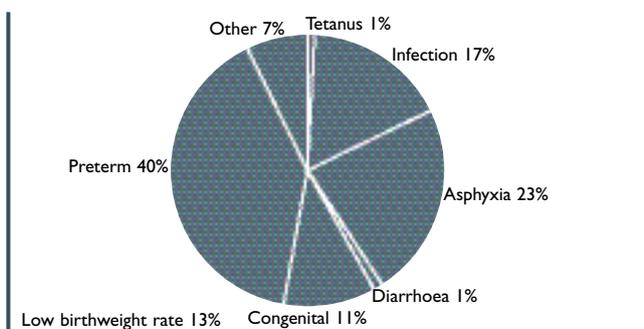
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	36
Annual under 5 deaths	500
Annual postnatal deaths	300
NMR as percentage of U5MR	28%

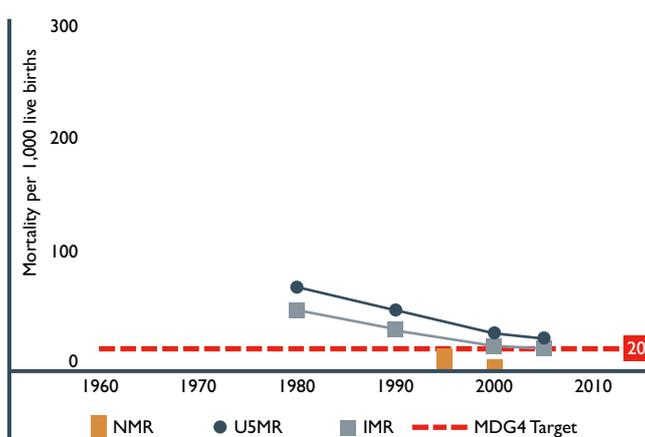
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	0
Establishment of national MNCH task force	No
Birth registration coverage	-
Number of baby-friendly hospitals	1
Midwives per 1,000 population	-
Districts with IMCI	-
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS



RATE OF PROGRESS TO MDG 4



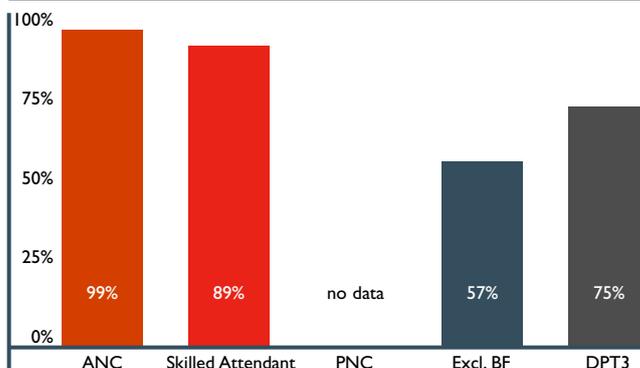
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	<100
Range of NMR reduction	15-36%

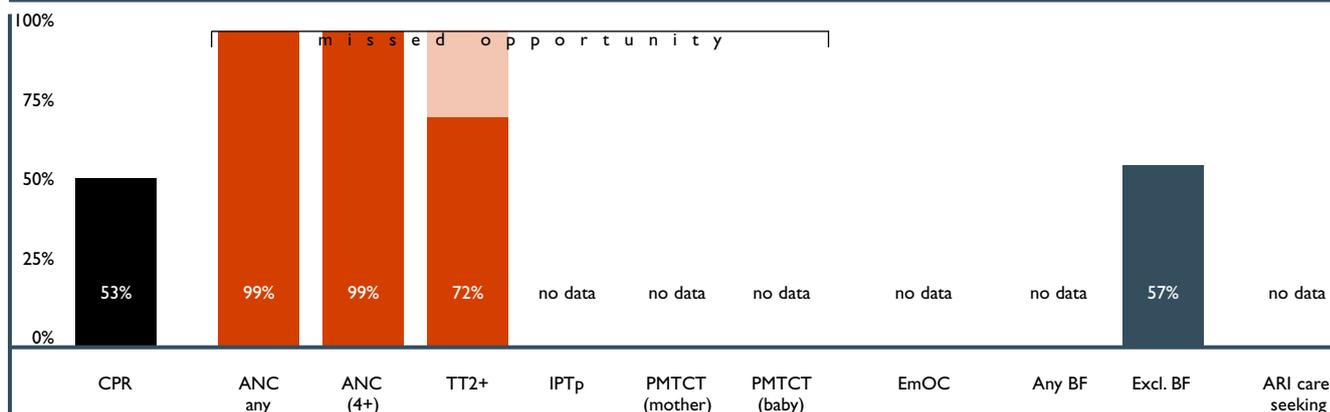
FINANCING

Gross national income, per capita (US\$)	\$1,700
Government spending on health, per capita (US\$)	\$57
Government spending on health	11%
Out-of-pocket spending on health	27%
User fee protection for women and children	-
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Central African Republic



BIRTHS, DEATHS AND INEQUITY

Total population	3,986,000
Annual births	149,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,100
Annual maternal deaths	1,600

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	29
Annual number of stillbirths	4,400
Neonatal mortality rate <i>per 1,000 live births</i>	48
Annual neonatal deaths	7,200
Excess NMR for poorest vs. least poor	150%

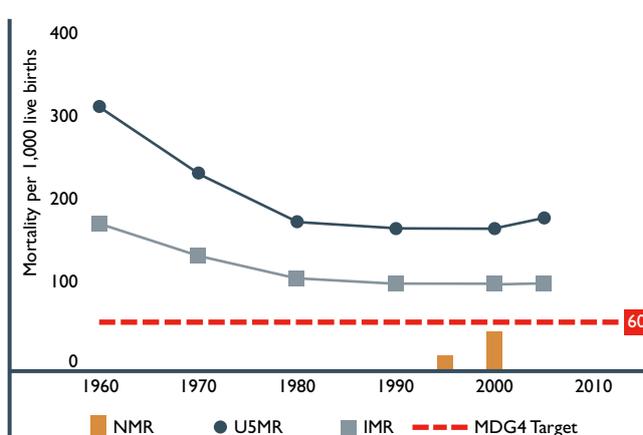
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	193
Annual under 5 deaths	28,800
Annual postnatal deaths	21,600
NMR as percentage of U5MR	25%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	4
Establishment of national MNCH task force	Yes
Birth registration coverage	73%
Number of baby-friendly hospitals	4
Midwives per 1,000 population	0.13
Districts with IMCI	-
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



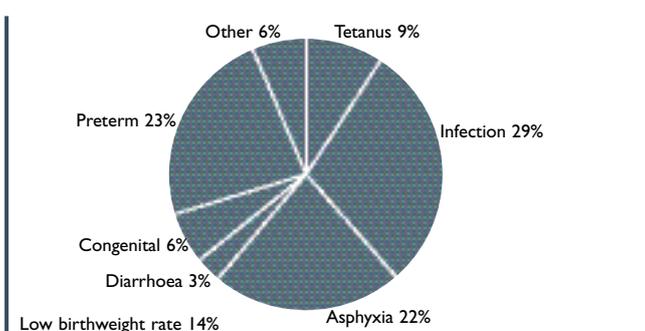
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 4,700
Range of NMR reduction	36-66%

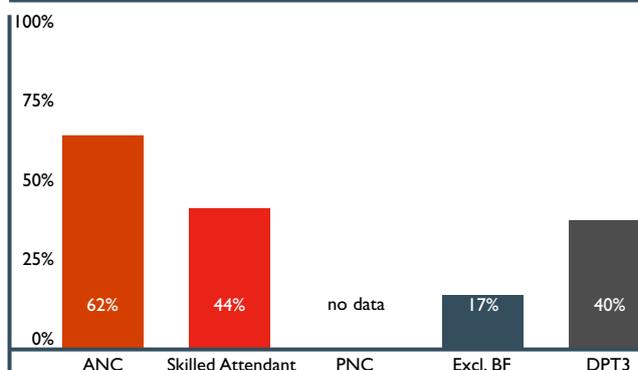
FINANCING

Gross national income, per capita (US\$)	\$310
Government spending on health, per capita (US\$)	\$5
Government spending on health	12%
Out-of-pocket spending on health	59%
User fee protection for women and children	-
Line item for newborns in national budget	-

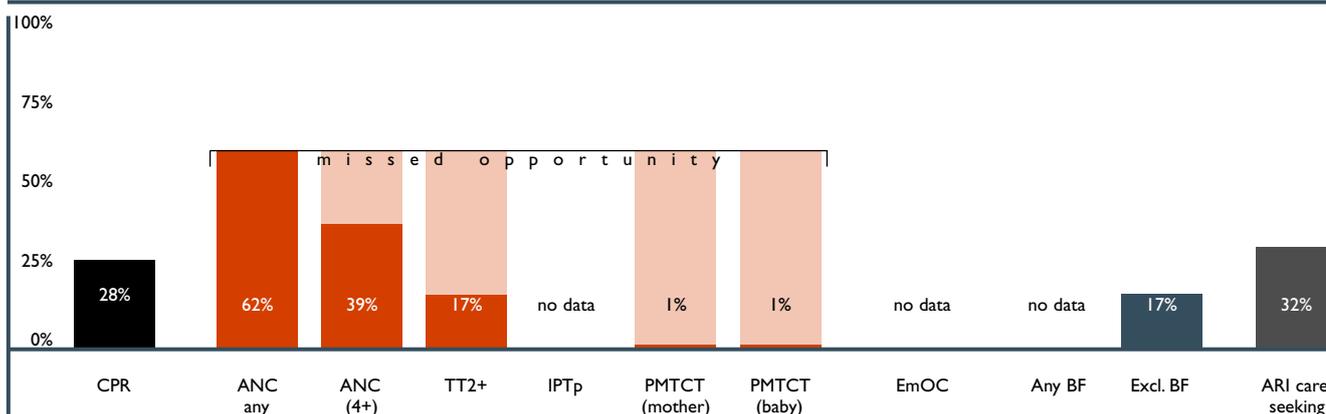
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

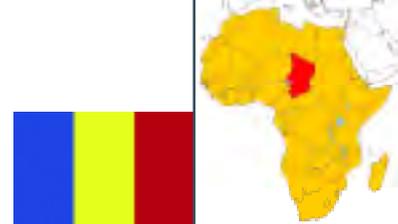


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Chad



BIRTHS, DEATHS AND INEQUITY

Total population	9,448,000
Annual births	456,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,099
Annual maternal deaths	5,000

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	34
Annual number of stillbirths	15,900
Neonatal mortality rate <i>per 1,000 live births</i>	39
Annual neonatal deaths	17,800
Excess NMR for poorest vs. least poor	57%

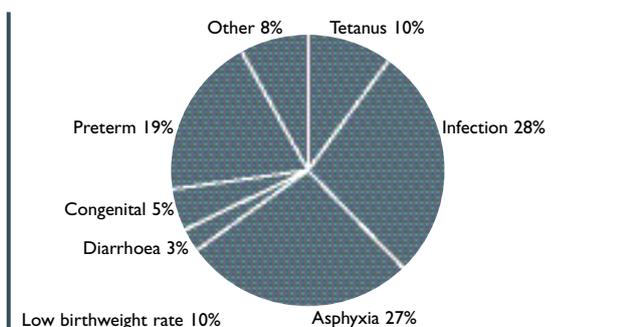
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	191
Annual under 5 deaths	87,100
Annual postnatal deaths	69,300
NMR as percentage of U5MR	20%

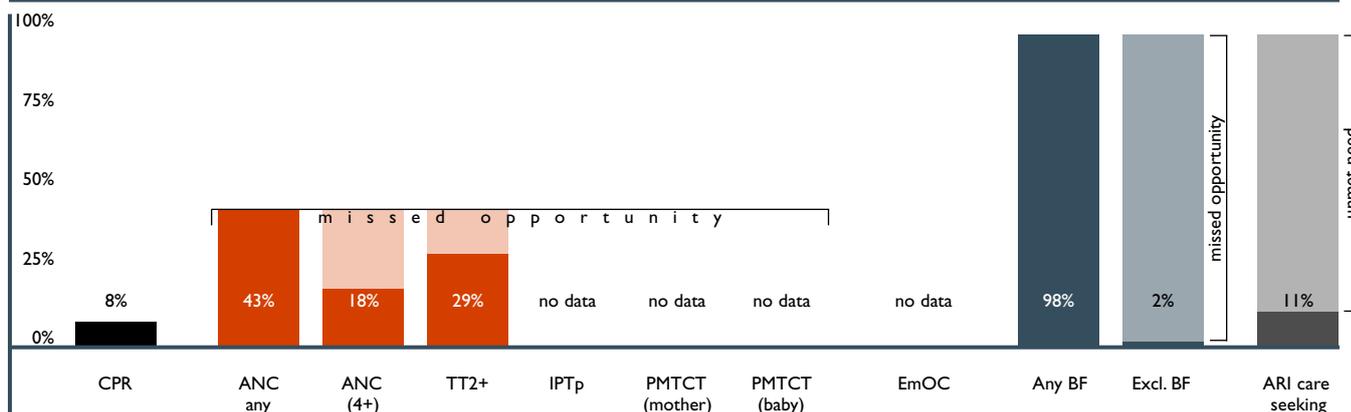
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	2
Establishment of national MNCH task force	No
Birth registration coverage	25%
Number of baby-friendly hospitals	2
Midwives per 1,000 population	0.01
Districts with IMCI	6%
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS

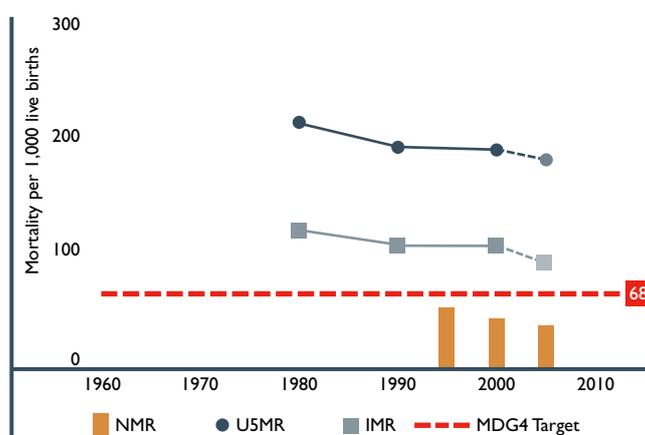


MISSED OPPORTUNITIES



See page 226 for data sources and notes. For this country, the most recent MMR, U5MR, IMR, and NMR are from unadjusted DHS data.

RATE OF PROGRESS TO MDG 4



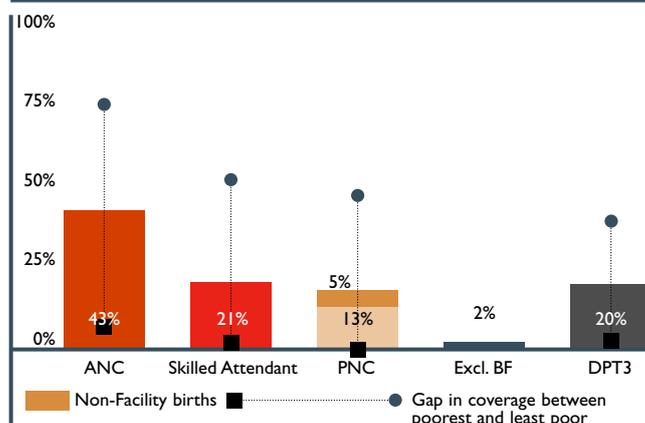
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 13,800
Range of NMR reduction	45-73%

FINANCING

Gross national income, per capita (US\$)	\$260
Government spending on health, per capita (US\$)	\$7
Government spending on health	11%
Out-of-pocket spending on health	58%
User fee protection for women and children	-
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



Comoros



BIRTHS, DEATHS AND INEQUITY

Total population	777,000
Annual births	28,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	480
Annual maternal deaths	100

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	26
Annual number of stillbirths	700
Neonatal mortality rate <i>per 1,000 live births</i>	29
Annual neonatal deaths	800
NMR for poorest vs. least poor	-

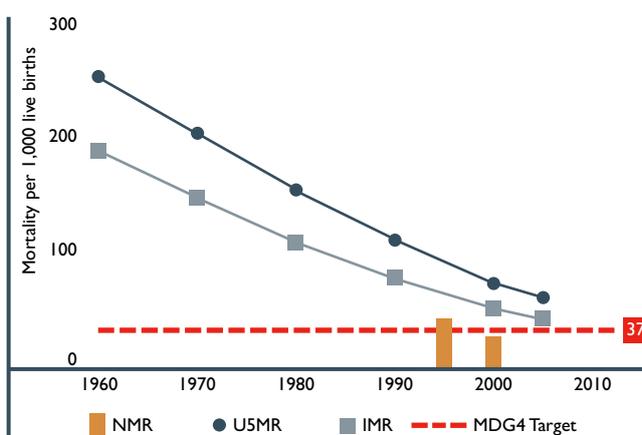
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	70
Annual under 5 deaths	2,000
Annual postnatal deaths	12,000
NMR as percentage of U5MR	41%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	7
Establishment of national MNCH task force	Yes
Birth registration coverage	83%
Number of baby-friendly hospitals	19
Midwives per 1,000 population	-
Districts with IMCI	-
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



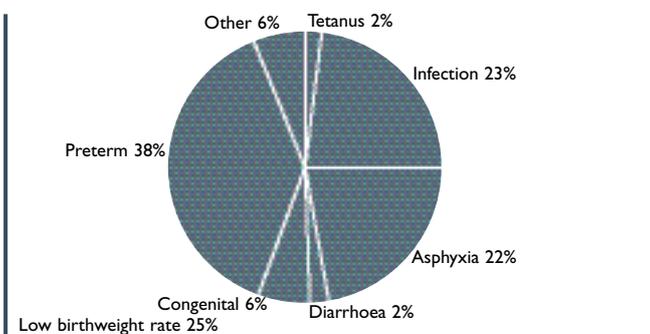
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 500
Range of NMR reduction	36-68%

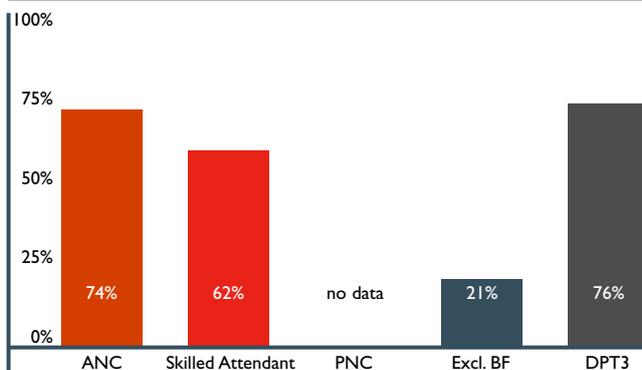
FINANCING

Gross national income, per capita (US\$)	\$530
Government spending on health, per capita (US\$)	\$6
Government spending on health	6%
Out-of-pocket spending on health	46%
User fee protection for women and children	-
Line item for newborns in national budget	-

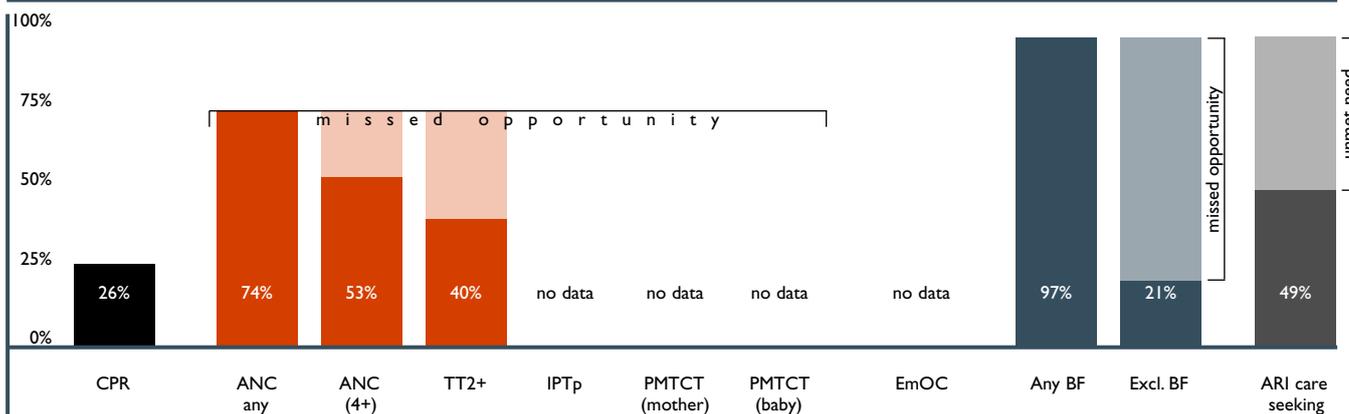
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Congo



BIRTHS, DEATHS AND INEQUITY

Total population	3,883,000
Annual births	172,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	510
Annual maternal deaths	900

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	28
Annual number of stillbirths	4,900
Neonatal mortality rate <i>per 1,000 live births</i>	32
Annual neonatal deaths	5,500
Excess NMR for poorest vs. least poor	-

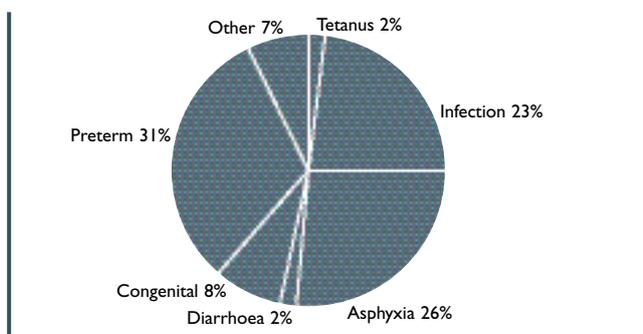
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	108
Annual under 5 deaths	18,600
Annual postnatal deaths	13,100
NMR as percentage of U5MR	29%

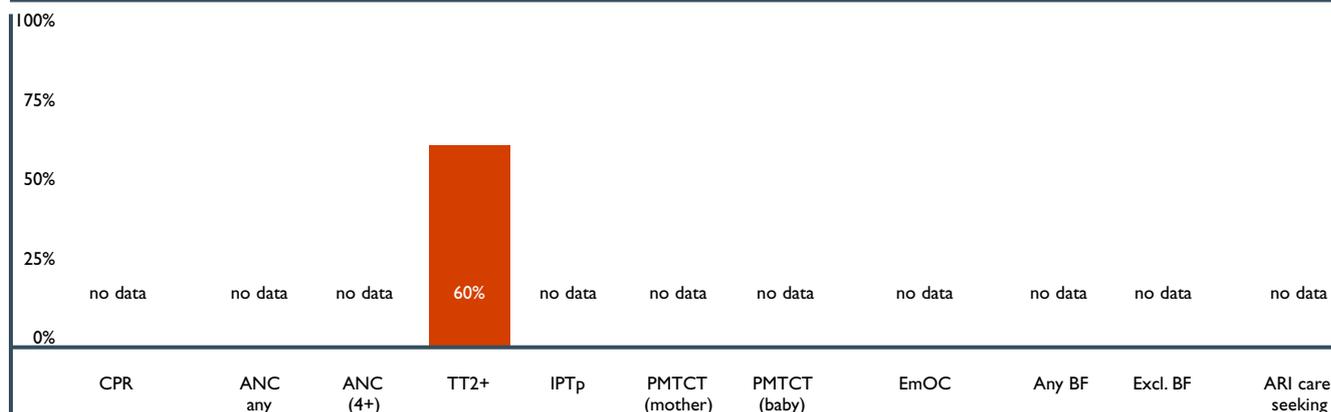
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	3
Establishment of national MNCH task force	No
Birth registration coverage	-
Number of baby-friendly hospitals	-
Midwives per 1,000 population	-
Districts with IMCI	-
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS

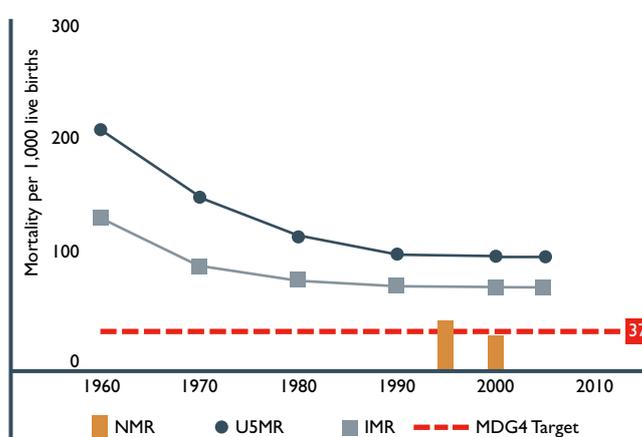


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

RATE OF PROGRESS TO MDG 4



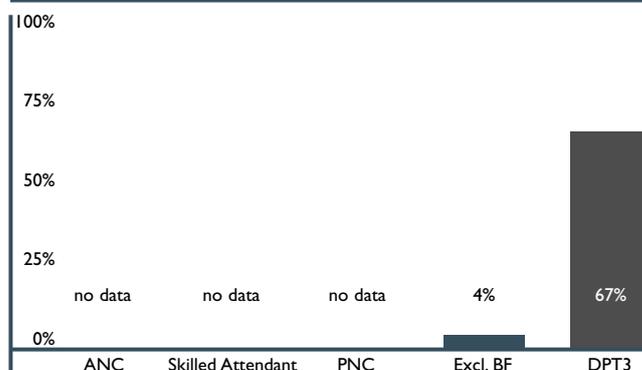
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 3,500
Range of NMR reduction	32-62%

FINANCING

Gross national income, per capita (US\$)	\$770
Government spending on health, per capita (US\$)	\$12
Government spending on health	4%
Out-of-pocket spending on health	36%
User fee protection for women and children	-
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



Congo, DR



BIRTHS, DEATHS AND INEQUITY

Total population 55,853,000
Annual births 2,788,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 990
Annual maternal deaths 27,600

BABIES

Stillbirth rate *per 1,000 deliveries* 34
Annual number of stillbirths 98,000
Neonatal mortality rate *per 1,000 live births* 47
Annual neonatal deaths 130,900
Excess NMR for poorest vs. least poor -

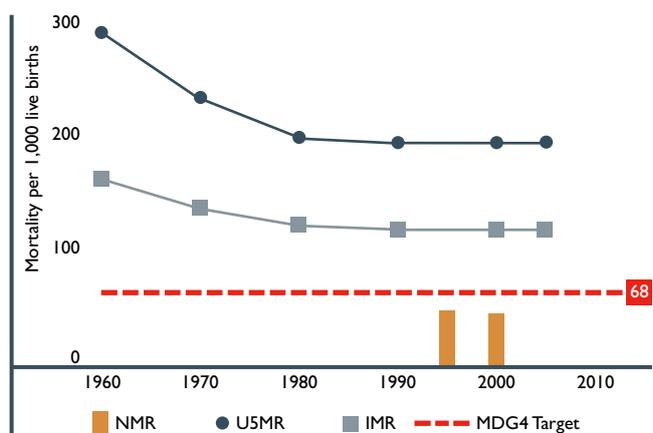
CHILDREN

Under 5 mortality rate *per 1,000 live births* 205
Annual under 5 deaths 571,500
Annual postnatal deaths 440,600
NMR as percentage of U5MR 23%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 5
Establishment of national MNCH task force Yes
Birth registration coverage 34%
Number of baby-friendly hospitals 2
Midwives per 1,000 population -
Districts with IMCI 4%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



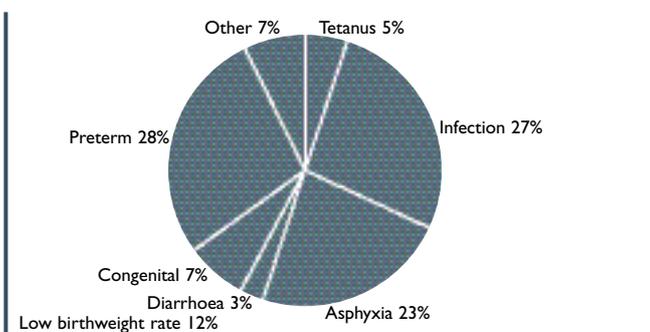
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 88,300
Range of NMR reduction 33-64%

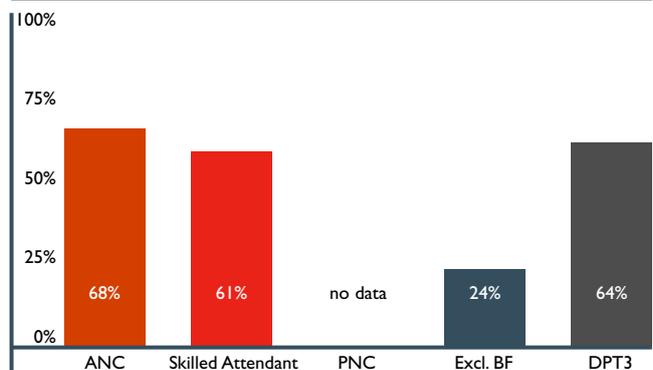
FINANCING

Gross national income, per capita (US\$) \$120
Government spending on health, per capita (US\$) \$1
Government spending on health 5%
Out-of-pocket spending on health 82%
User fee protection for women and children -
Line item for newborns in national budget -

