The maternal, newborn, and child health continuum of care

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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 polices 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.

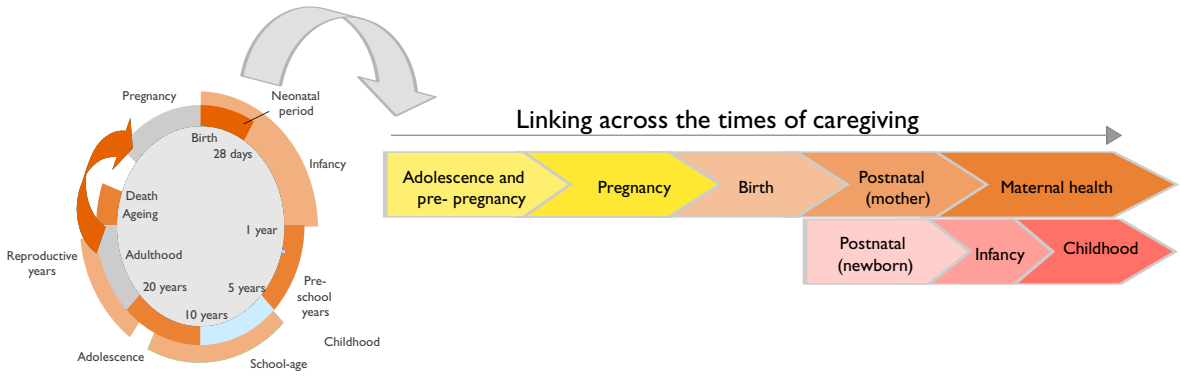
The gap in care around the *time* of birth, when the risks are highest for mother and baby. During birth and the first few days of life, over half of all maternal[3] and newborn[1] deaths occur in addition to intrapartum stillbirths. Although more mothers and newborns die during this time period than