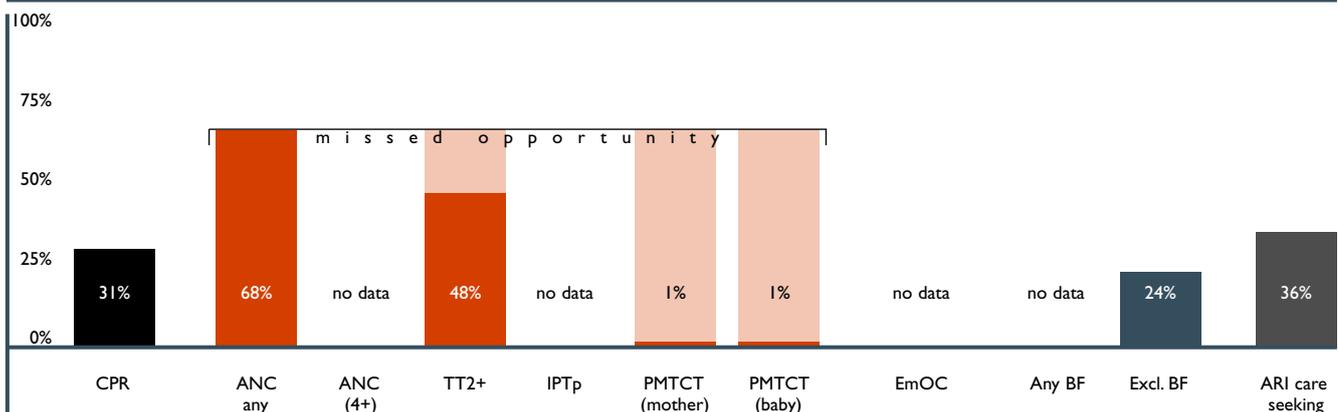
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

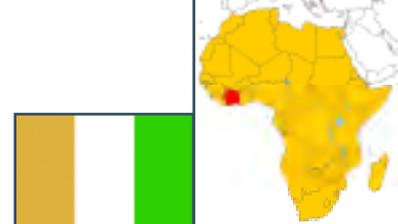


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Côte d'Ivoire



BIRTHS, DEATHS AND INEQUITY

Total population	17,872,000
Annual births	661,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	690
Annual maternal deaths	4,600

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	34
Annual number of stillbirths	23,200
Neonatal mortality rate <i>per 1,000 live births</i>	65
Annual neonatal deaths	42,800
Excess NMR for poorest vs. least poor	53%

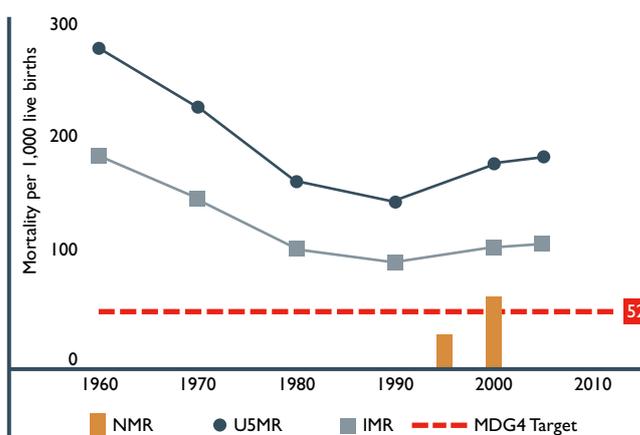
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	194
Annual under 5 deaths	128,200
Annual postnatal deaths	85,400
NMR as percentage of U5MR	33%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	4
Establishment of national MNCH task force	Yes
Birth registration coverage	72%
Number of baby-friendly hospitals	85
Midwives per 1,000 population	-
Districts with IMCI	5%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



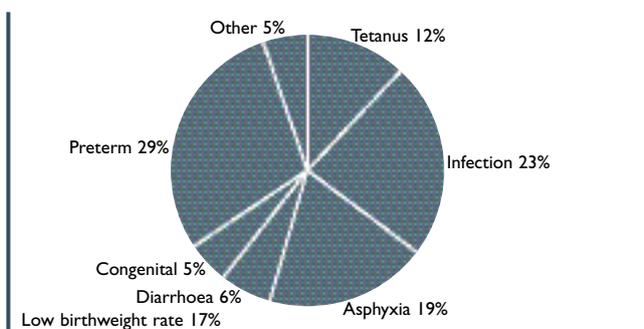
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 29,000
Range of NMR reduction	38-67%

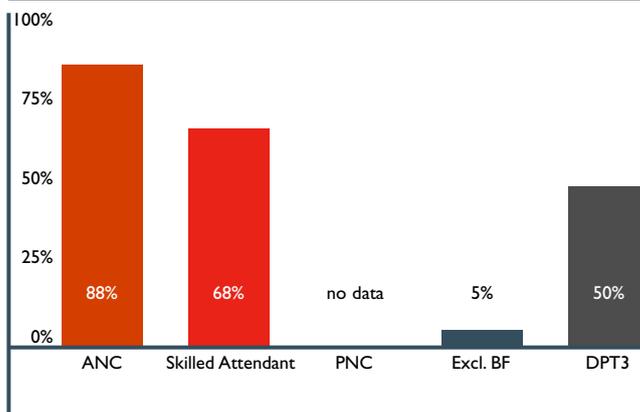
FINANCING

Gross national income, per capita (US\$)	\$770
Government spending on health, per capita (US\$)	\$8
Government spending on health	5%
Out-of-pocket spending on health	66%
User fee protection for women and children	-
Line item for newborns in national budget	-

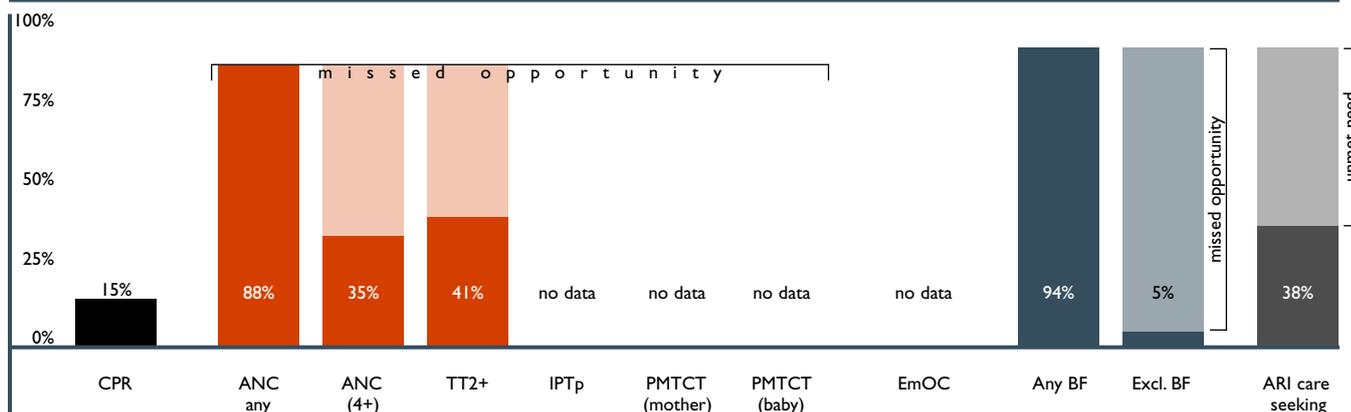
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Equatorial Guinea



BIRTHS, DEATHS AND INEQUITY

Total population	492,000
Annual births	21,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	880
Annual maternal deaths	200

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	26
Annual number of stillbirths	600
Neonatal mortality rate <i>per 1,000 live births</i>	40
Annual neonatal deaths	800
Excess NMR for poorest vs. least poor	-

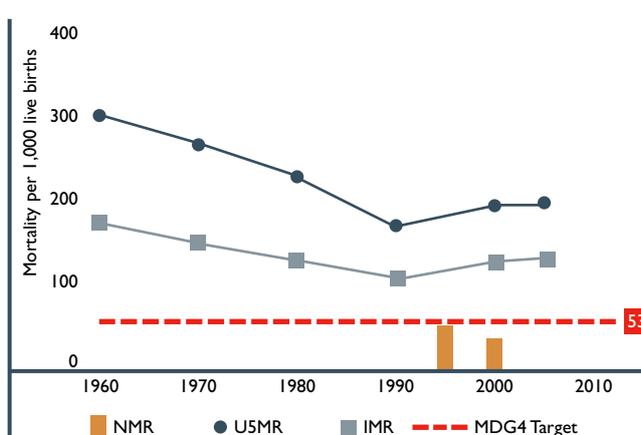
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	204
Annual under 5 deaths	4,300
Annual postnatal deaths	3,500
NMR as percentage of U5MR	20%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	4
Establishment of national MNCH task force	Yes
Birth registration coverage	32%
Number of baby-friendly hospitals	-
Midwives per 1,000 population	0.08
Districts with IMCI	22%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



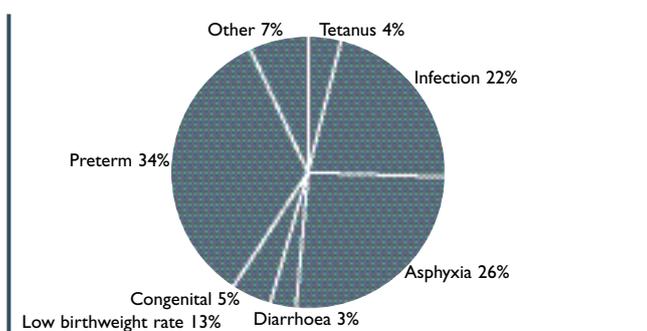
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 600
Range of NMR reduction	41-72%

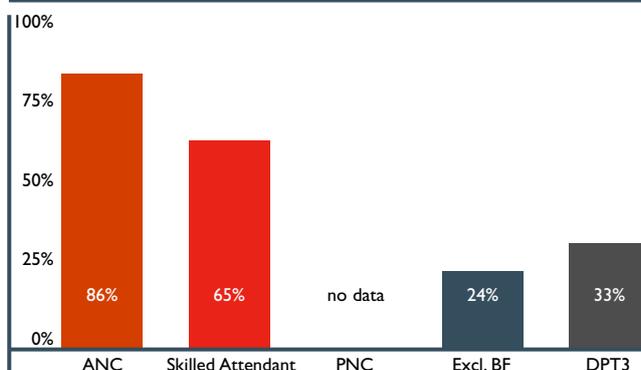
FINANCING

Gross national income, per capita (US\$)	-
Government spending on health, per capita (US\$)	\$65
Government spending on health	7%
Out-of-pocket spending on health	26%
User fee protection for women and children	-
Line item for newborns in national budget	-

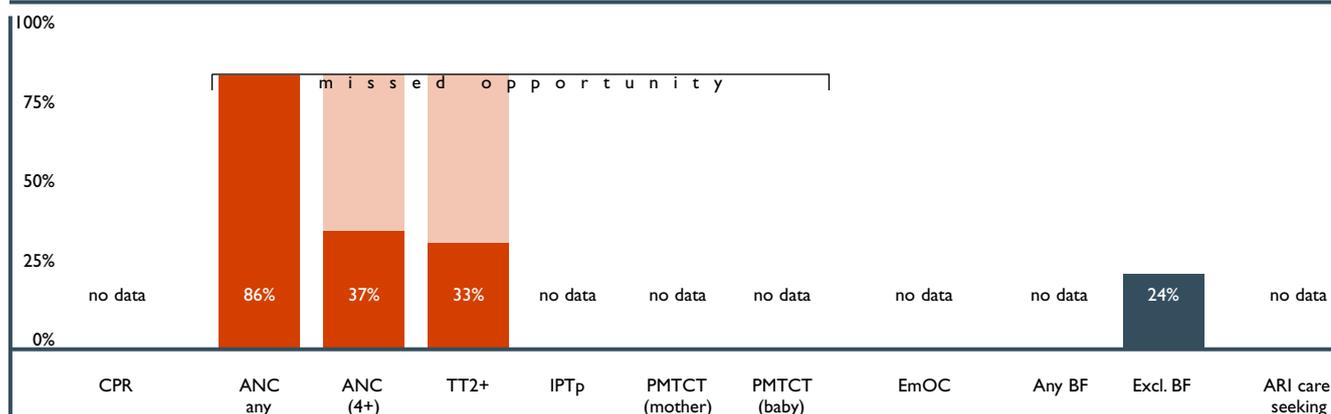
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Eritrea



BIRTHS, DEATHS AND INEQUITY

Total population	4,232,000
Annual births	166,000

MOTHERS

Maternal mortality ratio <i>per 1,000 live births</i>	630
Annual maternal deaths	1,000

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	27
Annual number of stillbirths	4,600
Neonatal mortality rate <i>per 1,000 live births</i>	24
Annual neonatal deaths	4,000
Excess NMR for poorest vs. least poor	33%

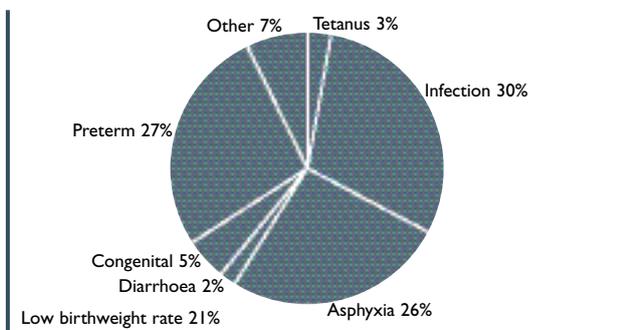
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	82
Annual under 5 deaths	13,600
Annual postnatal deaths	9,600
NMR as percentage of U5MR	29%

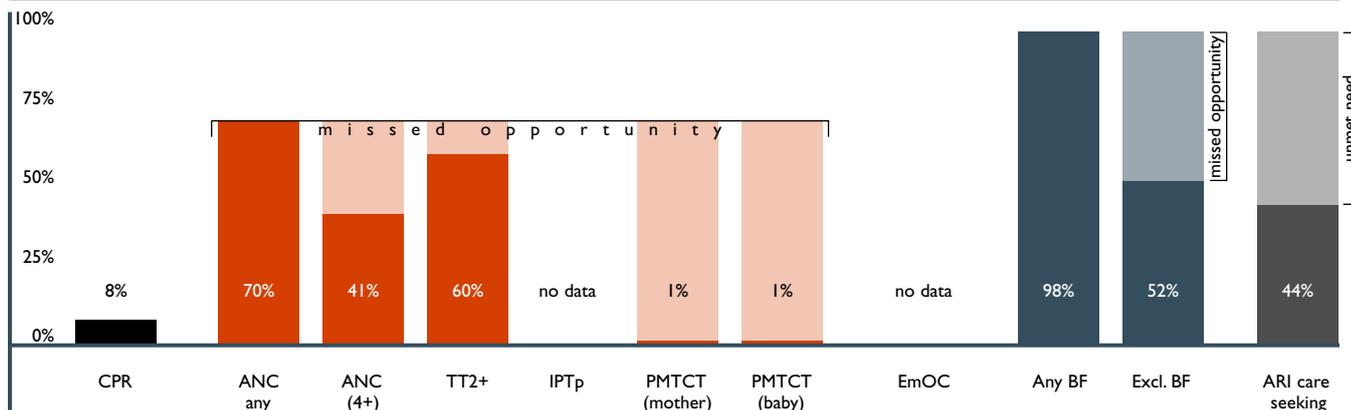
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	4
Establishment of national MNCH task force	Yes
Birth registration coverage	-
Number of baby-friendly hospitals	46
Midwives per 1,000 population	-
Districts with IMCI	36%
Elimination of neonatal tetanus	Yes

ESTIMATED CAUSES OF NEONATAL DEATHS

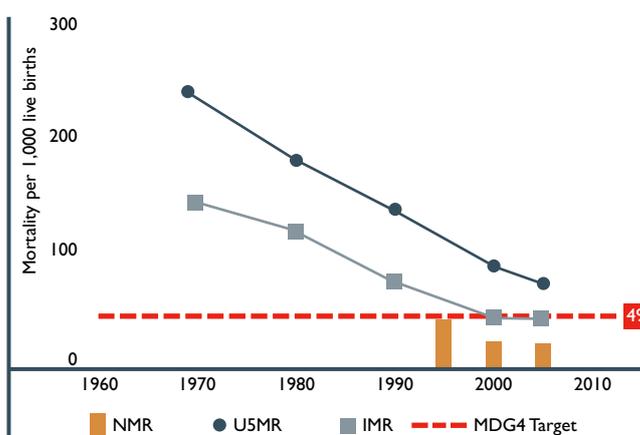


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

RATE OF PROGRESS TO MDG 4



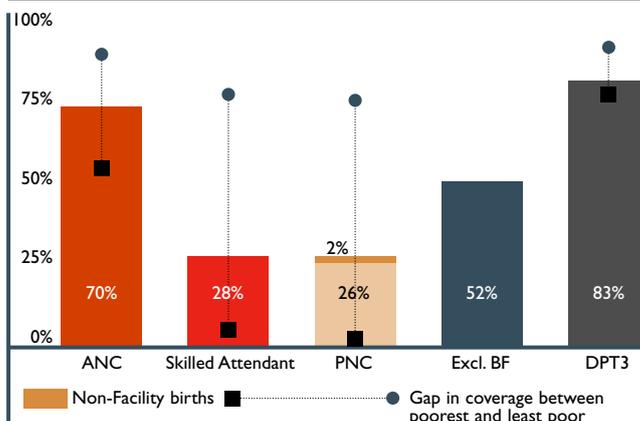
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 3,000
Range of NMR reduction	41-72%

FINANCING

Gross national income, per capita (US\$)	\$180
Government spending on health, per capita (US\$)	\$4
Government spending on health	4%
Out-of-pocket spending on health	55%
User fee protection for women and children	-
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



Ethiopia



BIRTHS, DEATHS AND INEQUITY

Total population 75,600,000
Annual births 3,064,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 850
Annual maternal deaths 26,000

BABIES

Stillbirth rate *per 1,000 deliveries* 36
Annual number of stillbirths 114,600
Neonatal mortality rate *per 1,000 live births* 39
Annual neonatal deaths 119,500
Excess NMR for poorest vs. least poor 30%

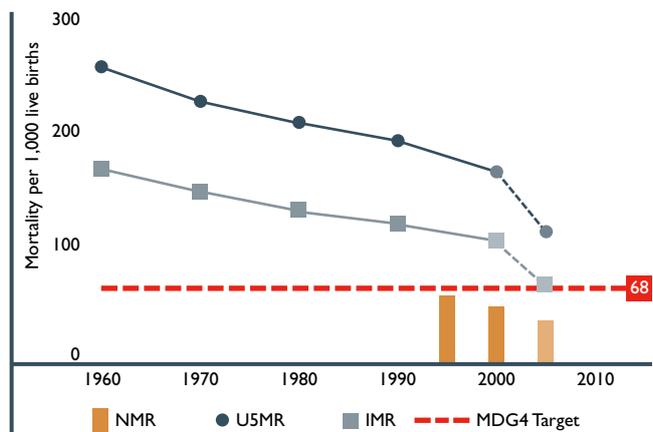
CHILDREN

Under 5 mortality rate *per 1,000 live births* 123
Annual under 5 deaths 376,900
Annual postnatal deaths 257,400
NMR as percentage of U5MR 32%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 4
Establishment of national MNCH task force Yes
Birth registration coverage -
Number of baby-friendly hospitals -
Midwives per 1,000 population 0.01
Districts with IMCI 19%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



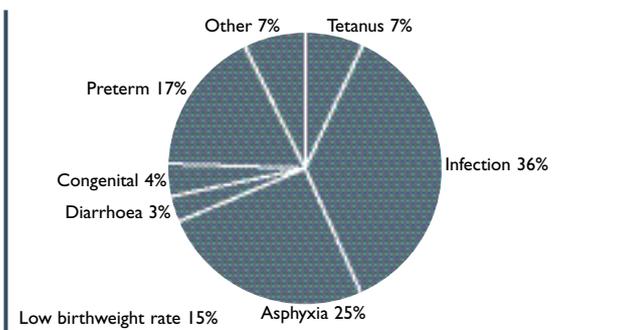
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 85,600
Range of NMR reduction 45-74%

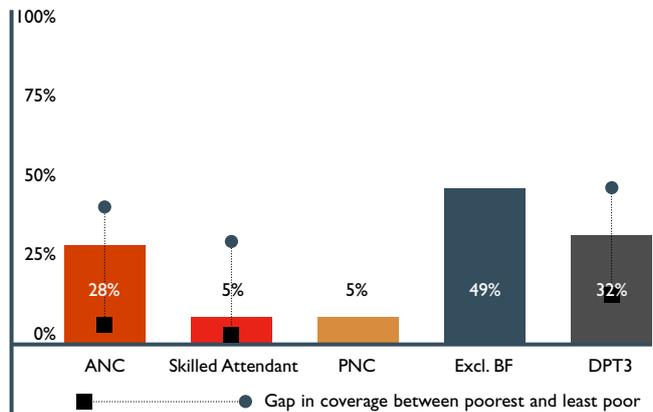
FINANCING

Gross national income, per capita (US\$) \$110
Government spending on health, per capita (US\$) \$3
Government spending on health 10%
Out-of-pocket spending on health 33%
User fee protection for women and children No
Line item for newborns in national budget Yes

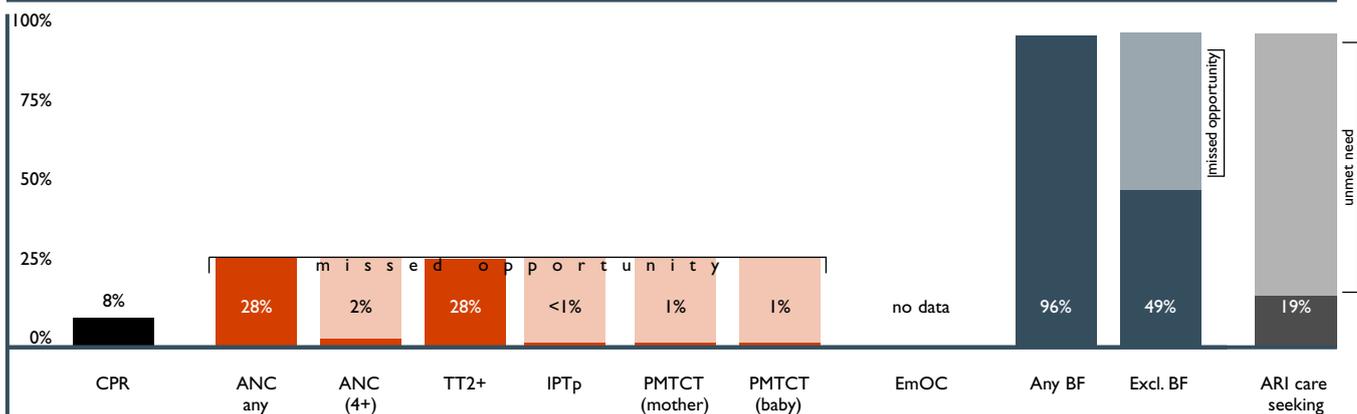
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

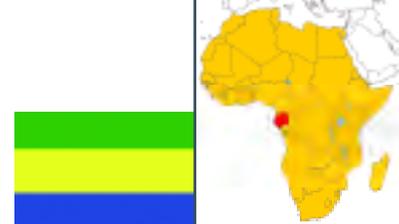


MISSED OPPORTUNITIES



See page 226 for data sources and notes. For this country, the most recent MMR, U5MR, IMR, and NMR are from unadjusted DHS data.

Gabon



BIRTHS, DEATHS AND INEQUITY

Total population	1,362,000
Annual births	42,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	420
Annual maternal deaths	200

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	19
Annual number of stillbirths	800
Neonatal mortality rate <i>per 1,000 live births</i>	31
Annual neonatal deaths	1,300
Excess NMR for poorest vs. least poor	20%

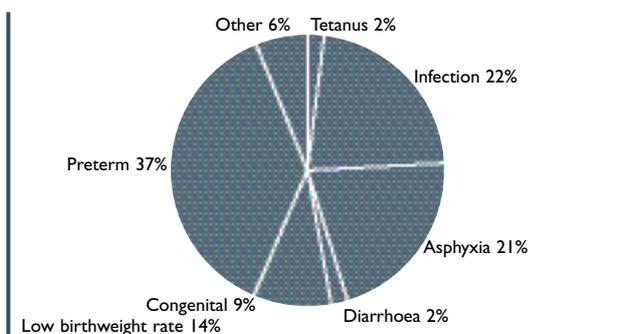
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	91
Annual under 5 deaths	3,800
Annual postnatal deaths	2,500
NMR as percentage of USMR	34%

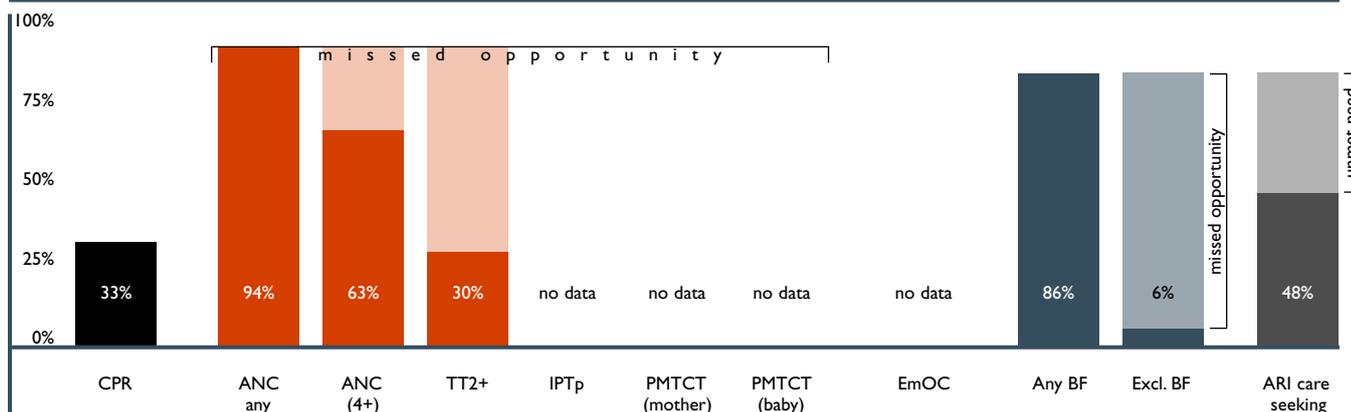
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	1
Establishment of national MNCH task force	No
Birth registration coverage	89%
Number of baby-friendly hospitals	2
Midwives per 1,000 population	-
Districts with IMCI	8%
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS

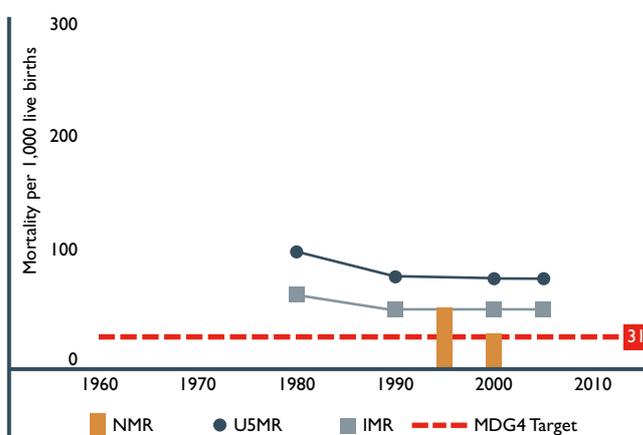


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

RATE OF PROGRESS TO MDG 4



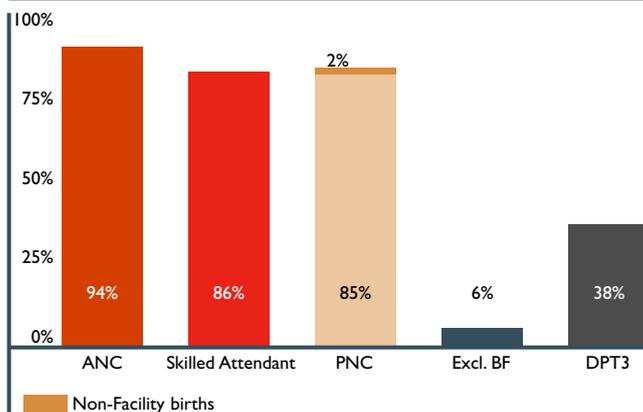
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 500
Range of NMR reduction	20-43%

FINANCING

Gross national income, per capita (US\$)	\$3,940
Government spending on health, per capita (US\$)	\$130
Government spending on health	13%
Out-of-pocket spending on health	33%
User fee protection for women and children	-
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



Gambia



BIRTHS, DEATHS AND INEQUITY

Total population	1,478,000
Annual births	52,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	540
Annual maternal deaths	300

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	27
Annual number of stillbirths	1,500
Neonatal mortality rate <i>per 1,000 live births</i>	46
Annual neonatal deaths	2,400
Excess NMR for poorest vs. least poor	-

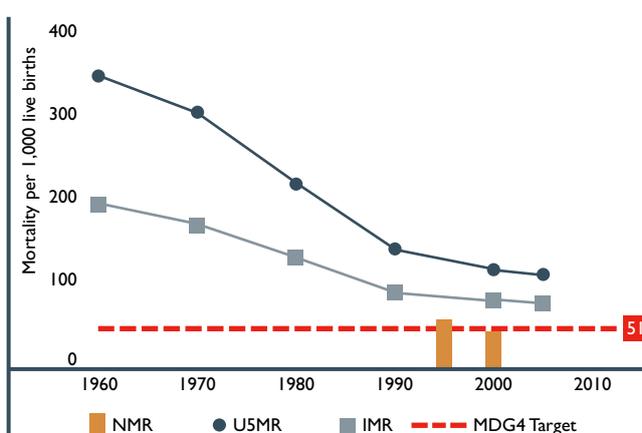
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	122
Annual under 5 deaths	6,300
Annual postnatal deaths	3,900
NMR as percentage of U5MR	38%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	6
Establishment of national MNCH task force	Yes
Birth registration coverage	32%
Number of baby-friendly hospitals	-
Midwives per 1,000 population	0.11
Districts with IMCI	100%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



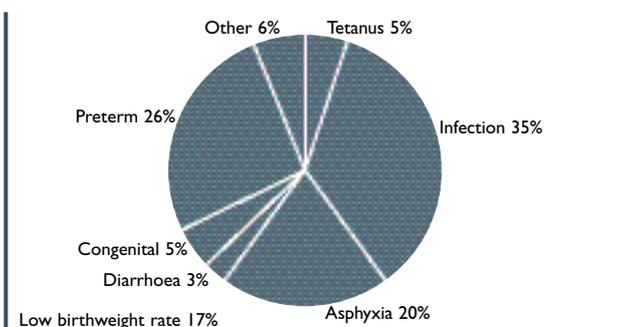
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 1,600
Range of NMR reduction	36-68%

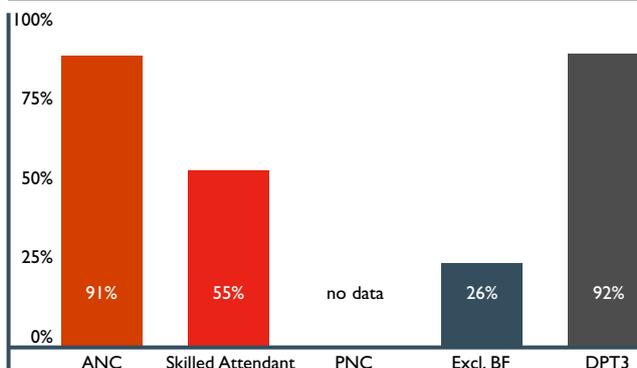
FINANCING

Gross national income, per capita (US\$)	\$290
Government spending on health, per capita (US\$)	\$8
Government spending on health	14%
Out-of-pocket spending on health	40%
User fee protection for women and children	Yes
Line item for newborns in national budget	-

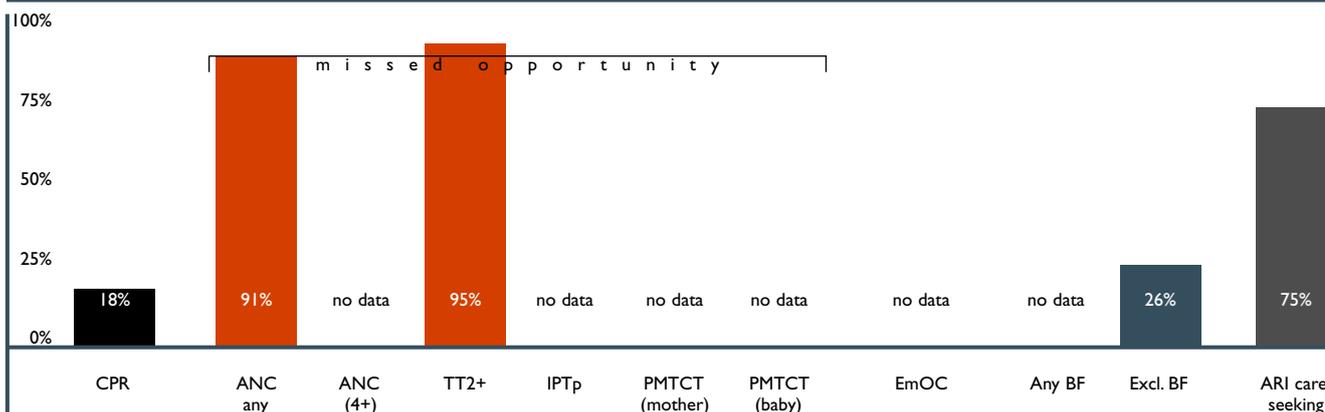
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Ghana



BIRTHS, DEATHS AND INEQUITY

Total population 21,664,000
Annual births 679,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 540
Annual maternal deaths 3,700

BABIES

Stillbirth rate *per 1,000 deliveries* 24
Annual number of stillbirths 16,300
Neonatal mortality rate *per 1,000 live births* 43
Annual neonatal deaths 29,200
Excess NMR for poorest vs. least poor -

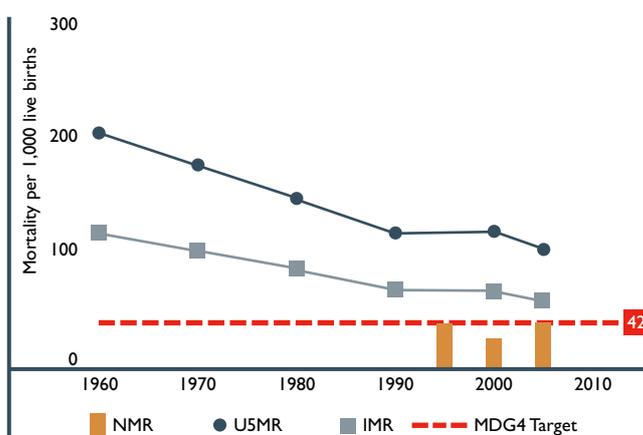
CHILDREN

Under 5 mortality rate *per 1,000 live births* 111
Annual under 5 deaths 75,400
Annual postnatal deaths 46,200
NMR as percentage of U5MR 39%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 3
Establishment of national MNCH task force No
Birth registration coverage 21%
Number of baby-friendly hospitals 19
Midwives per 1,000 population -
Districts with IMCI 30%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



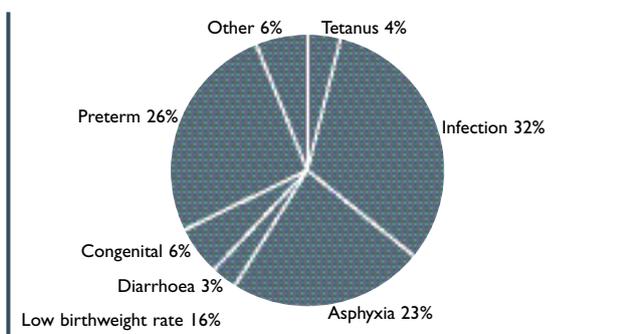
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 19,400
Range of NMR reduction 35-66%

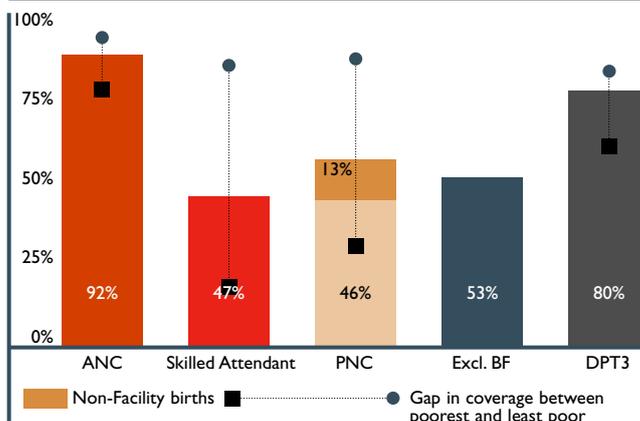
FINANCING

Gross national income, per capita (US\$) \$380
Government spending on health, per capita (US\$) \$5
Government spending on health 5%
Out-of-pocket spending on health 68%
User fee protection for women and children No
Line item for newborns in national budget -

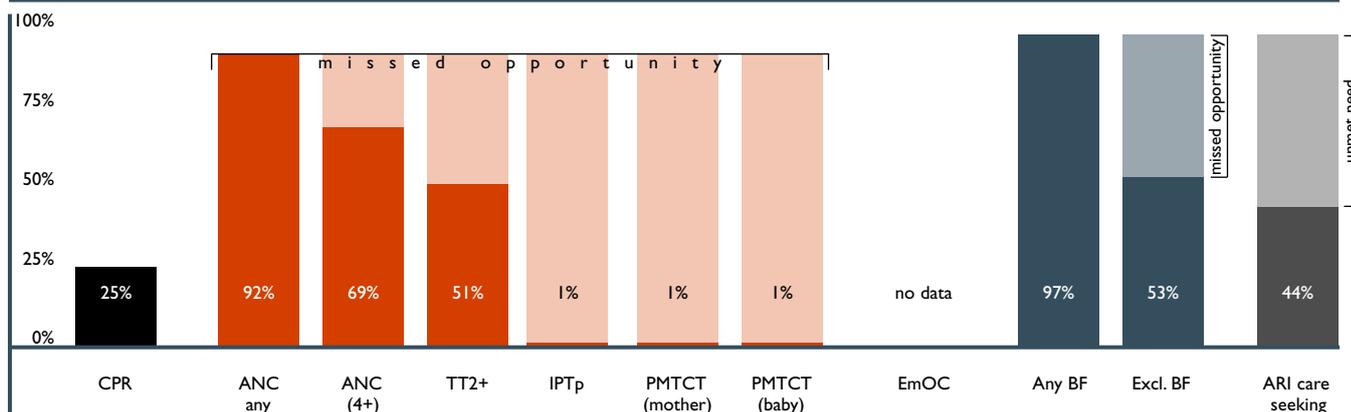
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

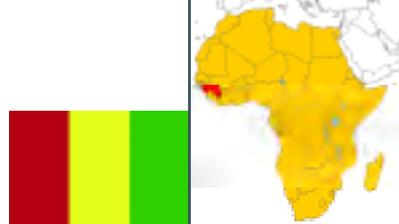


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Guinea



BIRTHS, DEATHS AND INEQUITY

Total population 9,202,000
Annual births 383,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 980
Annual maternal deaths 3,700

BABIES

Stillbirth rate *per 1,000 deliveries* 28
Annual number of stillbirths 11,200
Neonatal mortality rate *per 1,000 live births* 39
Annual neonatal deaths 15,000
Excess NMR for poorest vs. least poor 58%

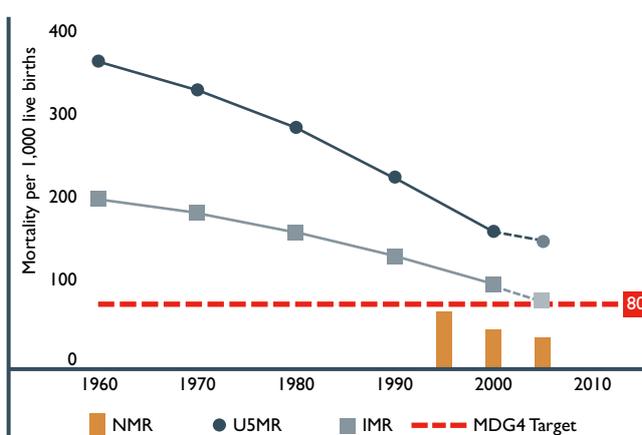
CHILDREN

Under 5 mortality rate *per 1,000 live births* 163
Annual under 5 deaths 62,400
Annual postnatal deaths 47,400
NMR as percentage of U5MR 24%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 8
Establishment of national MNCH task force Yes
Birth registration coverage 67%
Number of baby-friendly hospitals 3
Midwives per 1,000 population 0.01
Districts with IMCI 6%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



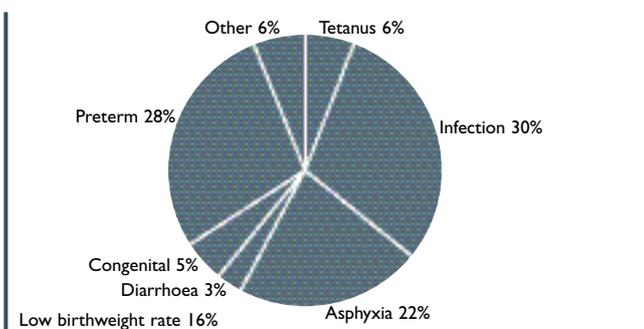
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 13,100
Range of NMR reduction 40-70%

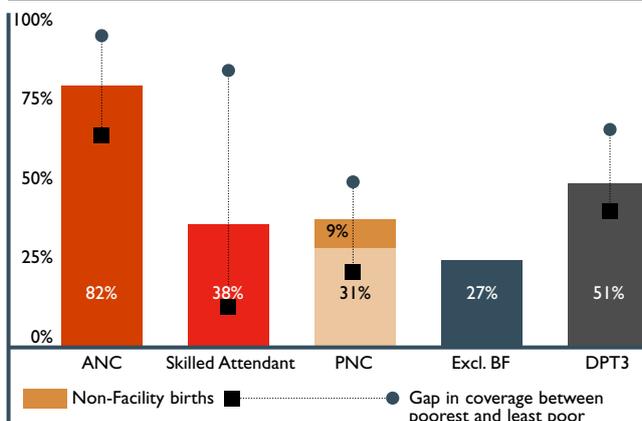
FINANCING

Gross national income, per capita (US\$) \$460
Government spending on health, per capita (US\$) \$4
Government spending on health 5%
Out-of-pocket spending on health 83%
User fee protection for women and children -
Line item for newborns in national budget -

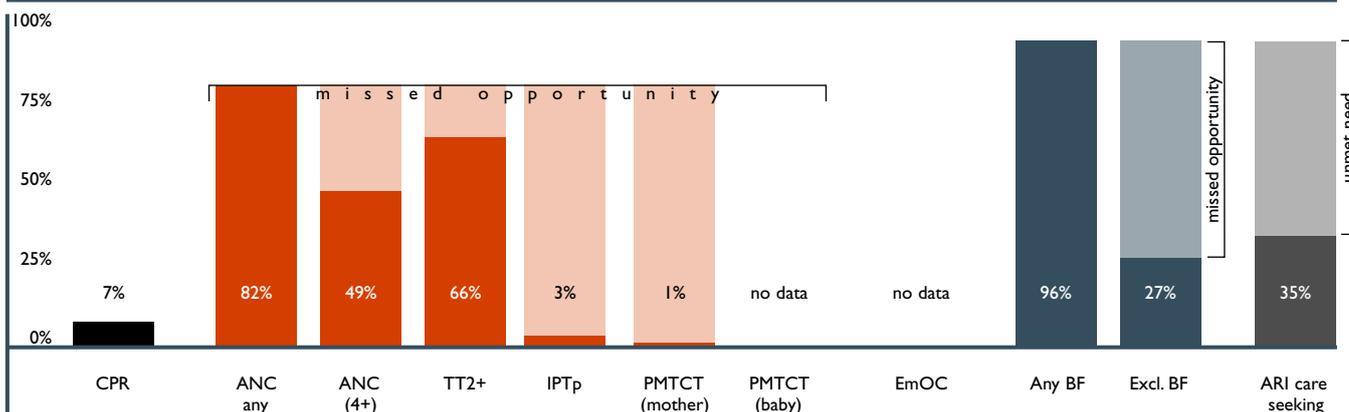
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

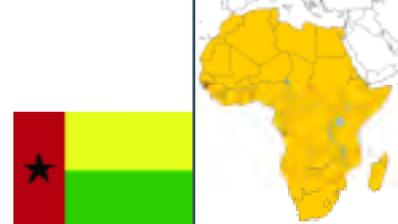


MISSED OPPORTUNITIES



See page 226 for data sources and notes. For this country, the most recent MMR, U5MR, IMR, and NMR are from unadjusted DHS data.

Guinea-Bissau



BIRTHS, DEATHS AND INEQUITY

Total population	1,540,000
Annual births	77,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,100
Annual maternal deaths	800

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	35
Annual number of stillbirths	2,800
Neonatal mortality rate <i>per 1,000 live births</i>	48
Annual neonatal deaths	3,700
Excess NMR for poorest vs. least poor	-

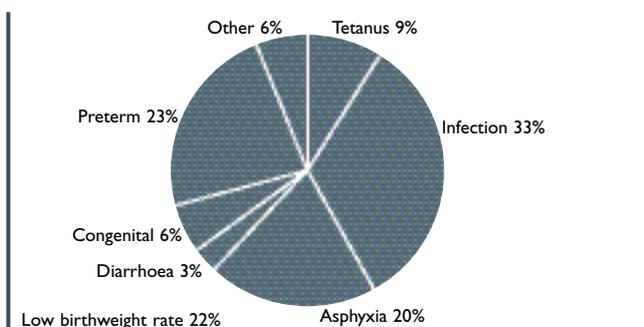
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	203
Annual under 5 deaths	15,600
Annual postnatal deaths	11,900
NMR as percentage of U5MR	24%

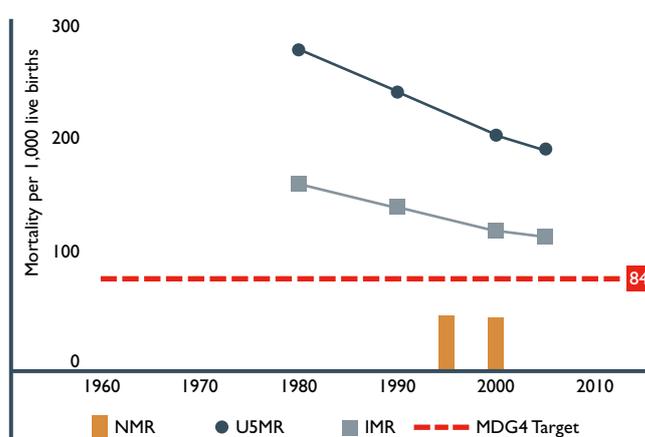
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	-
Establishment of national MNCH task force	No
Birth registration coverage	42%
Number of baby-friendly hospitals	-
Midwives per 1,000 population	0.02
Districts with IMCI	4%
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS



RATE OF PROGRESS TO MDG 4



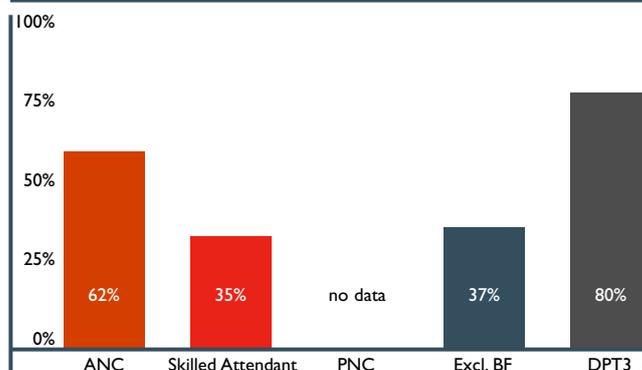
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 2,600
Range of NMR reduction	37-68%

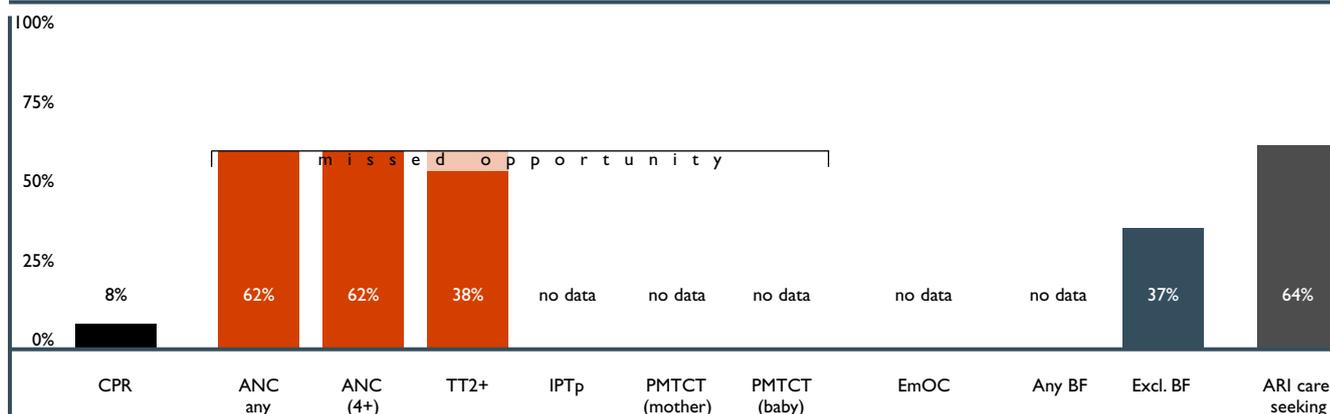
FINANCING

Gross national income, per capita (US\$)	\$160
Government spending on health, per capita (US\$)	\$4
Government spending on health	7%
Out-of-pocket spending on health	43%
User fee protection for women and children	-
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Kenya



BIRTHS, DEATHS AND INEQUITY

Total population 33,467,000
Annual births 1,322,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 1,000
Annual maternal deaths 13,200

BABIES

Stillbirth rate *per 1,000 deliveries* 45
Annual number of stillbirths 61,400
Neonatal mortality rate *per 1,000 live births* 33
Annual neonatal deaths 43,600
Excess NMR for poorest vs. least poor 32%

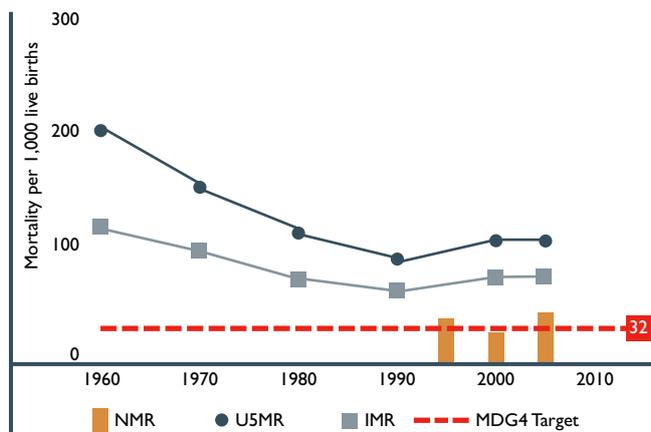
CHILDREN

Under 5 mortality rate *per 1,000 live births* 120
Annual under 5 deaths 158,600
Annual postnatal deaths 115,000
NMR as percentage of U5MR 28%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 5
Establishment of national MNCH task force Yes
Birth registration coverage 48%
Number of baby-friendly hospitals 232
Midwives per 1,000 population -
Districts with IMCI 22%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



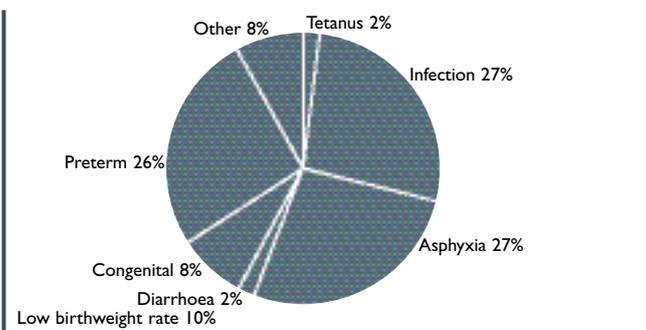
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 29,800
Range of NMR reduction 34-65%

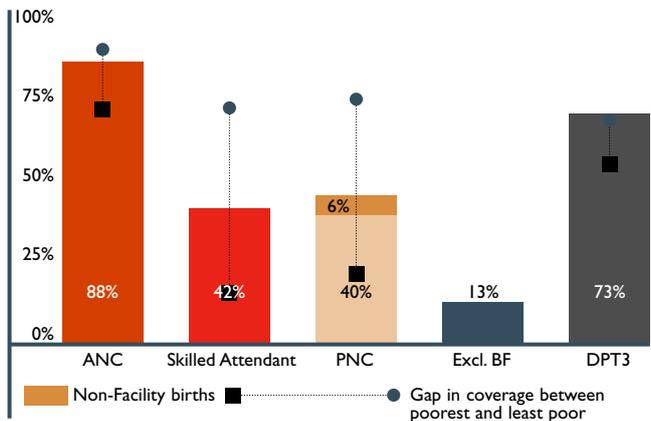
FINANCING

Gross national income, per capita (US\$) \$460
Government spending on health, per capita (US\$) \$8
Government spending on health 7%
Out-of-pocket spending on health 51%
User fee protection for women and children Partial
Line item for newborns in national budget -

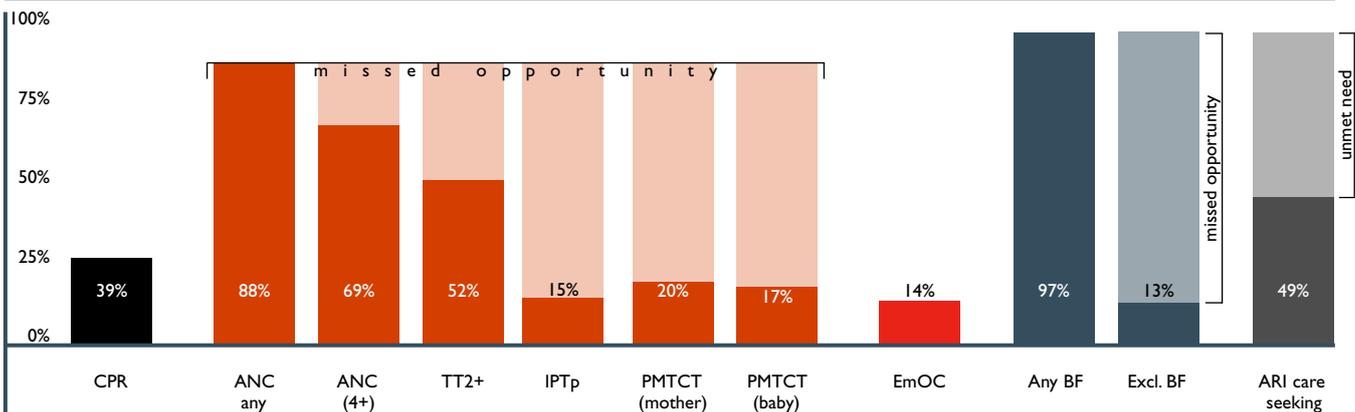
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Lesotho



BIRTHS, DEATHS AND INEQUITY

Total population	1,798,000
Annual births	50,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	550
Annual maternal deaths	300

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	23
Annual number of stillbirths	1,200
Neonatal mortality rate <i>per 1,000 live births</i>	46
Annual neonatal deaths	2,300
Excess NMR for poorest vs. least poor	104%

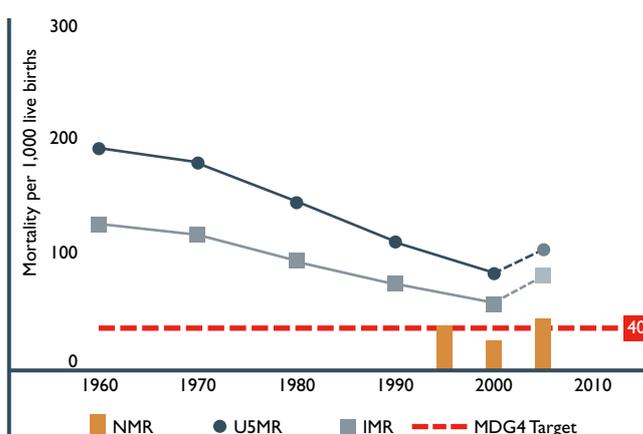
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	113
Annual under 5 deaths	5,700
Annual postnatal deaths	3,400
NMR as percentage of U5MR	41%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	7, in process
Establishment of national MNCH task force	Yes
Birth registration coverage	51%
Number of baby-friendly hospitals	7
Midwives per 1,000 population	-
Districts with IMCI	60%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



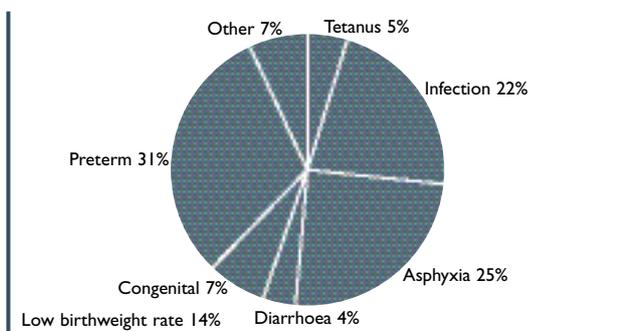
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 1,300
Range of NMR reduction	29-59%

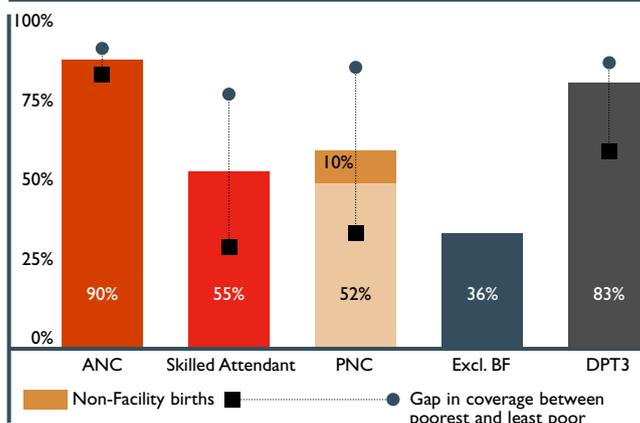
FINANCING

Gross national income, per capita (US\$)	\$740
Government spending on health, per capita (US\$)	\$25
Government spending on health	10%
Out-of-pocket spending on health	4%
User fee protection for women and children	No
Line item for newborns in national budget	-

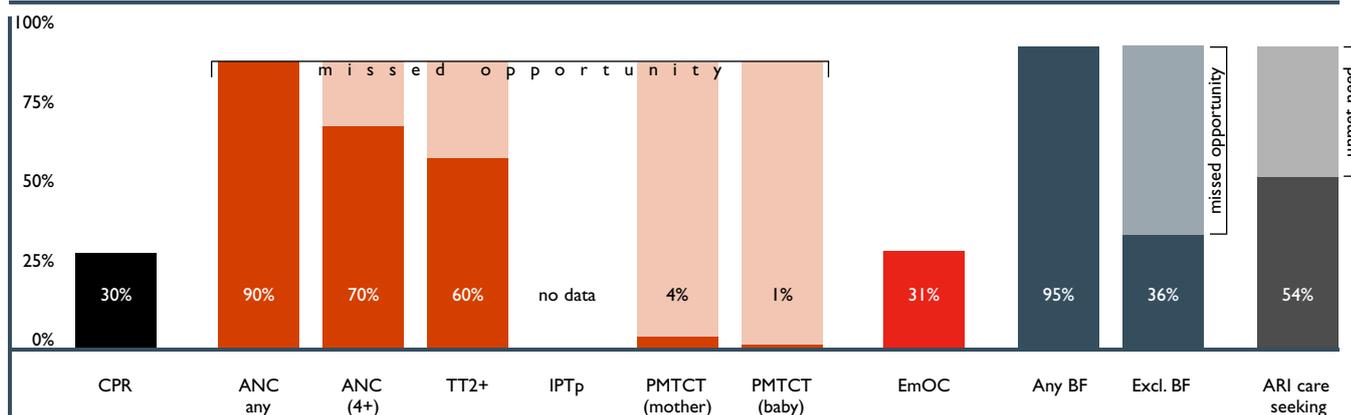
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See page 226 for data sources and notes. For this country, the most recent MMR, U5MR, IMR, and NMR are from unadjusted DHS data.

Liberia



BIRTHS, DEATHS AND INEQUITY

Total population	3,241,000
Annual births	164,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	760
Annual maternal deaths	1,200

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	32
Annual number of stillbirths	5,400
Neonatal mortality rate <i>per 1,000 live births</i>	66
Annual neonatal deaths	10,800
Excess NMR for poorest vs. least poor	-

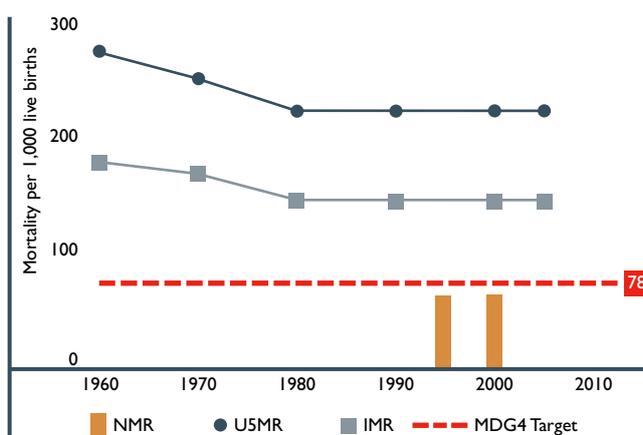
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	235
Annual under 5 deaths	38,500
Annual postnatal deaths	27,700
NMR as percentage of U5MR	28%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	-
Establishment of national MNCH task force	No
Birth registration coverage	-
Number of baby-friendly hospitals	2
Midwives per 1,000 population	0.12
Districts with IMCI	-
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



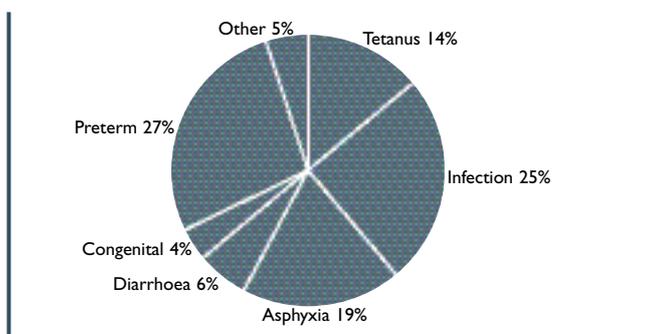
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 8,200
Range of NMR reduction	44-73%

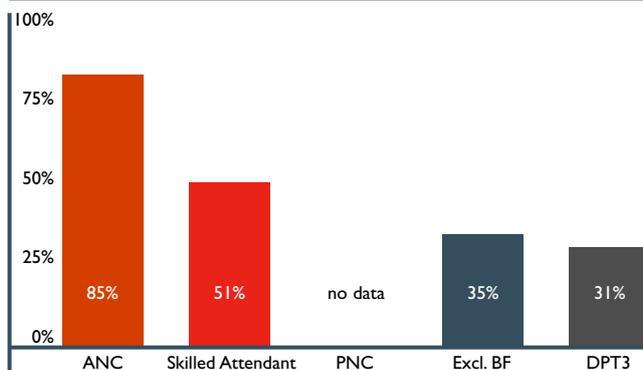
FINANCING

Gross national income, per capita (US\$)	\$110
Government spending on health, per capita (US\$)	\$4
Government spending on health	18%
Out-of-pocket spending on health	43%
User fee protection for women and children	Partial
Line item for newborns in national budget	-

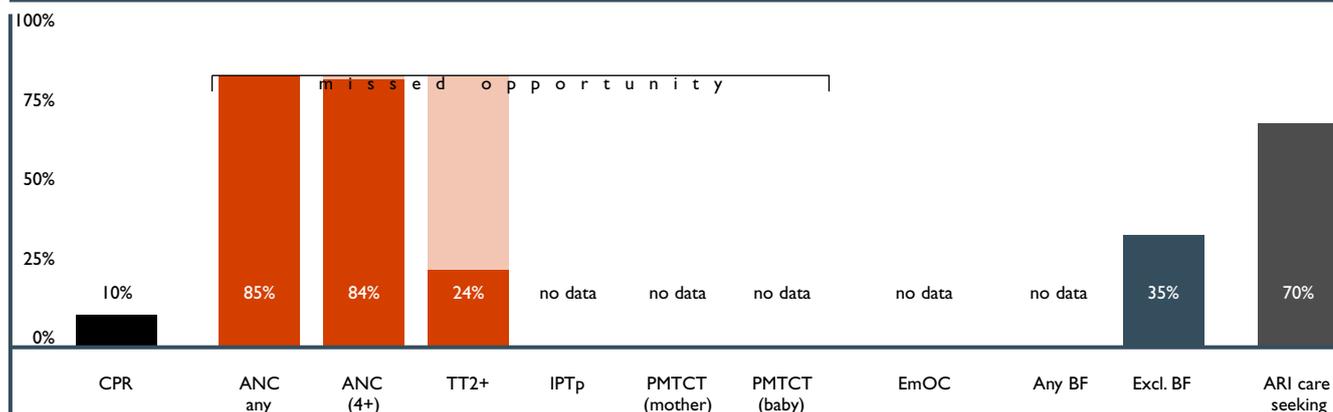
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Madagascar



BIRTHS, DEATHS AND INEQUITY

Total population	18,113,000
Annual births	704,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	550
Annual maternal deaths	3,900

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	29
Annual number of stillbirths	20,800
Neonatal mortality rate <i>per 1,000 live births</i>	32
Annual neonatal deaths	22,500
Excess NMR for poorest vs. least poor	127%

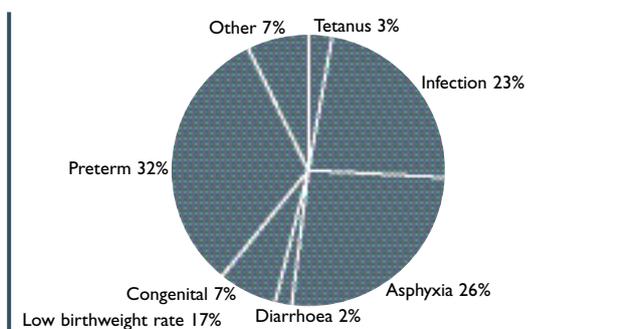
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	123
Annual under 5 deaths	86,600
Annual postnatal deaths	64,100
NMR as percentage of U5MR	26%

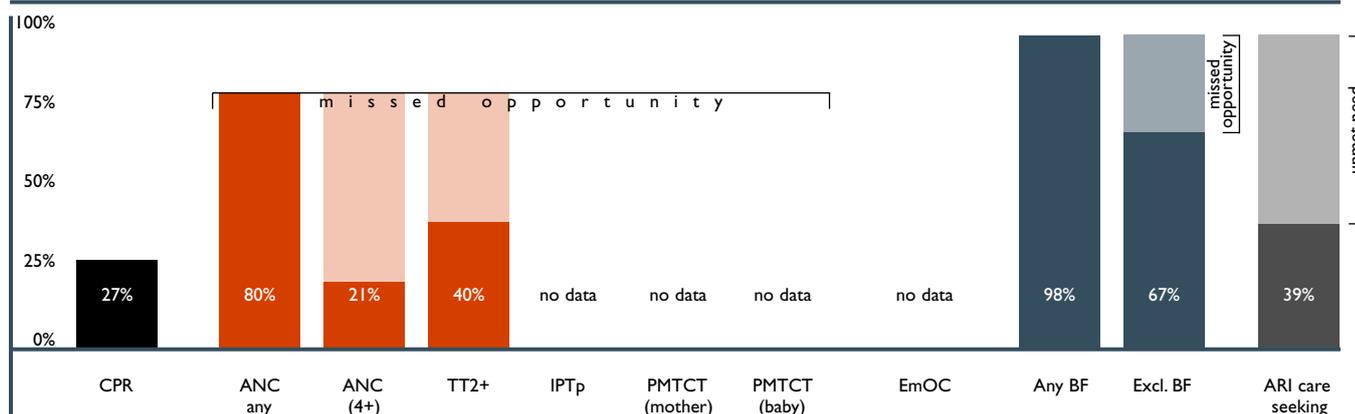
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	6
Establishment of national MNCH task force	Yes
Birth registration coverage	75%
Number of baby-friendly hospitals	53
Midwives per 1,000 population	-
Districts with IMCI	79%
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS

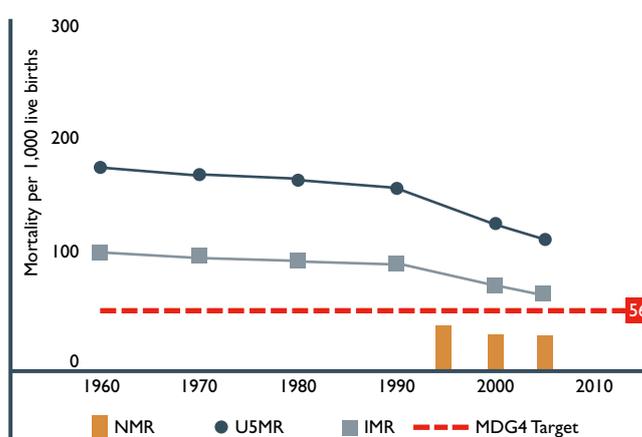


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

RATE OF PROGRESS TO MDG 4



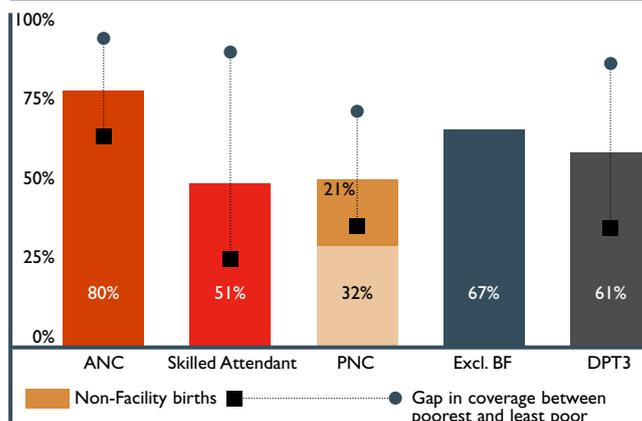
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 15,200
Range of NMR reduction	36-66%

FINANCING

Gross national income, per capita (US\$)	\$300
Government spending on health, per capita (US\$)	\$5
Government spending on health	9%
Out-of-pocket spending on health	34%
User fee protection for women and children	Yes
Line item for newborns in national budget	No

COVERAGE ALONG THE CONTINUUM OF CARE



Malawi



BIRTHS, DEATHS AND INEQUITY

Total population 12,608,000
Annual births 550,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 984
Annual maternal deaths 5,400

BABIES

Stillbirth rate *per 1,000 deliveries* 39
Annual number of stillbirths 22,200
Neonatal mortality rate *per 1,000 live births* 27
Annual neonatal deaths 14,900
Excess NMR for poorest vs. least poor 24%

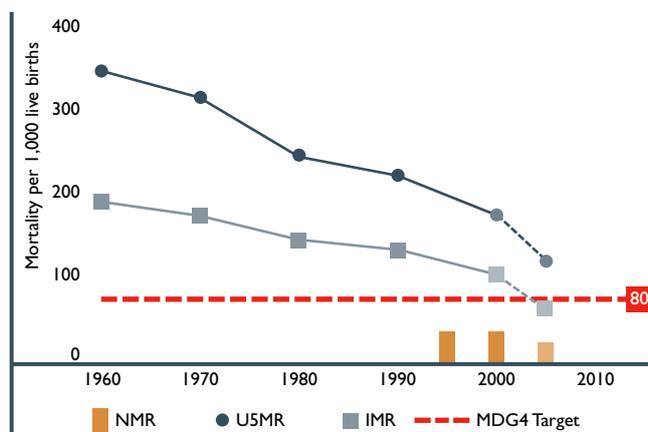
CHILDREN

Under 5 mortality rate *per 1,000 live births* 133
Annual under 5 deaths 73,200
Annual postnatal deaths 58,300
NMR as percentage of U5MR 20%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 5
Establishment of national MNCH task force Yes
Birth registration coverage -
Number of baby-friendly hospitals 7
Midwives per 1,000 population -
Districts with IMCI 64%
Elimination of neonatal tetanus Yes

RATE OF PROGRESS TO MDG 4



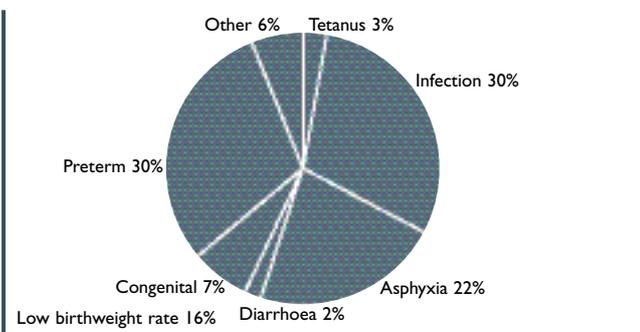
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 8,900
Range of NMR reduction 29-59%

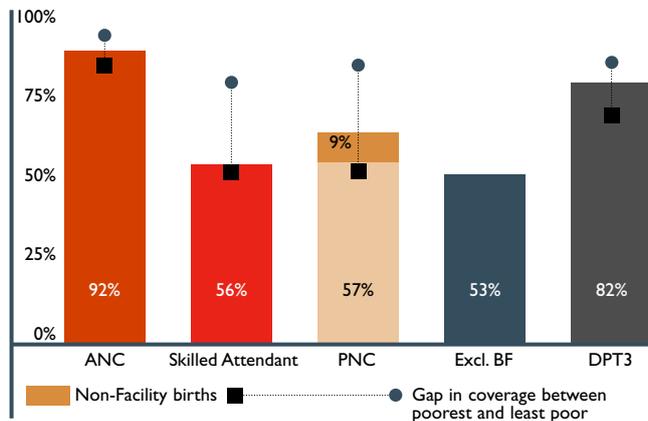
FINANCING

Gross national income, per capita (US\$) \$170
Government spending on health, per capita (US\$) \$5
Government spending on health 9%
Out-of-pocket spending on health 28%
User fee protection for women and children Partial
Line item for newborns in national budget Partial

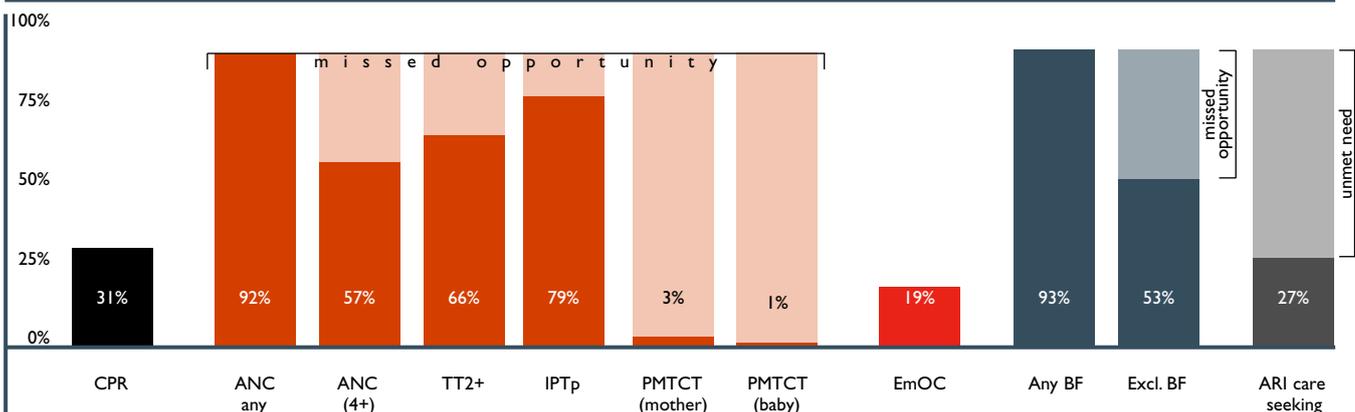
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



Mali



BIRTHS, DEATHS AND INEQUITY

Total population 13,124,000
Annual births 647,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 1,200
Annual maternal deaths 7,800

BABIES

Stillbirth rate *per 1,000 deliveries* 24
Annual number of stillbirths 15,900
Neonatal mortality rate *per 1,000 live births* 57
Annual neonatal deaths 36,900
Excess NMR for poorest vs. least poor 34%

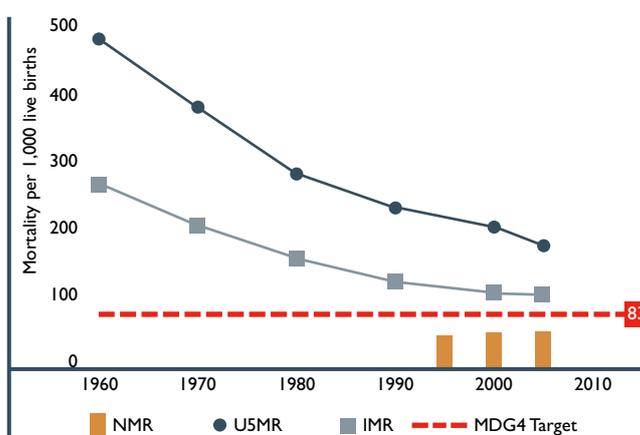
CHILDREN

Under 5 mortality rate *per 1,000 live births* 219
Annual under 5 deaths 141,700
Annual postnatal deaths 104,800
NMR as percentage of U5MR 26%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 3
Establishment of national MNCH task force No
Birth registration coverage 48%
Number of baby-friendly hospitals 12
Midwives per 1,000 population 0.04
Districts with IMCI 14%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



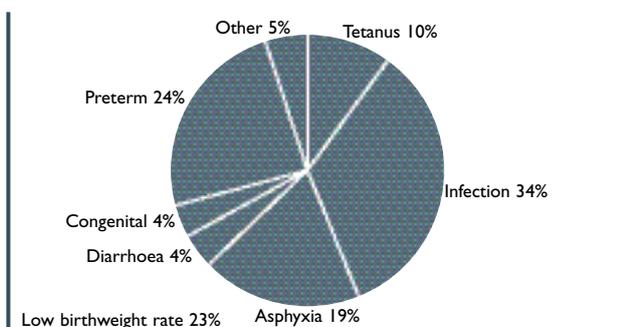
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 27,600
Range of NMR reduction 41-72%

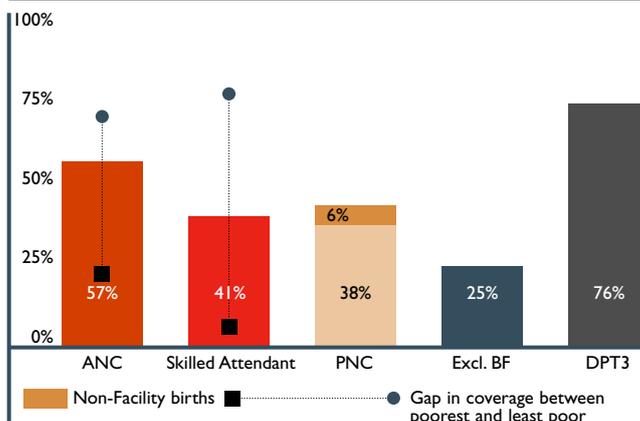
FINANCING

Gross national income, per capita (US\$) \$360
Government spending on health, per capita (US\$) \$9
Government spending on health 9%
Out-of-pocket spending on health 38%
User fee protection for women and children -
Line item for newborns in national budget -

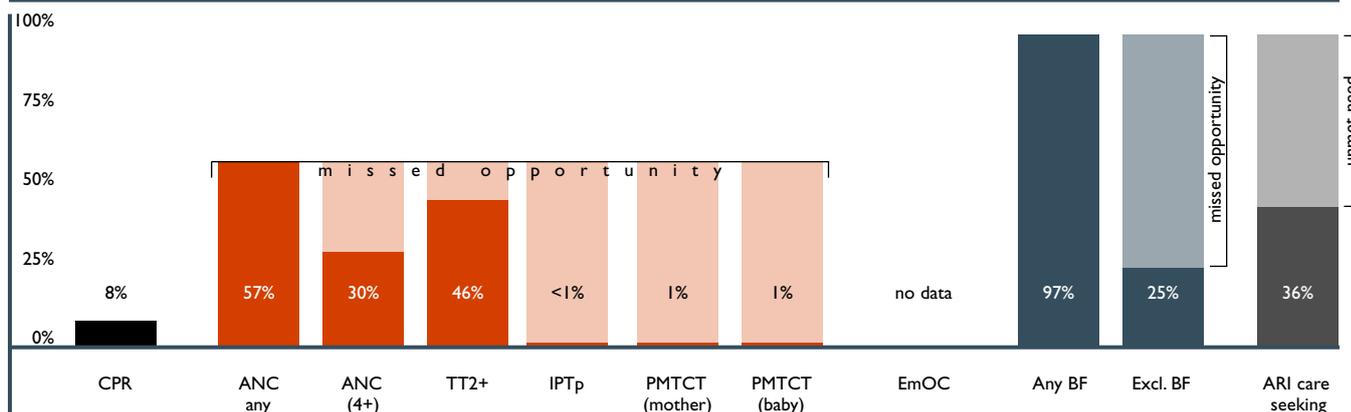
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

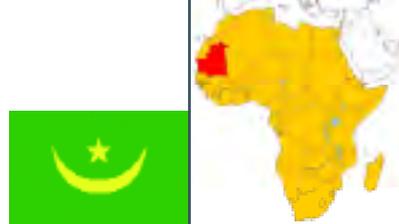


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Mauritania



BIRTHS, DEATHS AND INEQUITY

Total population	2,980,000
Annual births	123,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,000
Annual maternal deaths	1,200

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	30
Annual number of stillbirths	3,800
Neonatal mortality rate <i>per 1,000 live births</i>	40
Annual neonatal deaths	4,900
Excess NMR for poorest vs. least poor	-

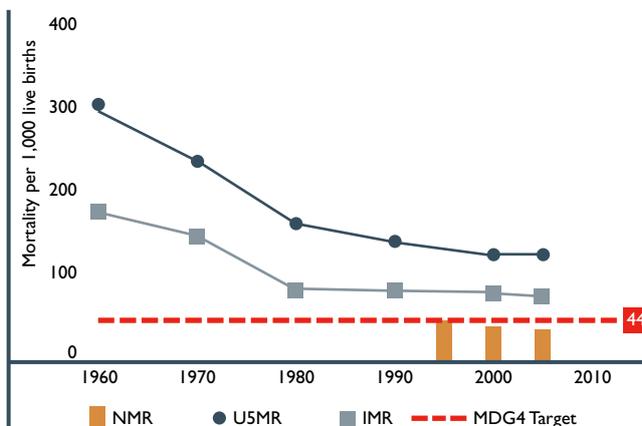
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	125
Annual under 5 deaths	15,100
Annual postnatal deaths	10,200
NMR as percentage of U5MR	33%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	I
Establishment of national MNCH task force	No
Birth registration coverage	55%
Number of baby-friendly hospitals	I
Midwives per 1,000 population	-
Districts with IMCI	4%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



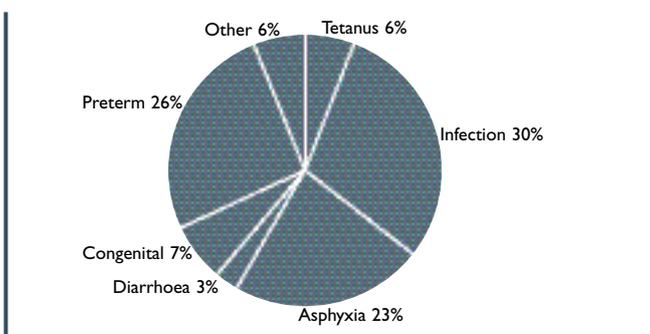
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 3,400
Range of NMR reduction	38-68%

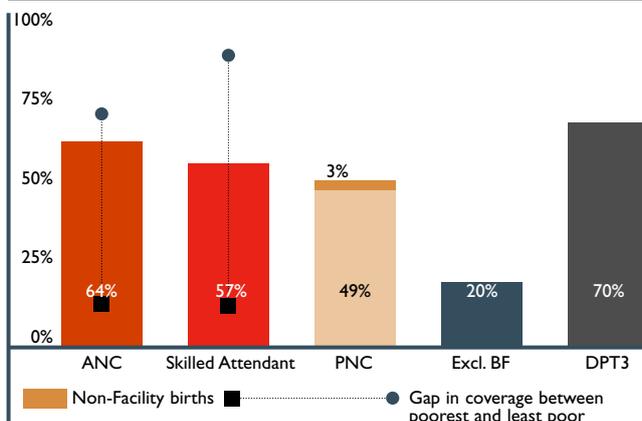
FINANCING

Gross national income, per capita (US\$)	\$420
Government spending on health, per capita (US\$)	\$13
Government spending on health	14%
Out-of-pocket spending on health	23%
User fee protection for women and children	-
Line item for newborns in national budget	-

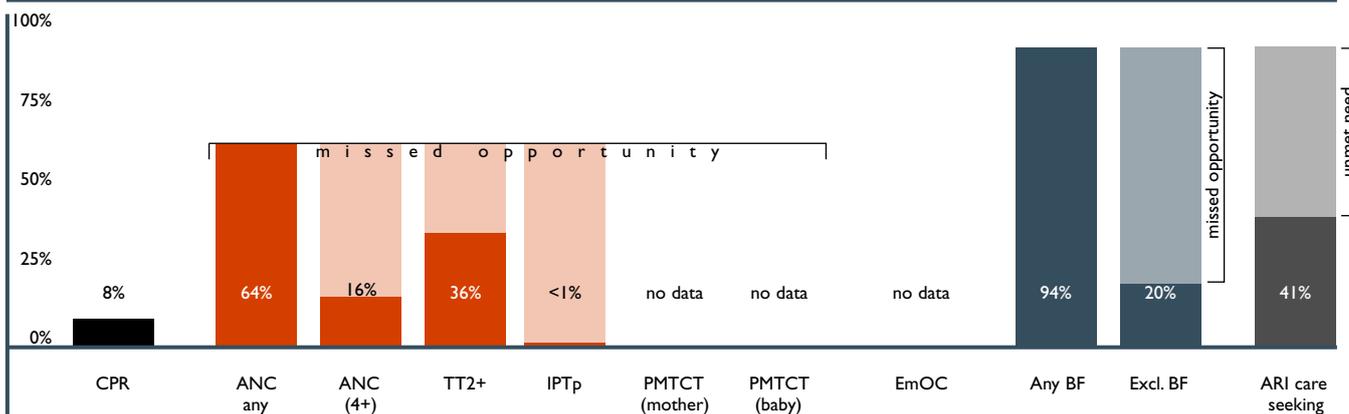
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Mauritius



V

BIRTHS, DEATHS AND INEQUITY

Total population	1,233,000
Annual births	20,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	24
Annual maternal deaths	-

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	11
Annual number of stillbirths	200
Neonatal mortality rate <i>per 1,000 live births</i>	12
Annual neonatal deaths	200
Excess NMR for poorest vs. least poor	-

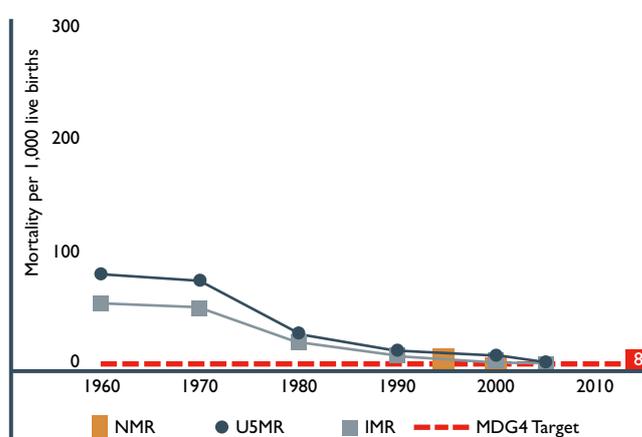
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	15
Annual under 5 deaths	300
Annual postnatal deaths	100
NMR as percentage of USMR	78%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	-
Establishment of national MNCH task force	No
Birth registration coverage	-
Number of baby-friendly hospitals	6
Midwives per 1,000 population	0.04
Districts with IMCI	-
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



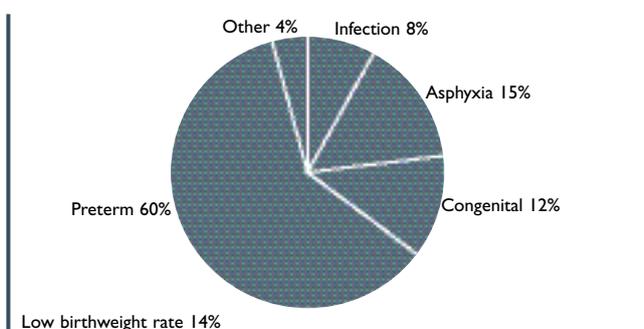
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	-
Range of NMR reduction	-

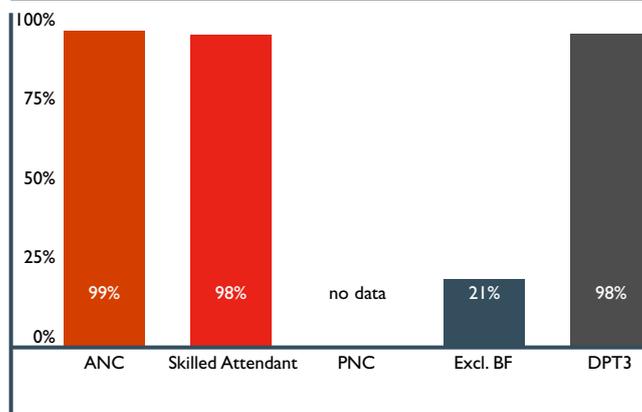
FINANCING

Gross national income, per capita (US\$)	\$4,640
Government spending on health, per capita (US\$)	\$105
Government spending on health	9%
Out-of-pocket spending on health	39%
User fee protection for women and children	-
Line item for newborns in national budget	-

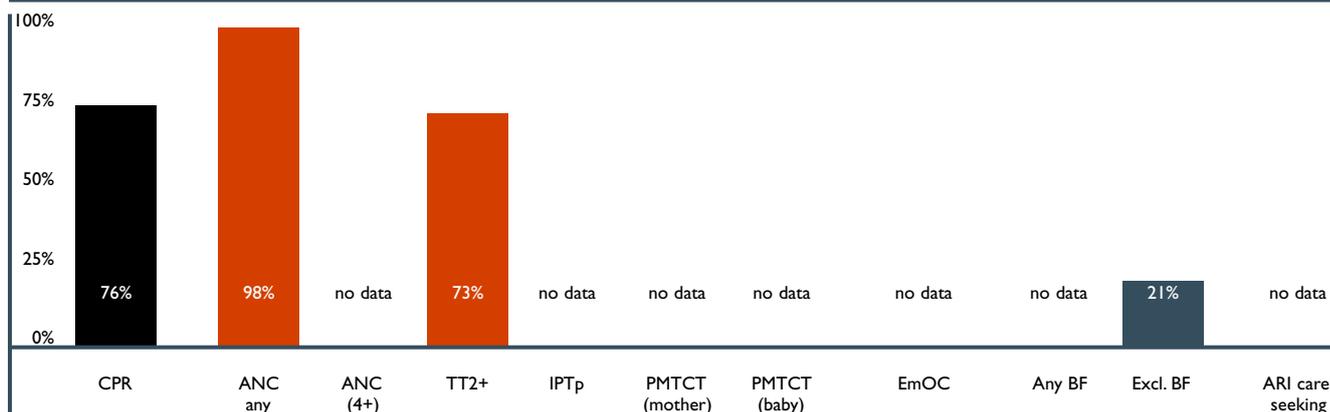
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

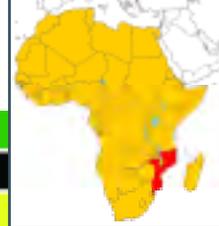


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Mozambique



BIRTHS, DEATHS AND INEQUITY

Total population 1,942,000
Annual births 769,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 1,000
Annual maternal deaths 7,700

BABIES

Stillbirth rate *per 1,000 deliveries* 32
Annual number of stillbirths 25,200
Neonatal mortality rate *per 1,000 live births* 37
Annual neonatal deaths 28,500
Excess NMR for poorest vs. least poor 103%

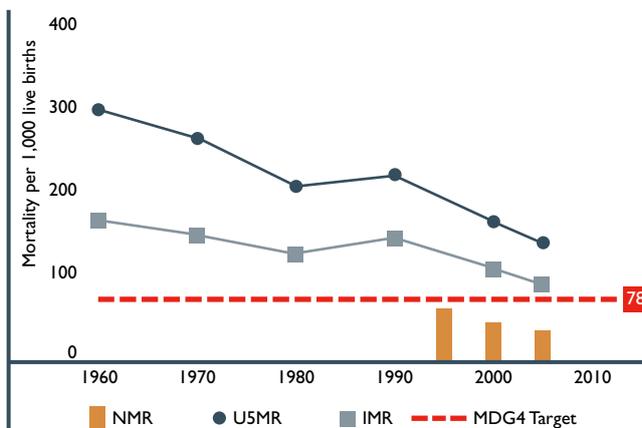
CHILDREN

Under 5 mortality rate *per 1,000 live births* 152
Annual under 5 deaths 116,900
Annual postnatal deaths 88,400
NMR as percentage of U5MR 24%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 1
Establishment of national MNCH task force No
Birth registration coverage -
Number of baby-friendly hospitals -
Midwives per 1,000 population 0.12
Districts with IMCI 21%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



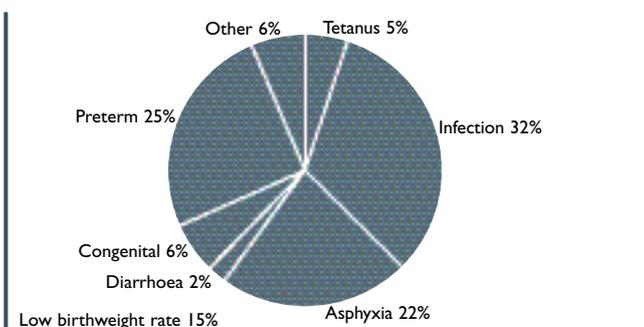
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 19,100
Range of NMR reduction 35-67%

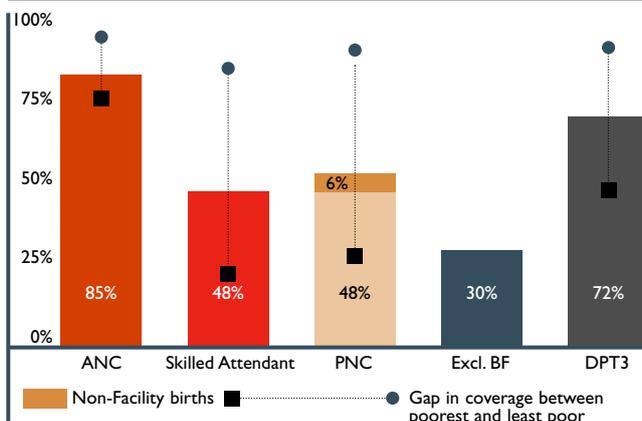
FINANCING

Gross national income, per capita (US\$) \$250
Government spending on health, per capita (US\$) \$7
Government spending on health 11%
Out-of-pocket spending on health 15%
User fee protection for women and children Yes
Line item for newborns in national budget -

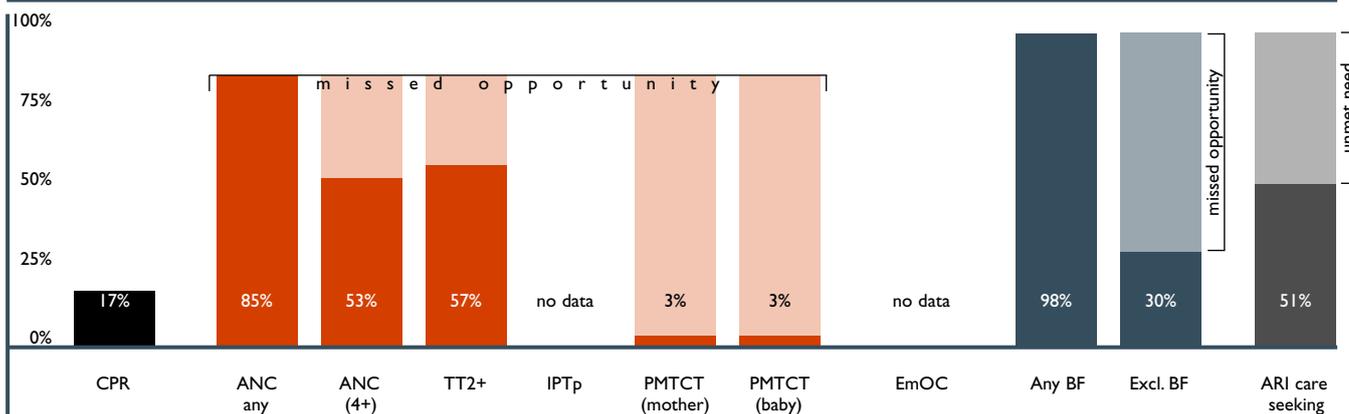
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

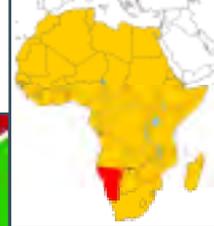


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Namibia



V

BIRTHS, DEATHS AND INEQUITY

Total population	2,009,000
Annual births	56,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	300
Annual maternal deaths	200

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	19
Annual number of stillbirths	1,100
Neonatal mortality rate <i>per 1,000 live births</i>	25
Annual neonatal deaths	1,400
Excess NMR for poorest vs. least poor	-

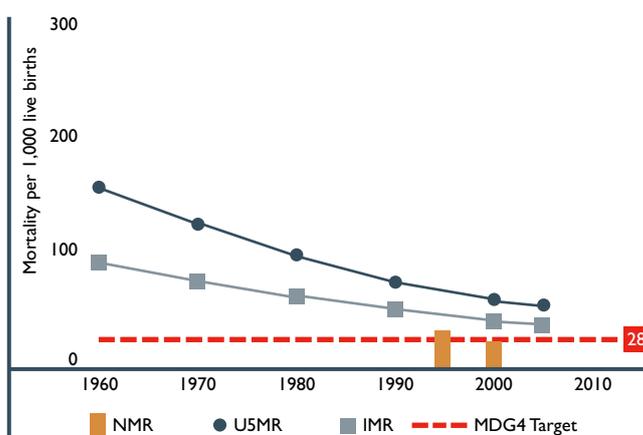
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	63
Annual under 5 deaths	3,500
Annual postnatal deaths	2,100
NMR as percentage of U5MR	40%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	-
Establishment of national MNCH task force	No
Birth registration coverage	71%
Number of baby-friendly hospitals	35
Midwives per 1,000 population	-
Districts with IMCI	16%
Elimination of neonatal tetanus	Yes

RATE OF PROGRESS TO MDG 4



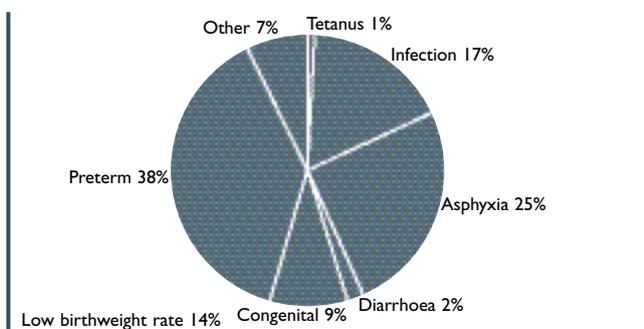
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 600
Range of NMR reduction	20-46%

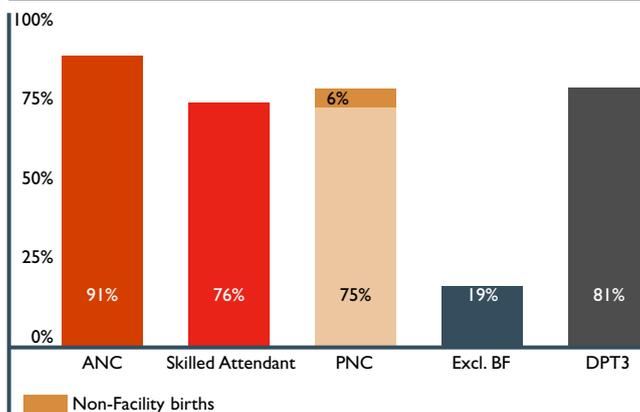
FINANCING

Gross national income, per capita (US\$)	\$2,370
Government spending on health, per capita (US\$)	\$101
Government spending on health	12%
Out-of-pocket spending on health	6%
User fee protection for women and children	Partial
Line item for newborns in national budget	-

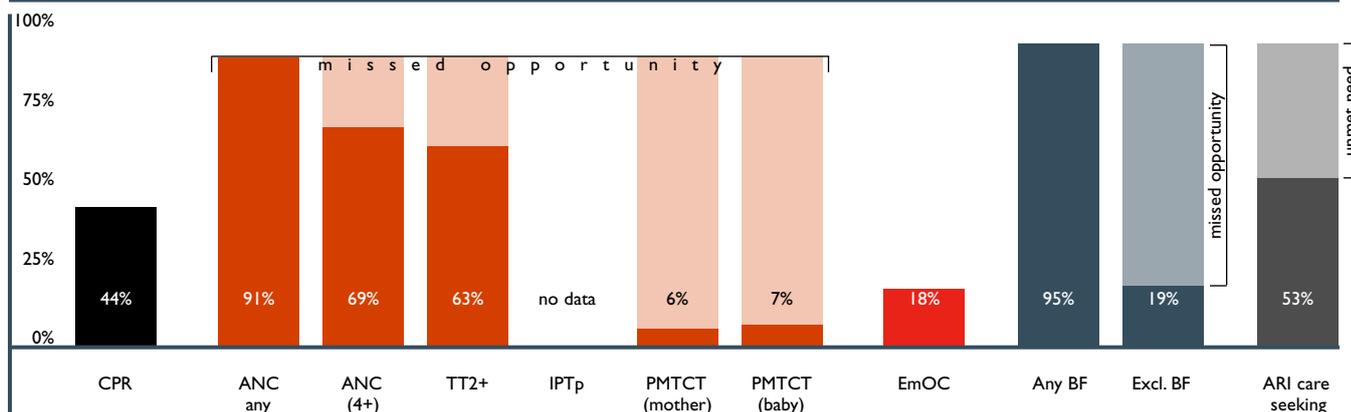
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Niger



BIRTHS, DEATHS AND INEQUITY

Total population 13,499,000
Annual births 734,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 1,600
Annual maternal deaths 11,700

BABIES

Stillbirth rate *per 1,000 deliveries* 38
Annual number of stillbirths 29,200
Neonatal mortality rate *per 1,000 live births* 43
Annual neonatal deaths 31,700
Excess NMR for poorest vs. least poor 73%

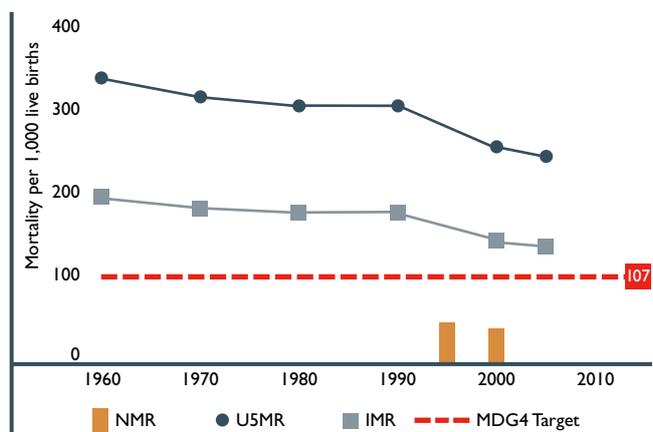
CHILDREN

Under 5 mortality rate *per 1,000 live births* 259
Annual under 5 deaths 190,100
Annual postnatal deaths 158,400
NMR as percentage of U5MR 17%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 4
Establishment of national MNCH task force Yes
Birth registration coverage 46%
Number of baby-friendly hospitals 20
Midwives per 1,000 population <0.01
Districts with IMCI 40%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



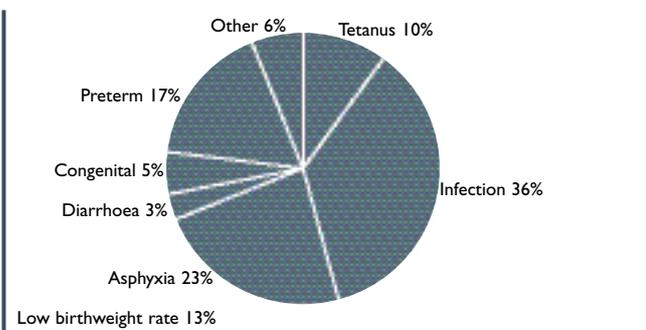
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 24,900
Range of NMR reduction 46-75%

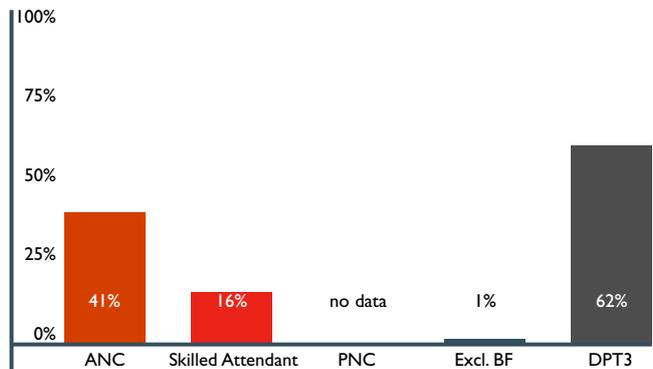
FINANCING

Gross national income, per capita (US\$) \$230
Government spending on health, per capita (US\$) \$5
Government spending on health 12%
Out-of-pocket spending on health 42%
User fee protection for women and children -
Line item for newborns in national budget -

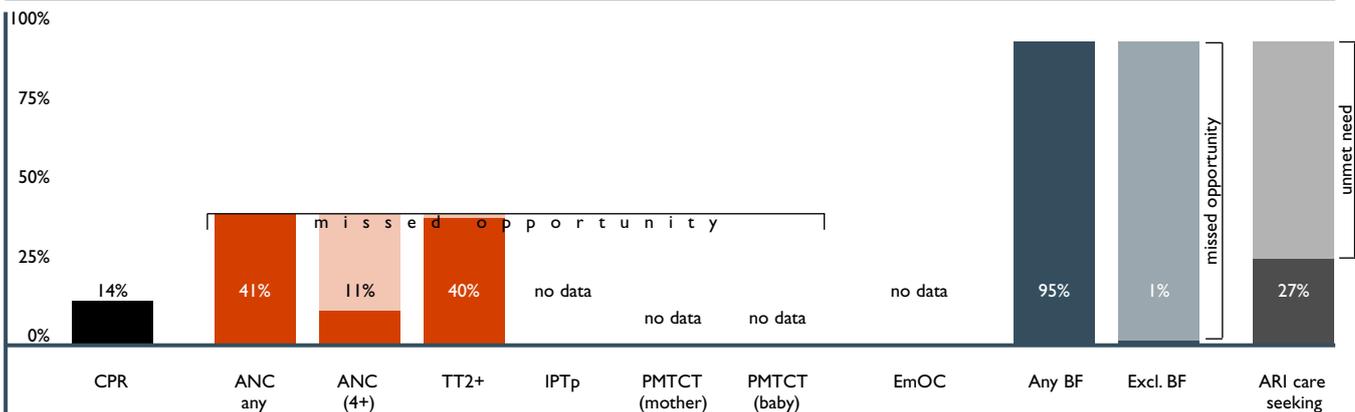
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE

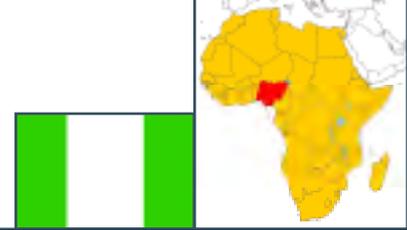


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Nigeria



BIRTHS, DEATHS AND INEQUITY

Total population 128,709,000
Annual births 5,323,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 800
Annual maternal deaths 42,600

BABIES

Stillbirth rate *per 1,000 deliveries* 30
Annual number of stillbirths 163,400
Neonatal mortality rate *per 1,000 live births* 48
Annual neonatal deaths 255,500
Excess NMR for poorest vs. least poor 157%

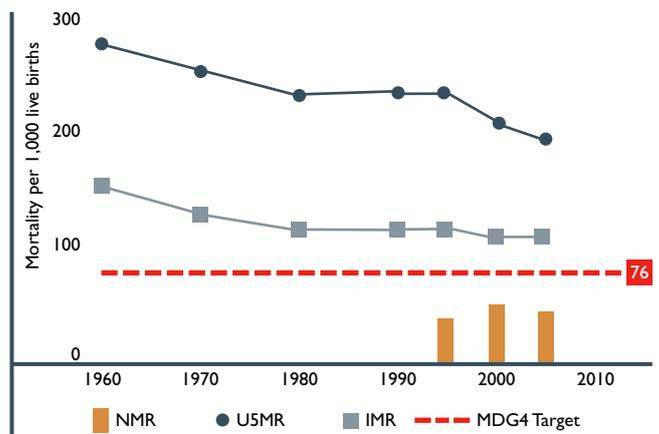
CHILDREN

Under 5 mortality rate *per 1,000 live births* 197
Annual under 5 deaths 1,048,600
Annual postnatal deaths 793,100
NMR as percentage of U5MR 24%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 4
Establishment of national MNCH task force In process
Birth registration coverage 30%
Number of baby-friendly hospitals 1,147
Midwives per 1,000 population -
Districts with IMCI 1%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



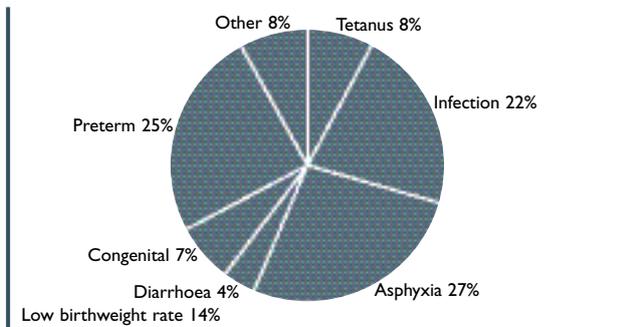
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 177,600
Range of NMR reduction 39-68%

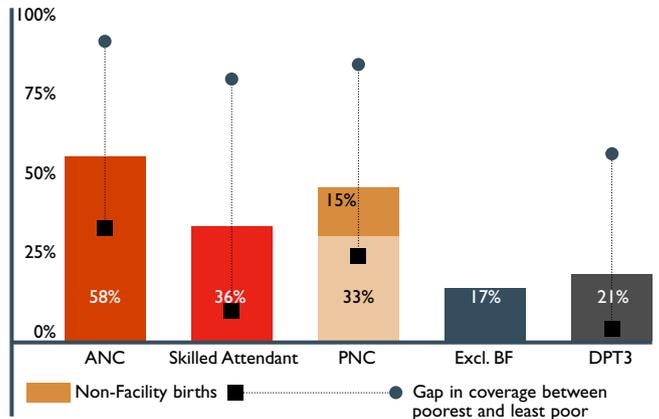
FINANCING

Gross national income, per capita (US\$) \$390
Government spending on health, per capita (US\$) \$6
Government spending on health 3%
Out-of-pocket spending on health 68%
User fee protection for women and children Partial
Line item for newborns in national budget -

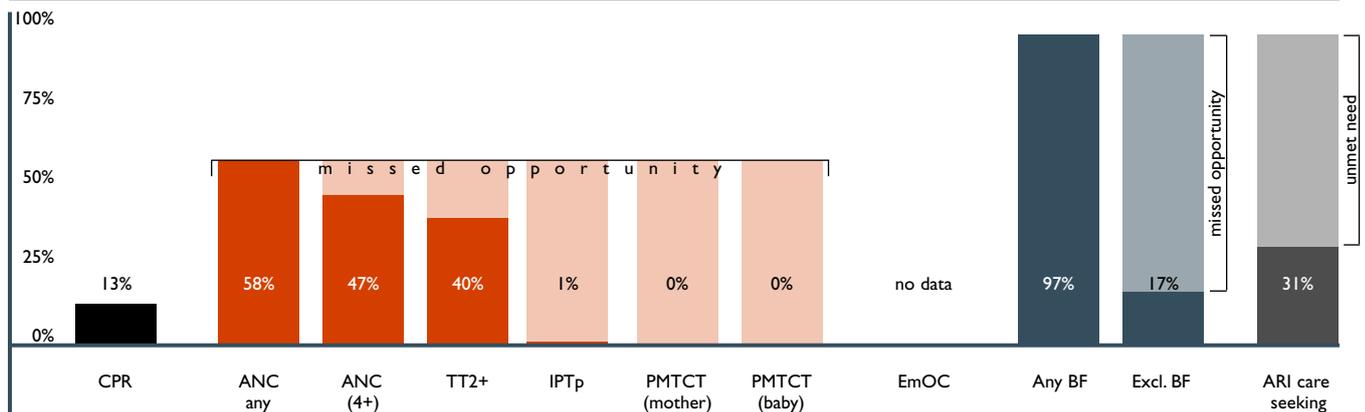
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Rwanda



BIRTHS, DEATHS AND INEQUITY

Total population 8,882,000
Annual births 365,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 1,400
Annual maternal deaths 5,100

BABIES

Stillbirth rate *per 1,000 deliveries* 30
Annual number of stillbirths 11,200
Neonatal mortality rate *per 1,000 live births* 45
Annual neonatal deaths 16,200
Excess NMR in poorest vs. least poor 51%

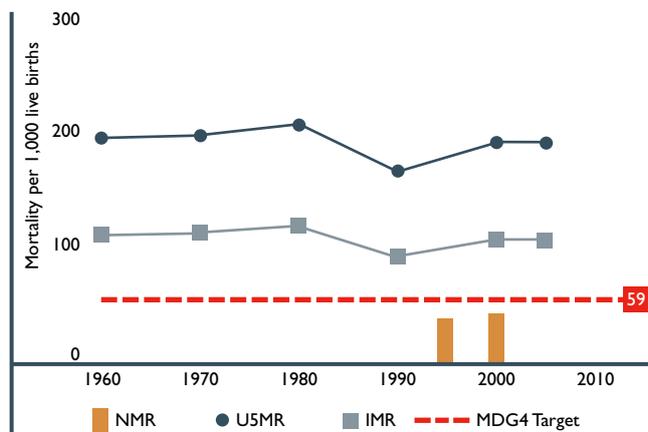
CHILDREN

Under 5 mortality rate *per 1,000 live births* 203
Annual under 5 deaths 74,100
Annual postnatal deaths 57,900
NMR as percentage of U5MR 22%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 4
Establishment of national MNCH task force No
Birth registration coverage 65%
Number of baby-friendly hospitals 2
Midwives per 1,000 population 0.01
Districts with IMCI 13%
Elimination of neonatal tetanus Yes

RATE OF PROGRESS TO MDG 4



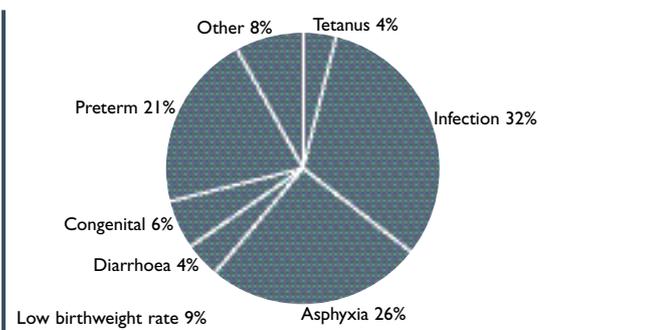
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 11,500
Range of NMR reduction 37-67%

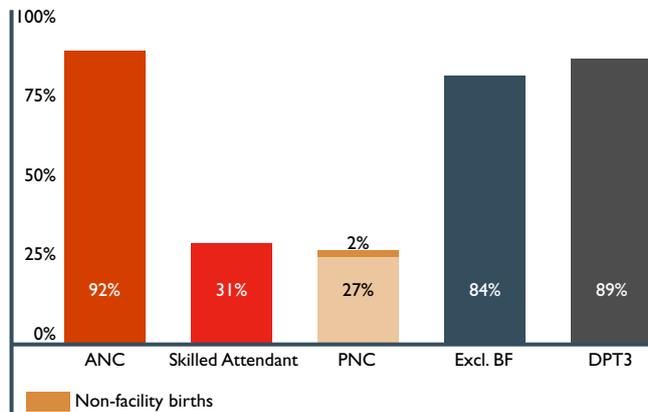
FINANCING

Gross national income, per capita (US\$) \$220
Government spending on health, per capita (US\$) \$3
Government spending on health 7%
Out-of-pocket spending on health 24%
User fee protection for women and children No
Line item for newborns in national budget -

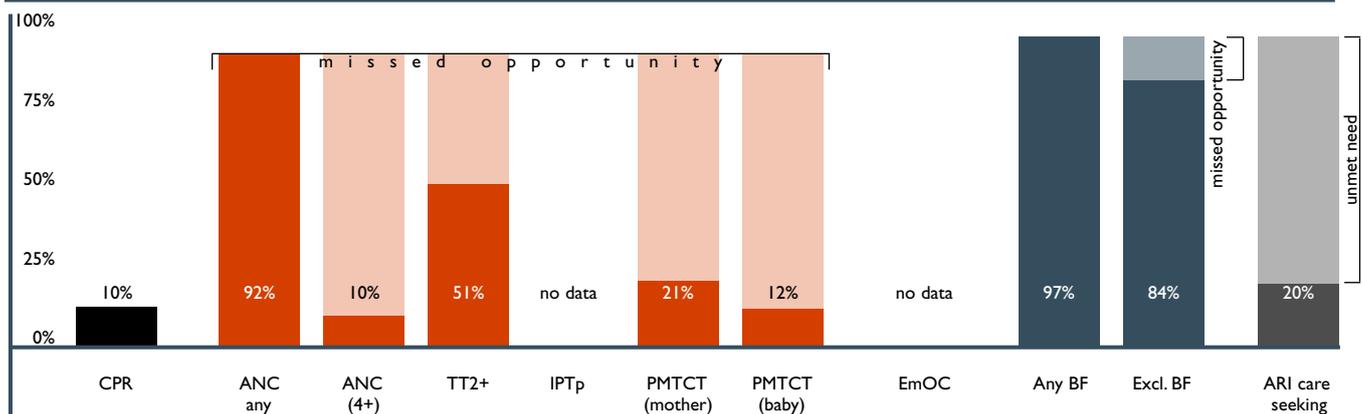
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See page 226 for data sources and notes.

São Tomé & Príncipe



V

BIRTHS, DEATHS AND INEQUITY

Total population	153,000
Annual births	5,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	-
Annual maternal deaths	-

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	25
Annual number of stillbirths	100
Neonatal mortality rate <i>per 1,000 live births</i>	38
Annual neonatal deaths	200
Excess NMR for poorest vs. least poor	-

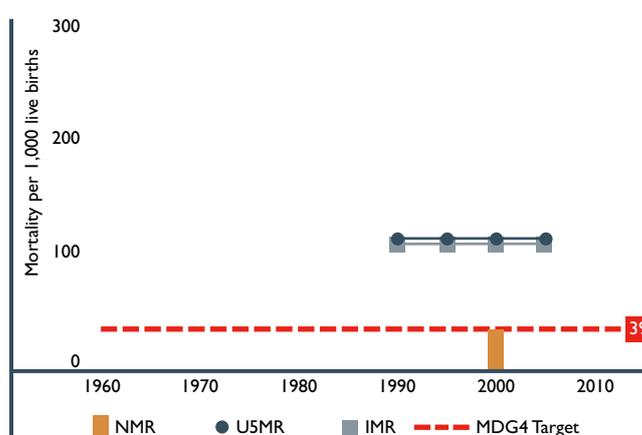
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	118
Annual under 5 deaths	600
Annual postnatal deaths	400
NMR as percentage of U5MR	32%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	-
Establishment of national MNCH task force	No
Birth registration coverage	70%
Number of baby-friendly hospitals	-
Midwives per 1,000 population	0.32
Districts with IMCI	29%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



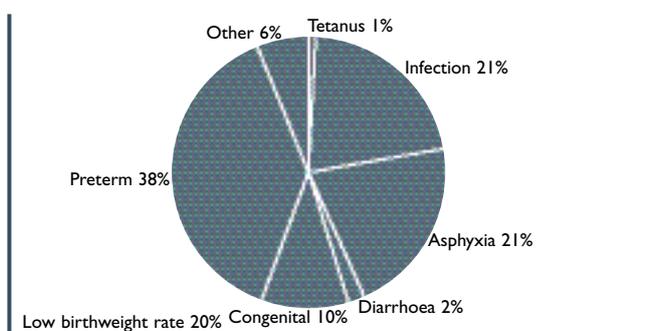
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to <100
Range of NMR reduction	20-46%

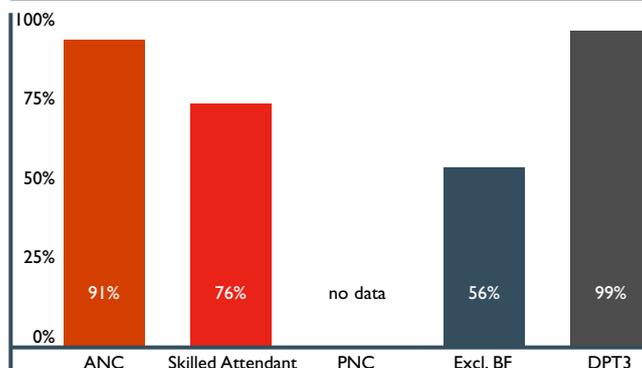
FINANCING

Gross national income, per capita (US\$)	\$370
Government spending on health, per capita (US\$)	\$29
Government spending on health	11%
Out-of-pocket spending on health	16%
User fee protection for women and children	-
Line item for newborns in national budget	-

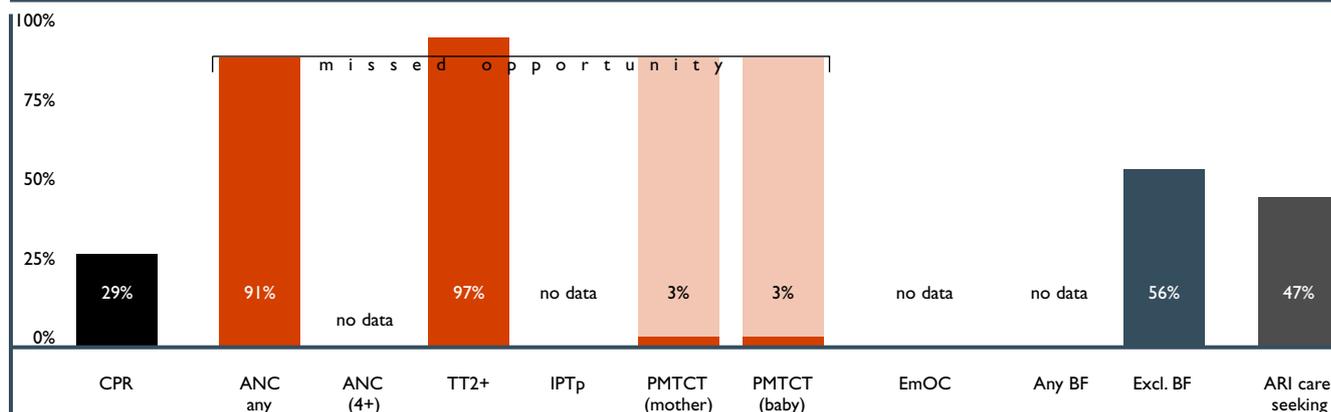
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Senegal



BIRTHS, DEATHS AND INEQUITY

Total population 11,386,000
Annual births 419,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 401
Annual maternal deaths 1,700

BABIES

Stillbirth rate *per 1,000 deliveries* 27
Annual number of stillbirths 11,500
Neonatal mortality rate *per 1,000 live births* 35
Annual neonatal deaths 14,700
Excess NMR for poorest vs. least poor 104%

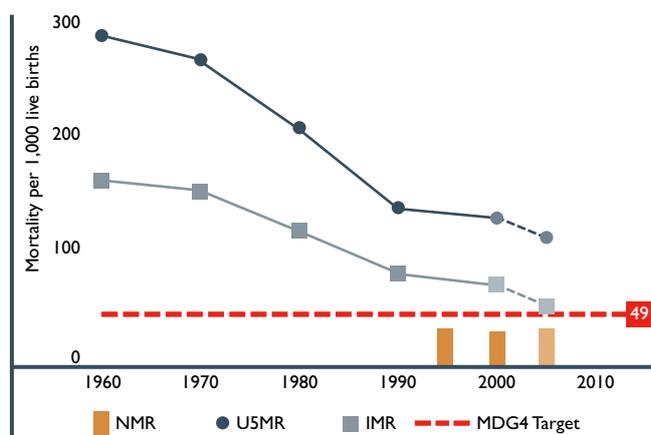
CHILDREN

Under 5 mortality rate *per 1,000 live births* 121
Annual under 5 deaths 50,700
Annual postnatal deaths 36,000
NMR as percentage of U5MR 29%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 7, in process
Establishment of national MNCH task force In process
Birth registration coverage 62%
Number of baby-friendly hospitals -
Midwives per 1,000 population -
Districts with IMCI 40%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



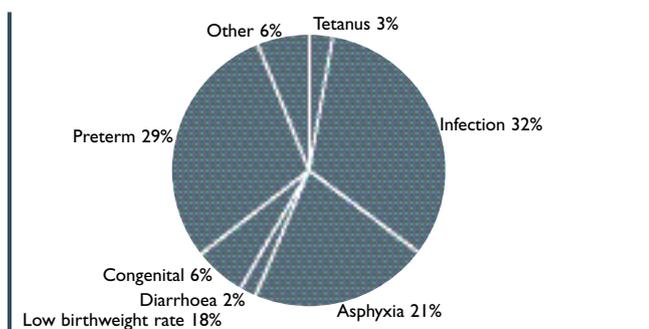
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 8,700
Range of NMR reduction 35-66%

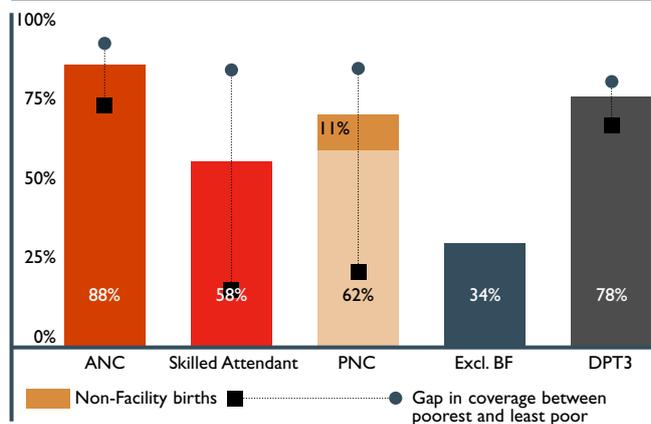
FINANCING

Gross national income, per capita (US\$) \$670
Government spending on health, per capita (US\$) \$12
Government spending on health 9%
Out-of-pocket spending on health 55%
User fee protection for women and children -
Line item for newborns in national budget -

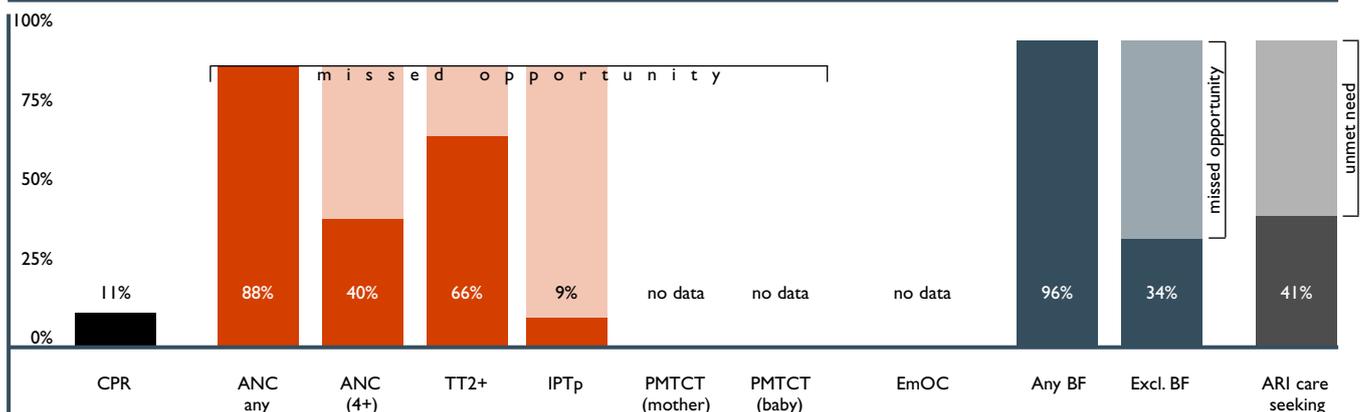
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



Seychelles



V

BIRTHS, DEATHS AND INEQUITY

Total population	80,000
Annual births	3,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	-
Annual maternal deaths	-

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	10
Annual number of stillbirths	-
Neonatal mortality rate <i>per 1,000 live births</i>	9
Annual neonatal deaths	<100
Excess NMR for poorest vs. least poor	-

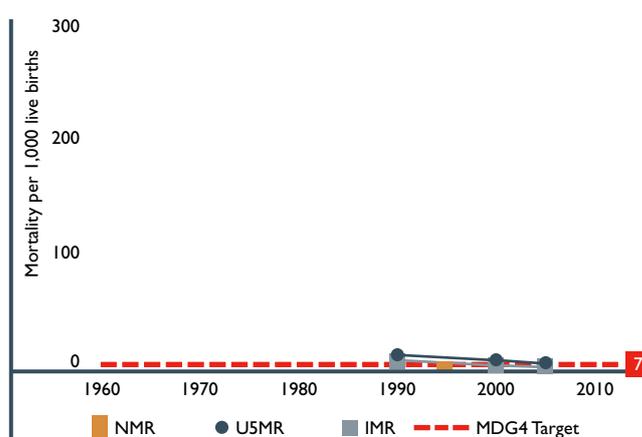
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	14
Annual under 5 deaths	<100
Annual postnatal deaths	<100
NMR as percentage of U5MR	62%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	I
Establishment of national MNCH task force	No
Birth registration coverage	-
Number of baby-friendly hospitals	-
Midwives per 1,000 population	-
Districts with IMCI	-
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



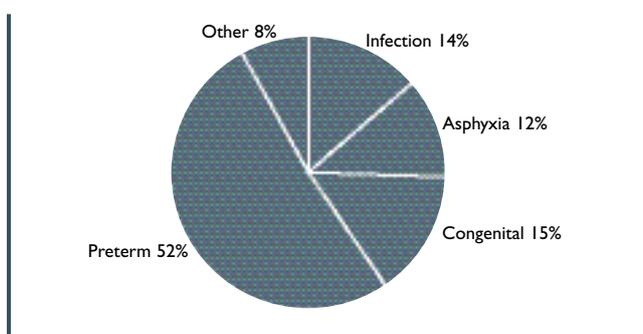
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to <100
Range of NMR reduction	11-27%

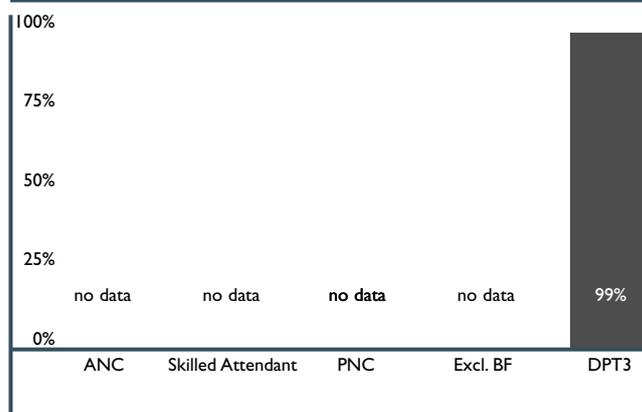
FINANCING

Gross national income, per capita (US\$)	\$8,090
Government spending on health, per capita (US\$)	\$382
Government spending on health	10%
Out-of-pocket spending on health	17%
User fee protection for women and children	-
Line item for newborns in national budget	-

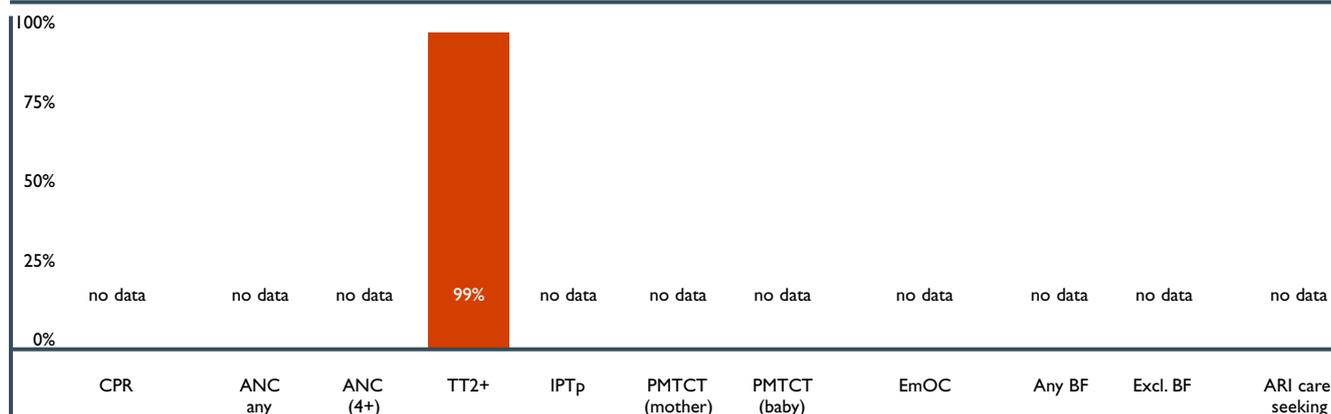
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Sierra Leone



BIRTHS, DEATHS AND INEQUITY

Total population 5,336,000
Annual births 245,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 2,000
Annual maternal deaths 4,900

BABIES

Stillbirth rate *per 1,000 deliveries* 37
Annual number of stillbirths 9,300
Neonatal mortality rate *per 1,000 live births* 56
Annual neonatal deaths 13,800
Excess NMR for poorest vs. least poor -

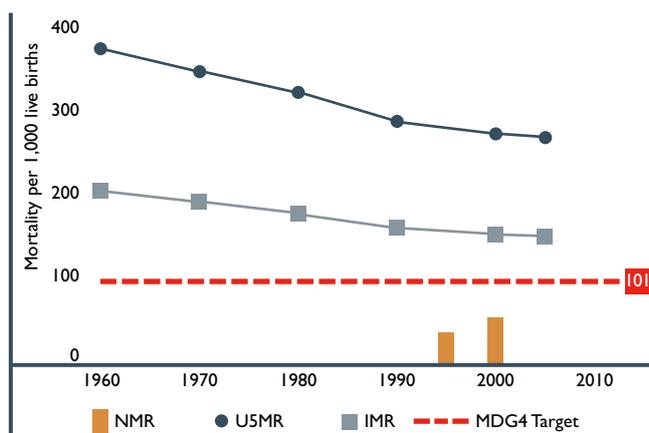
CHILDREN

Under 5 mortality rate *per 1,000 live births* 283
Annual under 5 deaths 69,300
Annual postnatal deaths 55,500
NMR as percentage of U5MR 20%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map -
Establishment of national MNCH task force No
Birth registration coverage 46%
Number of baby-friendly hospitals 4
Midwives per 1,000 population -
Districts with IMCI 33%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



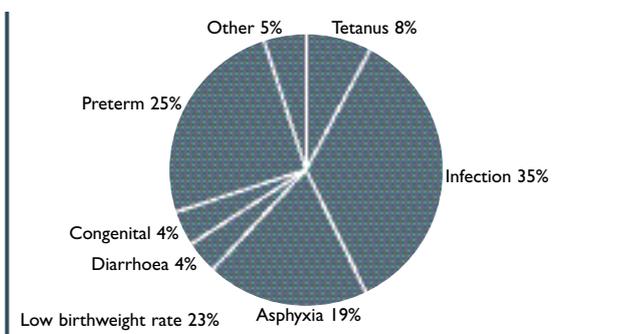
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 10,800
Range of NMR reduction 44-75%

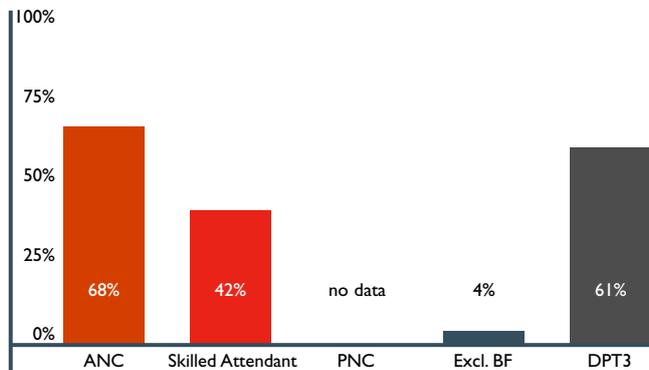
FINANCING

Gross national income, per capita (US\$) \$200
Government spending on health, per capita (US\$) \$4
Government spending on health 8%
Out-of-pocket spending on health 42%
User fee protection for women and children No
Line item for newborns in national budget -

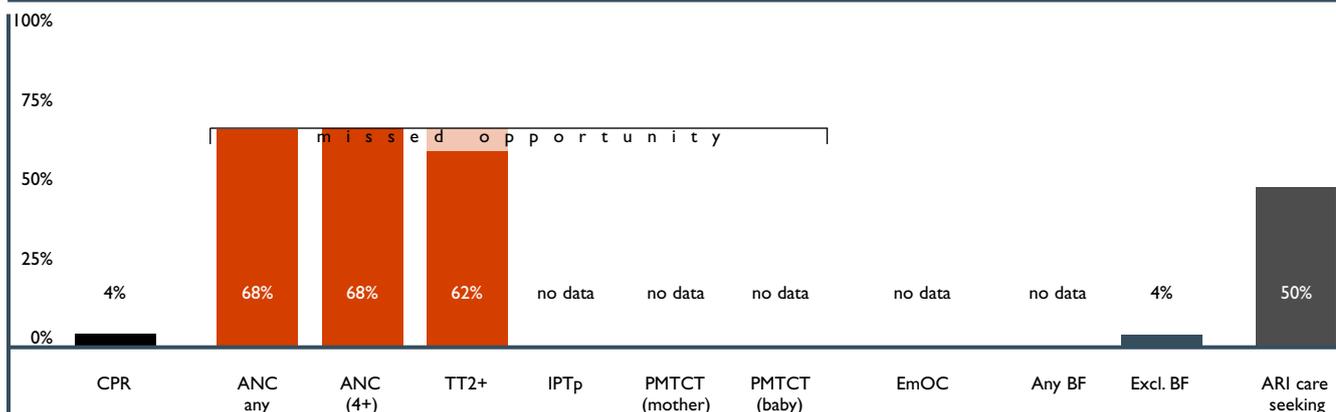
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Somalia



BIRTHS, DEATHS AND INEQUITY

Total population	7,964,000
Annual births	359,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,100
Annual maternal deaths	3,900

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	45
Annual number of stillbirths	16,800
Neonatal mortality rate <i>per 1,000 live births</i>	49
Annual neonatal deaths	17,800
Excess NMR for poorest vs. least poor	-

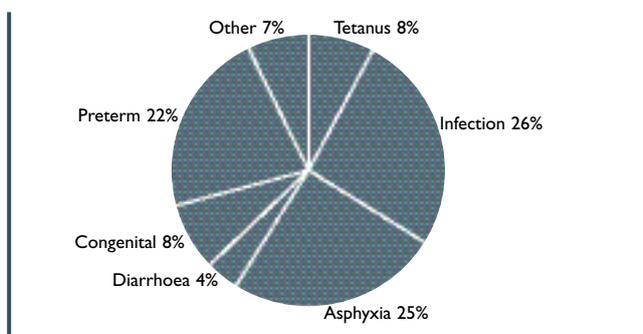
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	225
Annual under 5 deaths	80,800
Annual postnatal deaths	63,000
NMR as percentage of U5MR	22%

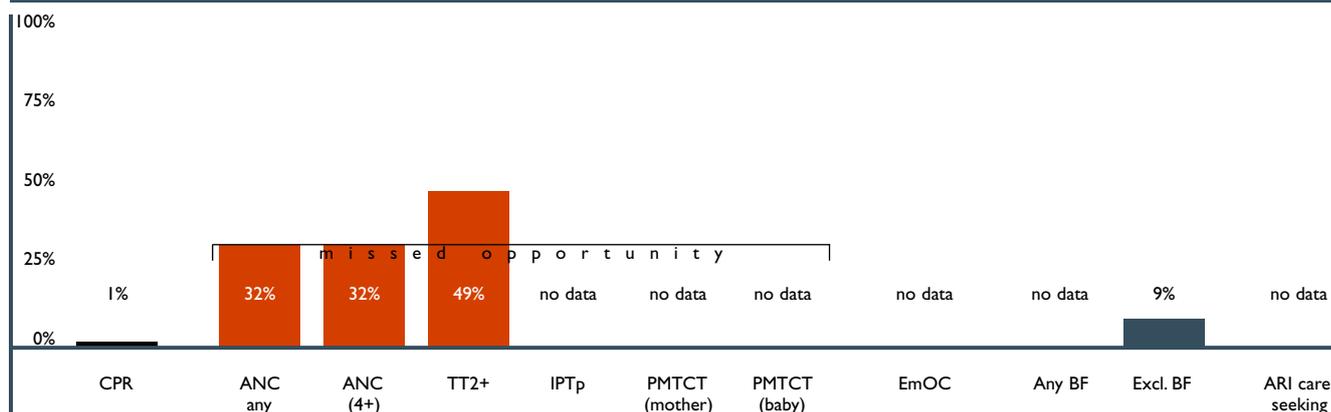
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	0
Establishment of national MNCH task force	No
Birth registration coverage	-
Number of baby-friendly hospitals	2
Midwives per 1,000 population	-
Districts with IMCI	-
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS

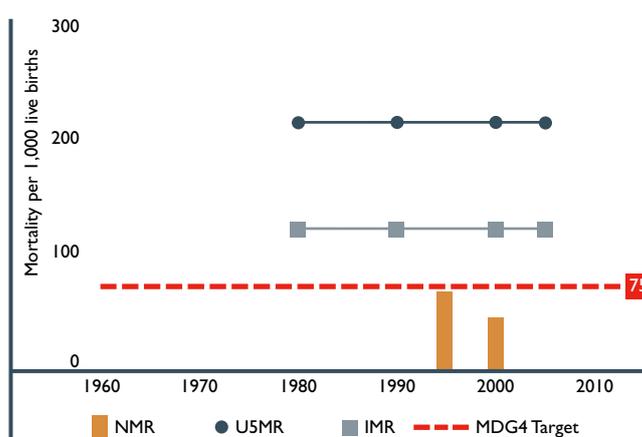


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

RATE OF PROGRESS TO MDG 4



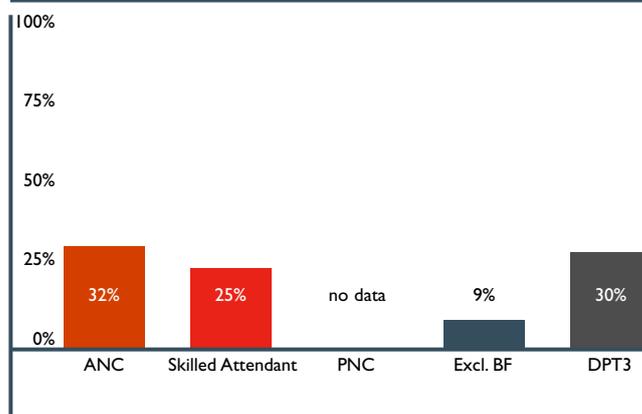
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 13,000
Range of NMR reduction	42-71%

FINANCING

Gross national income, per capita (US\$)	\$130
Government spending on health, per capita (US\$)	-
Government spending on health	-
Out-of-pocket spending on health	-
User fee protection for women and children	-
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



South Africa



BIRTHS, DEATHS AND INEQUITY

Total population	47,208,000
Annual births	1,093,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	230
Annual maternal deaths	2,500

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	18
Annual number of stillbirths	19,500
Neonatal mortality rate <i>per 1,000 live births</i>	21
Annual neonatal deaths	23,000
Excess NMR for poorest vs. least poor	-

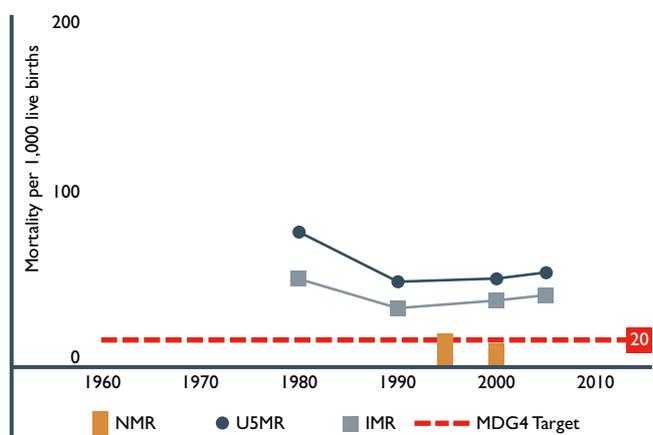
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	67
Annual under 5 deaths	73,200
Annual postnatal deaths	50,200
NMR as percentage of U5MR	31%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	0
Establishment of national MNCH task force	No
Birth registration coverage	-
Number of baby-friendly hospitals	176
Midwives per 1,000 population	-
Districts with IMCI	93%
Elimination of neonatal tetanus	Yes

RATE OF PROGRESS TO MDG 4



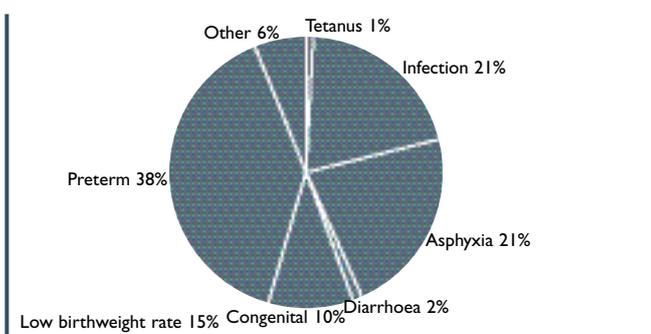
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 9,100
Range of NMR reduction	17-41%

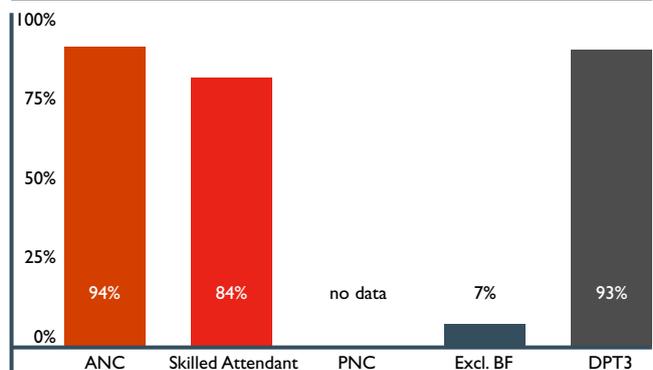
FINANCING

Gross national income, per capita (US\$)	\$3630
Government spending on health, per capita (US\$)	\$114
Government spending on health	10%
Out-of-pocket spending on health	36%
User fee protection for women and children	Yes
Line item for newborns in national budget	-

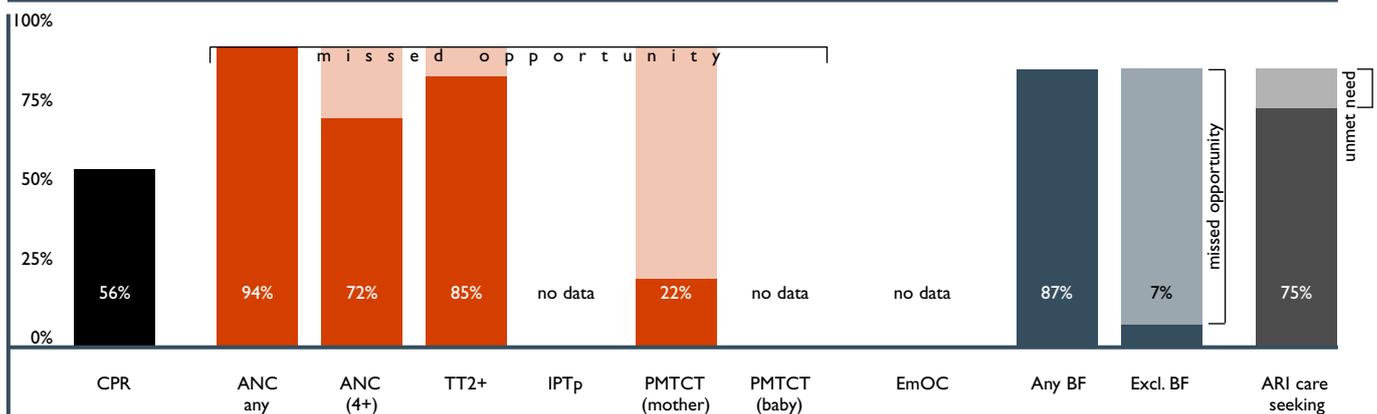
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Swaziland



BIRTHS, DEATHS AND INEQUITY

Total population	1,034,000
Annual births	30,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	370
Annual maternal deaths	100

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	22
Annual number of stillbirths	700
Neonatal mortality rate <i>per 1,000 live births</i>	38
Annual neonatal deaths	1,100
Excess NMR for poorest vs. least poor	-

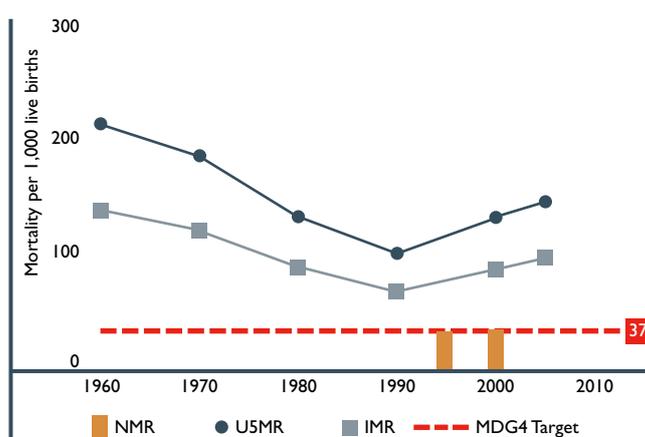
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	156
Annual under 5 deaths	4,700
Annual postnatal deaths	3,600
NMR as percentage of U5MR	24%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	-
Establishment of national MNCH task force	No
Birth registration coverage	53%
Number of baby-friendly hospitals	5
Midwives per 1,000 population	-
Districts with IMCI	50%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



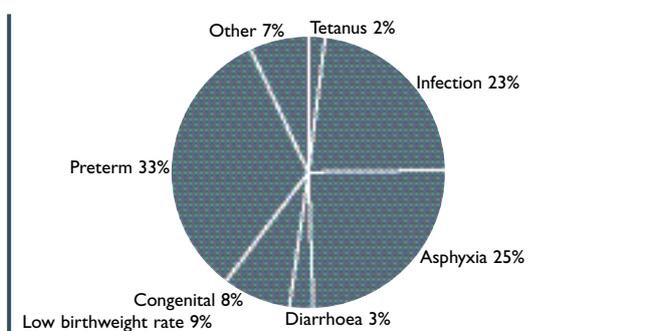
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 600
Range of NMR reduction	26-56%

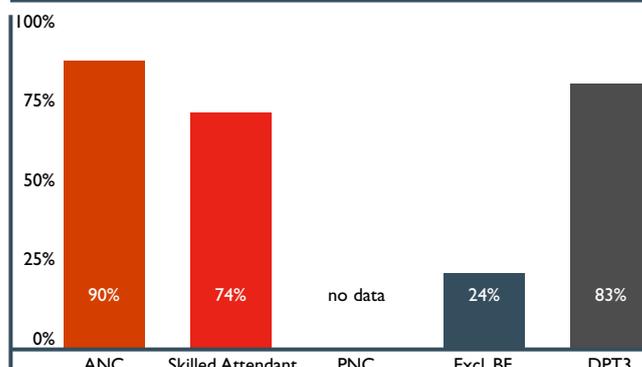
FINANCING

Gross national income, per capita (US\$)	\$1,660
Government spending on health, per capita (US\$)	\$61
Government spending on health	11%
Out-of-pocket spending on health	18%
User fee protection for women and children	Yes
Line item for newborns in national budget	No

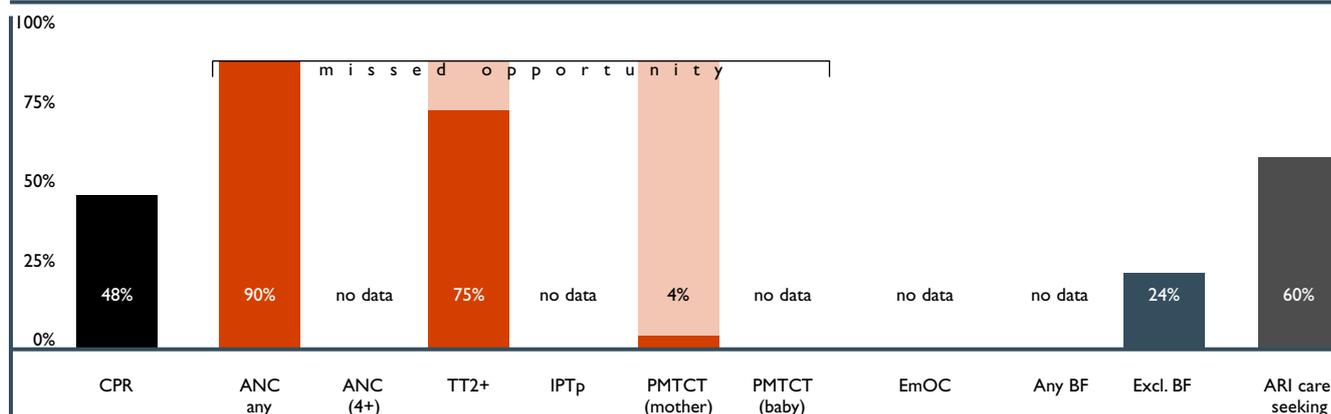
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Tanzania



BIRTHS, DEATHS AND INEQUITY

Total population 37,627,000
Annual births 1,403,000

MOTHERS

Maternal mortality ratio *per 100,000 live births* 578
Annual maternal deaths 8,100

BABIES

Stillbirth rate *per 1,000 deliveries* 29
Annual number of stillbirths 42,500
Neonatal mortality rate *per 1,000 live births* 32
Annual neonatal deaths 44,900
Excess NMR in poorest vs. least poor 6%

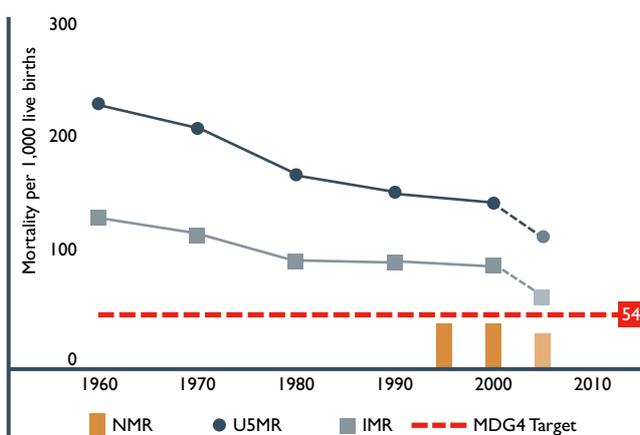
CHILDREN

Under 5 mortality rate *per 1,000 live births* 112
Annual under 5 deaths 157,100
Annual postnatal deaths 112,200
NMR as percentage of U5MR 29%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map 4, in process
Establishment of national MNCH task force Yes
Birth registration coverage 6%
Number of baby-friendly hospitals 47
Midwives per 1,000 population -
Districts with IMCI 90%
Elimination of neonatal tetanus No

RATE OF PROGRESS TO MDG 4



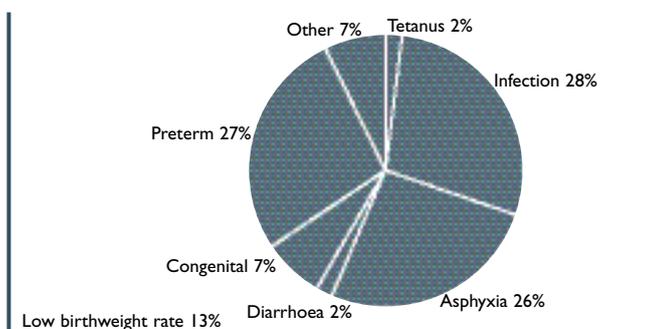
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved up to 29,000
Range of NMR reduction 33-64%

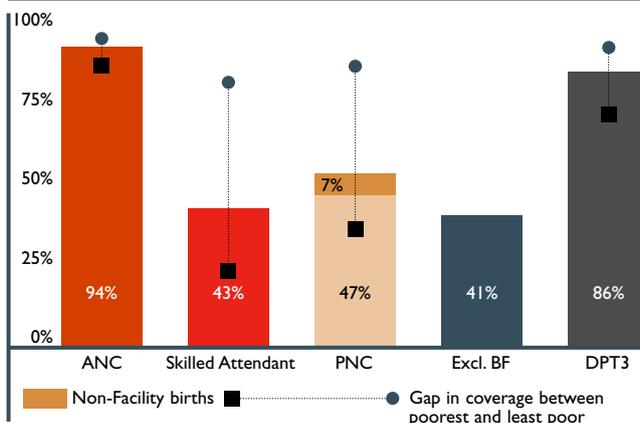
FINANCING

Gross national income, per capita (US\$) \$330
Government spending on health, per capita (US\$) \$7
Government spending on health 13%
Out-of-pocket spending on health 36%
User fee protection for women and children Yes
Line item for newborns in national budget -

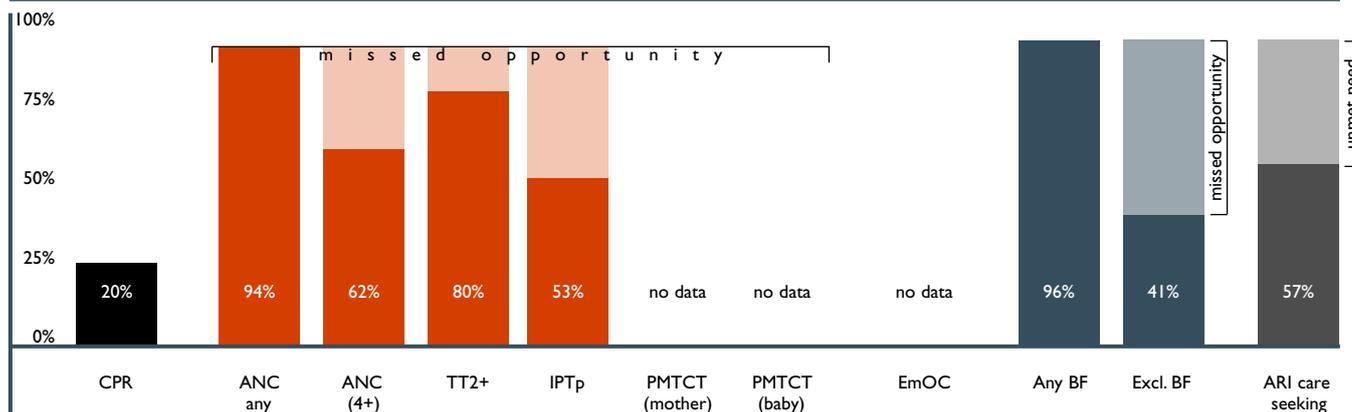
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



Togo



V

BIRTHS, DEATHS AND INEQUITY

Total population	5,988,000
Annual births	233,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	570
Annual maternal deaths	1,300

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	26
Annual number of stillbirths	6,200
Neonatal mortality rate <i>per 1,000 live births</i>	42
Annual neonatal deaths	9,800
Excess NMR for poorest vs. least poor	-

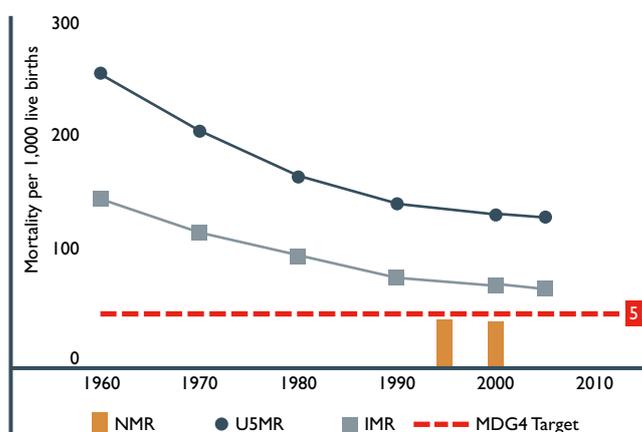
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	140
Annual under 5 deaths	32,600
Annual postnatal deaths	22,800
NMR as percentage of U5MR	30%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	5
Establishment of national MNCH task force	Yes
Birth registration coverage	82%
Number of baby-friendly hospitals	20
Midwives per 1,000 population	<0.01
Districts with IMCI	80%
Elimination of neonatal tetanus	Yes

RATE OF PROGRESS TO MDG 4



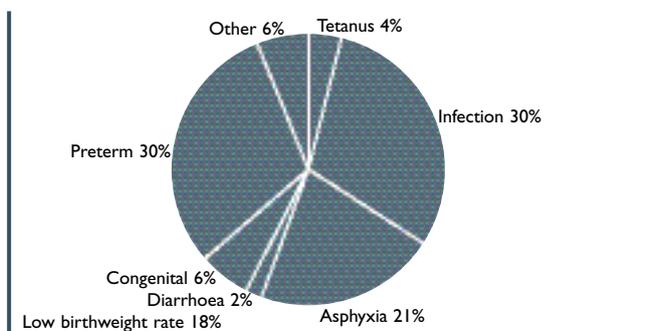
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 6,300
Range of NMR reduction	35-66%

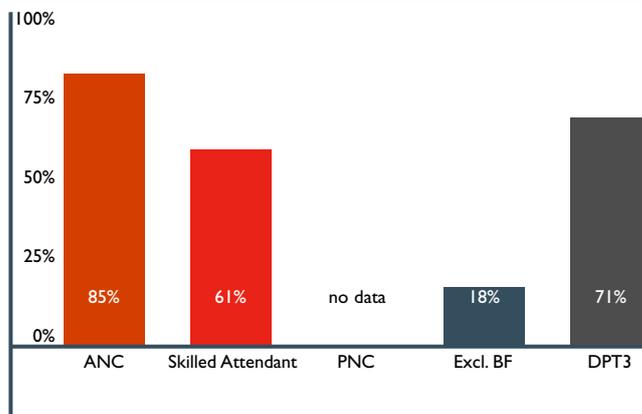
FINANCING

Gross national income, per capita (US\$)	\$380
Government spending on health, per capita (US\$)	\$4
Government spending on health	9%
Out-of-pocket spending on health	66%
User fee protection for women and children	No
Line item for newborns in national budget	No

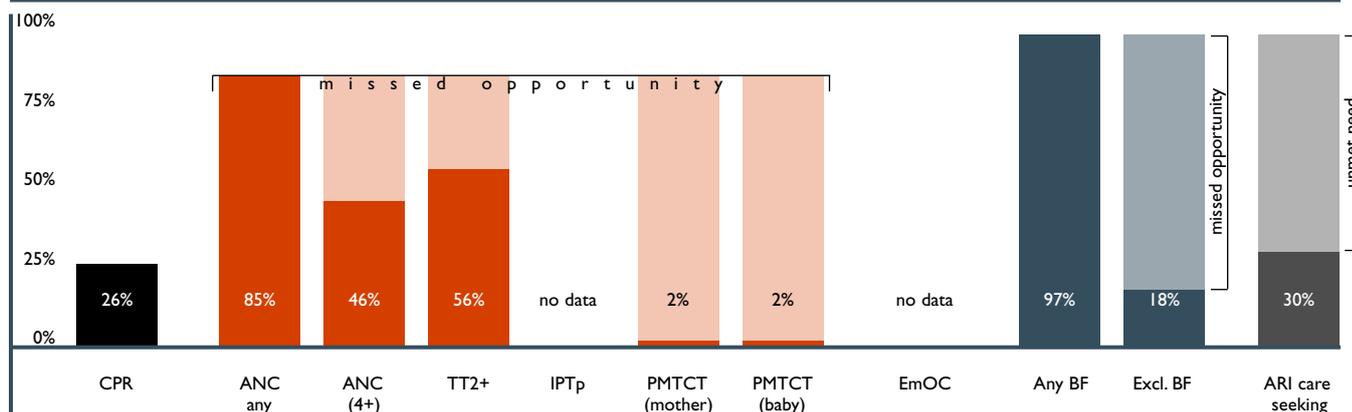
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

Uganda



BIRTHS, DEATHS AND INEQUITY

Total population	27,821,000
Annual births	1,412,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	880
Annual maternal deaths	12,400

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	31
Annual number of stillbirths	45,100
Neonatal mortality rate <i>per 1,000 live births</i>	32
Annual neonatal deaths	44,500
Excess NMR for poorest vs. least poor	53%

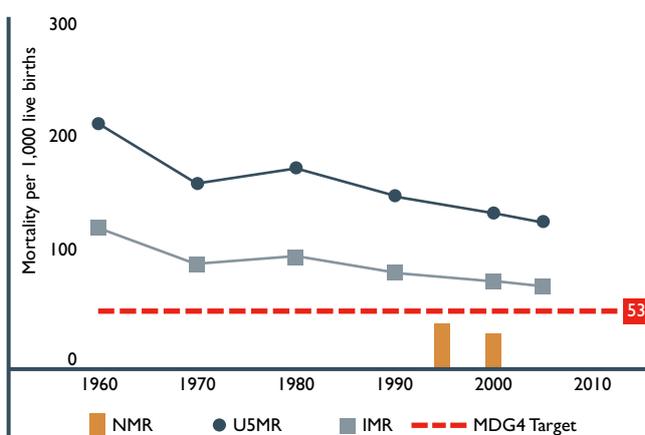
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	138
Annual under 5 deaths	194,900
Annual postnatal deaths	150,400
NMR as percentage of U5MR	23%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	I
Establishment of national MNCH task force	No
Birth registration coverage	4%
Number of baby-friendly hospitals	11
Midwives per 1,000 population	0.12
Districts with IMCI	100%
Elimination of neonatal tetanus	No

RATE OF PROGRESS TO MDG 4



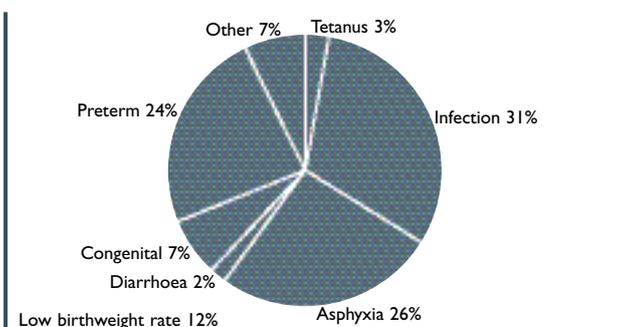
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 31,800
Range of NMR reduction	35-66%

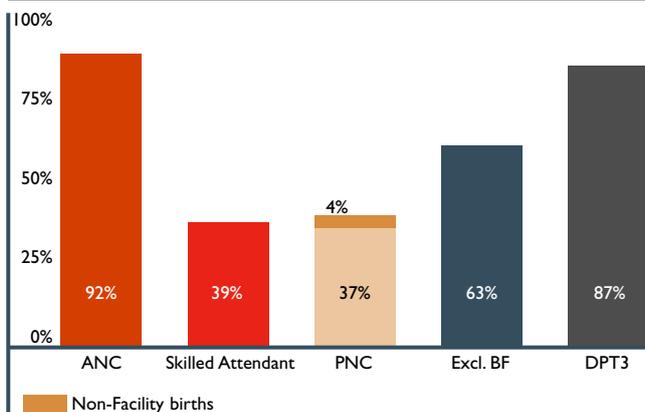
FINANCING

Gross national income, per capita (US\$)	\$270
Government spending on health, per capita (US\$)	\$5
Government spending on health	11%
Out-of-pocket spending on health	37%
User fee protection for women and children	Yes
Line item for newborns in national budget	Yes

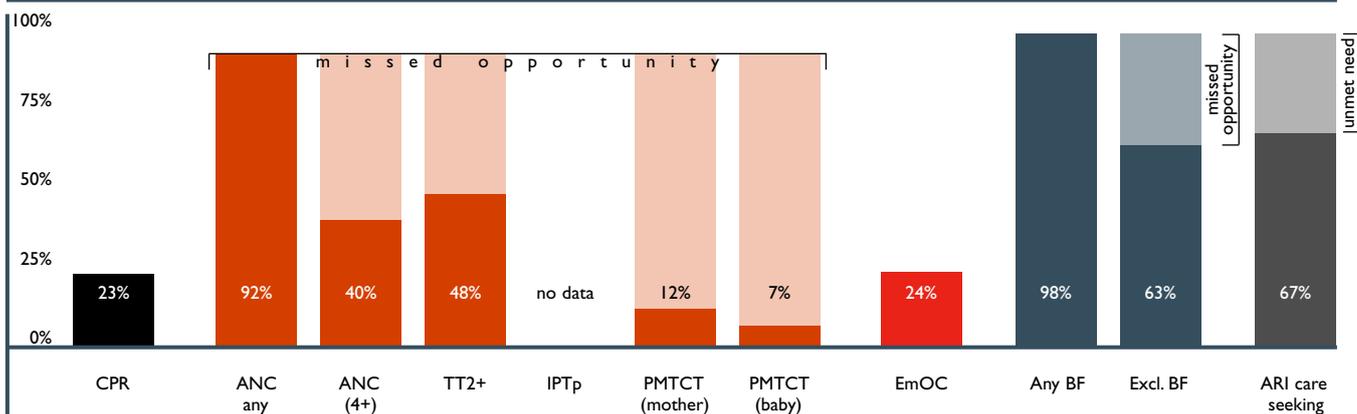
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



Zambia



BIRTHS, DEATHS AND INEQUITY

Total population	11,479,000
Annual births	468,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	750
Annual maternal deaths	3,500

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	31
Annual number of stillbirths	14,800
Neonatal mortality rate <i>per 1,000 live births</i>	37
Annual neonatal deaths	17,300
Excess NMR for poorest vs. least poor	63%

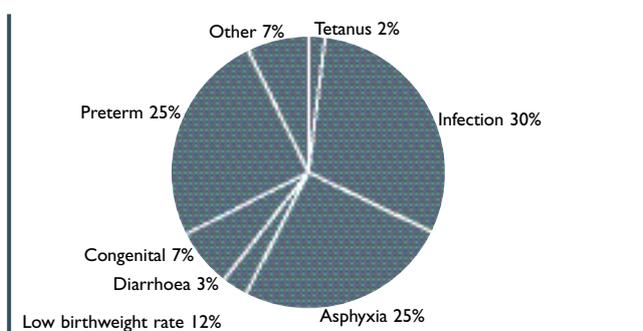
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	182
Annual under 5 deaths	85,200
Annual postnatal deaths	67,900
NMR as percentage of U5MR	20%

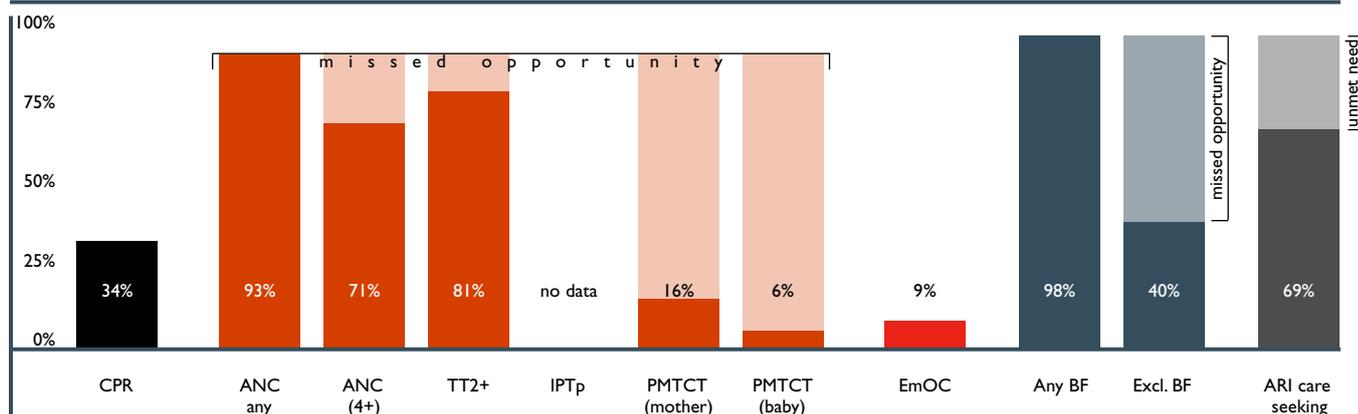
POLICY AND IMPLEMENTATION

Stage (of 10) of Road Map	6
Establishment of national MNCH task force	Yes
Birth registration coverage	10%
Number of baby-friendly hospitals	47
Midwives per 1,000 population	0.27
Districts with IMCI	53%
Elimination of neonatal tetanus	No

ESTIMATED CAUSES OF NEONATAL DEATHS

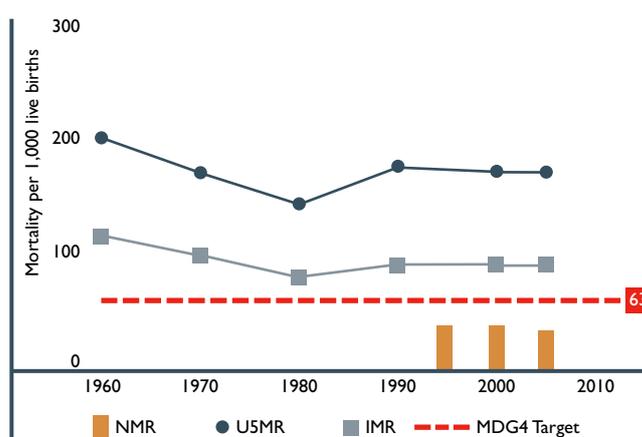


MISSED OPPORTUNITIES



See notes on page 226 for details on data.

RATE OF PROGRESS TO MDG 4



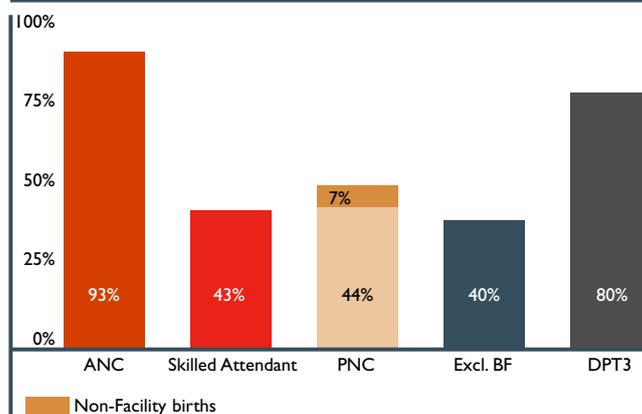
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 11,400
Range of NMR reduction	34-63%

FINANCING

Gross national income, per capita (US\$)	\$450
Government spending on health, per capita (US\$)	\$11
Government spending on health	12%
Out-of-pocket spending on health	33%
User fee protection for women and children	Yes
Line item for newborns in national budget	-

COVERAGE ALONG THE CONTINUUM OF CARE



Zimbabwe



BIRTHS, DEATHS AND INEQUITY

Total population	12,936,000
Annual births	384,000

MOTHERS

Maternal mortality ratio <i>per 100,000 live births</i>	1,100
Annual maternal deaths	4,200

BABIES

Stillbirth rate <i>per 1,000 deliveries</i>	22
Annual number of stillbirths	8,700
Neonatal mortality rate <i>per 1,000 live births</i>	33
Annual neonatal deaths	12,600
Excess NMR for poorest vs. least poor	-

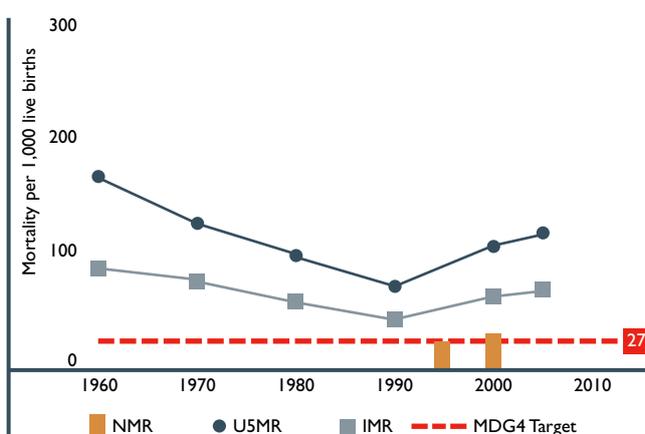
CHILDREN

Under 5 mortality rate <i>per 1,000 live births</i>	129
Annual under 5 deaths	49,500
Annual postnatal deaths	36,900
NMR as percentage of U5MR	25%

POLICY AND IMPLEMENTATION

Stage (of 10) of Road	6
Establishment of national MNCH task force	Yes
Birth registration coverage	42%
Number of baby-friendly hospitals	38
Midwives per 1,000 population	-
Districts with IMCI	21%
Elimination of neonatal tetanus	Yes

RATE OF PROGRESS TO MDG 4



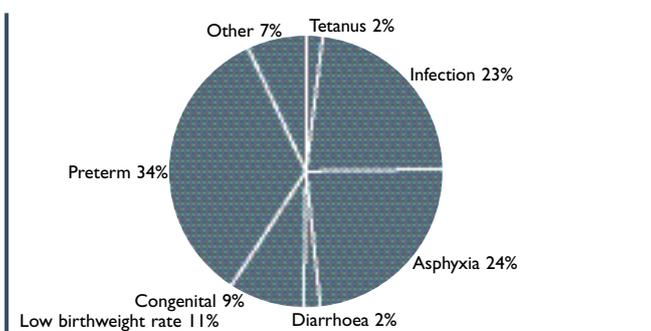
IF 90% COVERAGE OF ALL ESSENTIAL PACKAGES

Newborn lives saved	up to 6,000
Range of NMR reduction	21-48%

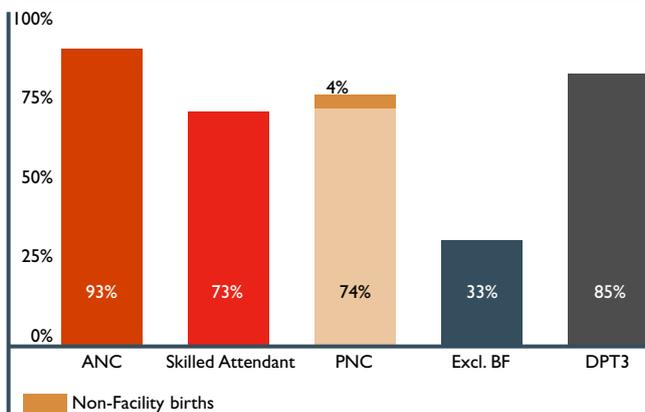
FINANCING

Gross national income, per capita (US\$)	\$480
Government spending on health, per capita (US\$)	\$14
Government spending on health	9%
Out-of-pocket spending on health	36%
User fee protection for women and children	Partial
Line item for newborns in national budget	No

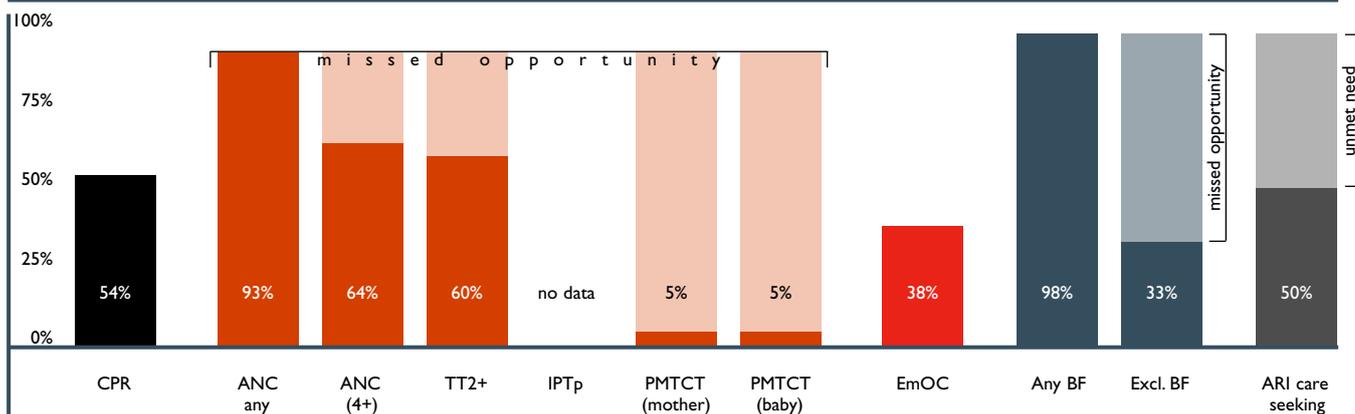
ESTIMATED CAUSES OF NEONATAL DEATHS



COVERAGE ALONG THE CONTINUUM OF CARE



MISSED OPPORTUNITIES



See notes on page 226 for details on data.

TABLE I. Tracking Money and Policy

Country	GNI per capita (US\$)	Government spending on health (%)	OOP [†] as % of total health spending	User fee protection for women and children	Stage of Road Map (of 10)	% birth registration coverage	No. of hospitals that are baby friendly	No. of midwives per 1,000 population	% districts with IMCI
Year	2004	2002	2003	2005-2006	2006	1998-2004	2002	1994-2004	2005
Angola	1030	5	16	No	4	29	3	0.04	2
Benin	530	10	51	Partial	4	70	23	-	26
Botswana	4340	8	12	Yes	4	58	7	-	46
Burkina Faso	360	13	52	Yes	2	-	6	0.13	5
Burundi	90	2	77	No	8	75	1	-	-
Cameroon	800	8	70	No	5	79	1	-	6
Cape Verde	1770	11	27	-	0	-	1	-	-
Central African Republic	310	12	59	-	5	73	4	0.13	-
Chad	260	11	58	-	2	25	2	0.01	6
Comoros	530	6	46	-	7	83	19	-	-
Congo	770	4	36	-	3	-	-	-	-
Congo, Democratic Republic of the	120	5	82	-	5	34	2	-	4
Côte d'Ivoire	770	8	66	-	4	72	85	-	5
Equatorial Guinea	-	7	26	-	4	32	-	0.08	22
Eritrea	180	4	55	-	4	-	46	-	36
Ethiopia	110	10	33	-	4	-	-	0.01	19
Gabon	3940	13	33	-	1	89	2	-	8
Gambia, The	290	14	40	Yes	6	32	-	0.11	100
Ghana	380	5	68	-	3	21	19	-	30
Guinea	460	5	83	-	8	67	3	0.01	6
Guinea-Bissau	160	7	43	-	-	42	-	0.02	4
Kenya	460	7	51	Partial	5	48	232	-	22
Lesotho	740	10	4	-	7	51	7	-	60
Liberia	110	18	43	-	0	-	2	0.12	-
Madagascar	300	9	34	Yes	6	75	53	-	79
Malawi	170	9	28	Partial	8	-	7	-	64
Mali	360	9	38	-	3	48	12	0.04	14
Mauritania	420	14	23	-	1	55	1	-	4
Mauritius	4640	9	39	-	0	-	6	0.04	-
Mozambique	250	11	15	Yes	1	-	-	0.12	21
Namibia	2370	12	6	-	4	71	35	-	16
Niger	230	12	42	-	4	46	20	<0.01	40
Nigeria	390	3	68	Partial	4	30	1147	-	1
Rwanda	220	7	24	-	4	65	2	0.01	13
Sao Tome and Principe	370	11	16	-	0	70	-	0.32	29
Senegal	670	9	55	-	7	62	-	-	40
Seychelles	8090	10	17	-	1	-	-	-	-
Sierra Leone	200	8	42	-	0	46	4	-	33
Somalia	130	-	-	-	0	-	2	-	-
South Africa	3630	10	36	Yes	0	-	176	-	93
Swaziland	1660	11	18	Yes	0	53	5	-	50
Tanzania, United Republic of	330	13	36	Yes	4	6	47	-	90
Togo	380	7.8	66	No	5	82	20	<0.01	80
Uganda	270	11	37	Yes	1	4	11	0.12	100
Zambia	450	12	33	Yes	6	10	47	0.27	53
Zimbabwe	480	14	36	Partial	6	42	38	-	21
Sub-Saharan Africa	611	9	40	-	-	38	2038	0.04	-

† = out of pocket payment. See page 226 for data sources and notes

TABLE 2. Tracking Coverage

Country	Pre-pregnancy care		Antenatal care						
	Female Literacy	Contraceptive Prevalence rate (%)	ANC	ANC 4+	TT2+	PAB	IPTp	PMTCT (mother)	PMTCT (baby)
1. Angola	54	6	66	-	72	75	-	-	-
2. Benin	23	19	81	61	72	69	-	-	-
3. Botswana	82	48	97	97	55	-	-	509	39
4. Burkina Faso	8	14	73	27	40	65	<1	3	3
5. Burundi	52	16	78	-	41	45	-	2	2
6. Cameroon	60	26	83	60	53	60	<1	11	1
7. Cape Verde	68	53	99	99	72	-	-	-	-
8. Central African Republic	33	28	62	39	17	42	-	1	1
9. Chad	13	8	43	18	29	40	-	-	-
10. Comoros	49	26	74	53	-	46	-	-	-
11. Congo	77	-	-	-	60	65	-	3	4
12. Congo, Democratic Republic of the	52	31	68	-	48	58	-	1	1
13. Côte d'Ivoire	38	15	88	35	41	75	-	-	-
14. Equatorial Guinea	76	-	86	37	33	40	-	-	-
15. Eritrea	-	8	70	41	60	62	-	1	1
16. Ethiopia	34	8	28	2	28	45	<1	1	1
17. Gabon	-	33	94	63	30	45	-	-	-
18. Gambia, The	-	18	91	-	95	-	-	-	-
19. Ghana	46	25	92	69	51	70	1	1	1
20. Guinea	-	7	82	49	66	77	3	1	-
21. Guinea-Bissau	-	8	62	62	38	56	-	-	-
22. Kenya	70	39	88	69	66	70	15	20	17
23. Lesotho	90	30	90	70	60	-	-	4	1
24. Liberia	39	10	85	-	24	35	-	-	-
25. Madagascar	65	27	80	21	40	55	-	-	-
26. Malawi	54	31	92	56	66	70	79	3	1
27. Mali	12	8	57	30	46	50	-	1	1
28. Mauritania	43	8	64	16	36	33	<1	-	-
29. Mauritius	81	76	99	-	73	-	-	-	-
30. Mozambique	31	17	85	53	57	60	-	3	3
31. Namibia	83	444	91	69	63	67	-	10	7
32. Niger	9	14	41	11	40	43	-	-	-
33. Nigeria	59	13	58	47	40	51	1	-	-
34. Rwanda	59	10	92	10	51	76	-	21	12
35. Sao Tome and Principe	-	29	91	-	97	-	-	3	3
36. Senegal	29	11	88	40	66	85	9	-	-
37. Seychelles	92	-	-	-	100	-	-	-	-
38. Sierra Leone	21	4	68	68	62	76	-	-	-
39. Somalia	-	1	32	32	49	60	-	-	-
40. South Africa	81	56	94	72	85	61	-	22	-
41. Swaziland	78	48	90	-	75	-	-	4	-
42. Tanzania, United Republic of	62	20	94	62	80	90	53	-	-
43. Togo	38	26	85	46	56	61	-	2	2
44. Uganda	59	23	92	40	48	53	-	12	7
45. Zambia	60	34	93	71	81	83	-	16	7
46. Zimbabwe	86	54	93	64	60	70	-	5	5
47. Sub-Saharan Africa	52	23	69	54	-	59	10	1	1



Country	Childbirth care			Postnatal care	Nutrition and breastfeeding				IMCI/immunisation	
	Skilled attendant	Emergency obstetric care	Birth in a facility	PNC within 2 days for home births [#]	Any BF	Early BF (within 1 hr)	EBF <6 months	% of infants with low birthweight	Percentage of ARI cases taken to appropriate care giver	DPT3
1.	45	-	16	-	-	-	11	12	58	59
2.	66	23	77	12	97	49	38	16	35	83
3.	94	-	66	-	-	-	34	10	14	97
4.	57	-	39	12	98	33	19	10	33	57
5.	25	-	20	-	-	-	62	16	40	74
6.	62	-	59	29	94	32	24	11	40	65
7.	89	-	-	-	-	-	57	13	-	75
8.	44	-	50	-	-	-	17	14	32	40
9.	21	-	13	5+	98	34	2	10	11	20
10.	62	-	-	-	97	28	21	25	49	76
11.	-	-	50	-	-	-	4	-	-	67
12.	61	-	50	-	-	-	24	12	36	64
13.	68	-	48	-	94	28	5	17	38	50
14.	65	-	5	-	-	-	24	13	-	33
15.	28	-	26	2	98	78	52	21	44	83
16.	5	-	6	3	95	52	49	15	19	32
17.	86	-	85	2	86	71	6	14	48	38
18.	55	-	40	-	-	-	26	17	75	92
19.	47	-	46	25	97	46	53	16	44	80
20.	38	-	31	13	96	40	27	16	35	51
21.	35	-	50	-	-	-	37	22	64	80
22.	42	14	40	10	97	52	13	10	49	73
23.	55	31	52	23	95	63	36	14	54	83
24.	51	-	20	-	-	-	35	-	70	31
25.	51	-	32	32	98	62	67	17	39	61
26.	56	19	57	21	98	70	53	16	27	82
27.	41	-	38	10	97	32	25	23	36	76
28.	57	-	49	5+	94	61	20	-	41	70
29.	98	-	-	-	-	-	21	14	-	98
30.	48	-	48	12	98	65	30	15	51	72
31.	76	18	75	-	95	81	19	14	53	81
32.	16	-	18	-	98	28	1	13	27	62
33.	36	-	33	23	97	32	17	14	31	21
34.	31	-	27	3	97	48	84	9	20	89
35.	76	-	-	-	-	-	56	20	47	99
36.	58	-	62	28	96	23	34	18	41	78
37.	-	-	-	-	-	-	-	-	-	99
38.	42	-	20	-	-	-	4	23	50	61
39.	25	-	2	-	-	-	9	-	-	30
40.	84	-	85	-	87	45	7	15	75	93
41.	74	-	56	-	-	-	24	9	60	83
42.	43	-	47	13	96	59	41	13	57	86
43.	61	-	49	-	97	19	18	18	30	71
44.	39	24	37	6	98	32	63	12	67	87
45.	43	9	44	12	98	51	40	12	69	80
46.	73	38	74	14	98	63	33	11	50	85
47.	42	33	37	13	95	44	30	14	41	65

Differs from the country profiles because it refers to latest home birth, not all births. See page 230.
+ PNC within 7 days.

TABLE 3. Tracking Survival

Country	Total population	Annual births	MMR per 100,000 live births	Annual number of maternal deaths	Stillbirth rate per 1,000 deliveries	Annual number of stillbirths
Year	2004	2004	2004	2004	2000	2000
1. Angola	15,490,000	749,000	1,700	12,700	33	25,200
2. Benin	8,177,000	341,000	850	2,900	30	10,400
3. Botswana	1,769,000	46,000	100	<100	19	900
4. Burkina Faso	12,822,000	601,000	1,000	6,000	26	16,000
5. Burundi	7,282,000	330,000	1,000	3,300	34	11,600
6. Cameroon	16,038,000	562,000	730	4,100	27	15,600
7. Cape Verde	495,000	15,000	150	<100	16	200
8. Central African Republic	3,986,000	149,000	1,100	1,600	29	4,400
9. Chad	9,448,000	456,000	1,099*	5,000	34	15,900
10. Comoros	777,000	28,000	480	100	26	700
11. Congo	3,883,000	172,000	510	900	28	4,900
12. Congo, Democratic Republic of the	55,853,000	2,788,000	990	27,600	34	98,000
13. Côte d'Ivoire	17,872,000	661,000	690	4,600	34	23,200
14. Equatorial Guinea	492,000	21,000	880	200	26	600
15. Eritrea	4,232,000	166,000	630	1,000	27	4,600
16. Ethiopia	75,600,000	3,064,000	850	26,000	36	114,600
17. Gabon	1,362,000	42,000	420	200	19	800
18. Gambia, The	1,478,000	52,000	540	300	27	1,500
19. Ghana	21,664,000	679,000	540	3,700	24	16,300
20. Guinea	9,202,000	383,000	980*	3,700	28	11,200
21. Guinea-Bissau	1,540,000	77,000	1,100	800	35	2,800
22. Kenya	33,467,000	1,322,000	1,000	13,200	45	61,400
23. Lesotho	1,798,000	50,000	550	300	23	1,200
24. Liberia	3,241,000	164,000	760	1,200	32	5,400
25. Madagascar	18,113,000	704,000	550	3,900	29	20,800
26. Malawi	12,608,000	550,000	984*	5,400	39	22,200
27. Mali	13,124,000	647,000	1,200	7,800	24	15,900
28. Mauritania	2,980,000	123,000	1,000	1,200	30	3,800
29. Mauritius	1,233,000	20,000	24	<100	11	200
30. Mozambique	19,424,000	769,000	1,000	7,700	32	25,200
31. Namibia	2,009,000	56,000	300	200	19	1,100
32. Niger	13,499,000	734,000	1,600	11,700	38	29,200
33. Nigeria	128,709,000	5,323,000	800	42,600	30	163,400
34. Rwanda	8,882,000	365,000	1,400	5,100	30	11,200
35. Sao Tome and Principe	153,000	5,000	-	-	25	100
36. Senegal	11,386,000	419,000	401*	1,700	27	11,500
37. Seychelles	80,000	3,000	-	-	10	<100
38. Sierra Leone	5,336,000	245,000	2,000	4,900	37	9,300
39. Somalia	7,964,000	359,000	1,100	3,900	45	16,800
40. South Africa	47,208,000	1,093,000	230	2,500	18	19,500
41. Swaziland	1,034,000	30,000	370	100	22	700
42. Tanzania, United Republic of	37,627,000	1,403,000	578*	8,100	29	42,500
43. Togo	5,988,000	233,000	570	1,300	26	6,200
44. Uganda	27,821,000	1,412,000	880	12,400	31	45,100
45. Zambia	11,479,000	468,000	750	3,500	31	14,800
46. Zimbabwe	12,936,000	384,000	1,100	4,200	22	8,700
47. Sub-Saharan Africa	697,561,000	28,263,000	940^	247,300	32	890,000



Country	NMR per 1,000 live births	Annual neonatal deaths	Neonatal mortality rank	Excess NMR for poorest vs. least poor (%)	U5MR per 1,000 live births	Annual under 5 deaths	NMR as % of U5MR	MDG 4 target
	2000-2005	2000-2005		1998-2005	2004-2005	2004		2015
1.	54	40,100	42	-	260	194,700	21	87
2.	41*	14,100	30	43	152	51,800	27	62
3.	40	1,800	28	-	116	5,300	34	19
4.	31*	18,600	11	11	192	115,400	16	70
5.	41*	14,600	29	-	190	62,700	22	63
6.	29	16,300	8	55	149	83,700	19	46
7.	10*	200	2	-	36	500	28	20
8.	48*	7,200	39	150	193	28,800	25	60
9.	39	17,800	23	57	191*	87,100	20	68
10.	29*	800	9	-	70	2,000	41	37
11.	32*	5,500	13	-	108	18,600	29	37
12.	47*	130,900	37	-	205	571,500	23	68
13.	65*	42,800	45	53	194	128,200	33	52
14.	40*	800	26	-	204	4,300	20	53
15.	24	4,000	5	33	82	13,600	29	49
16.	39	119,500	24	30	123*	376,900	32	68
17.	31*	1,300	10	20	91	3,800	34	31
18.	46*	2,400	36	-	122	6,300	38	51
19.	43	29,200	32	-	112	75,400	39	42
20.	39	15,000	25	58	163*	62,400	24	80
21.	48*	3,700	40	-	203	15,600	24	84
22.	33	43,600	17	46	120	158,600	28	32
23.	46	2,300	35	104	113*	5,700	41	40
24.	66*	10,800	46	-	235	38,500	28	78
25.	32	22,500	14	127	123	86,600	26	56
26.	27	14,900	7	24	133*	73,200	20	80
27.	57	36,900	44	34	219	141,700	26	83
28.	40	4,900	27	-	125	15,100	33	44
29.	12*	200	3	-	15	300	78	8
30.	37	28,500	19	103	152	116,900	24	78
31.	25*	1,400	6	-	63	3,500	40	28
32.	43*	31,700	33	73	259	190,100	17	107
33.	48	255,500	38	157	197	1,048,600	24	76
34.	45*	16,200	34	51	203	74,100	22	59
35.	38*	200	22	-	118	600	32	39
36.	35	14,700	18	104	121*	50,700	29	49
37.	9*	<100	1	-	14	<100	62	7
38.	56*	13,800	43	-	283	69,300	20	101
39.	49*	17,800	41	-	225	80,800	22	75
40.	21*	23,000	4	-	67	73,200	31	20
41.	38*	1,100	21	-	156	4,700	24	37
42.	32	44,900	15	6	112*	157,100	29	54
43.	42*	9,800	31	-	140	32,600	30	51
44.	32*	44,500	12	53	138	194,900	23	53
45.	37	17,300	20	63	182	85,200	20	63
46.	33*	12,600	16	-	129	49,500	25	27
47.	41	1,155,800		63	164	4,636,900	25	62

* Unadjusted data from most recent Demographic and Health Survey (DHS).

^ Does not include adjusted DHS data. See page 226 for data sources and notes.

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Why was this book written?

Each year at least 1.16 million newborns die in Africa – until recently, these deaths went uncounted. Up to two thirds of these babies could be saved with 90% coverage of evidence based, feasible interventions. Countries are recognising that addressing newborn health is a catalyst to strengthening existing maternal and child health care and to integration with other programmes such as malaria and HIV.

Who is this book for?

This publication has been developed by a partnership of UN agencies, donors, NGOs, professional organisations and individuals to be useful for all those who are committed to accelerating progress to save the lives of African mothers, newborns, and children.

What does this book provide?

- New information on Africa's newborns – where, when and why do they die? How many lives could be saved?
- An overview of the continuum of care for maternal, newborn, and child health
- The current situation, opportunities, and next steps related to strengthening and integrating newborn health in nine key packages and programmes linked to the continuum of care
- Principles and ideas for phasing newborn health interventions, with country examples
- Data about health status, progress and policy for 46 African countries



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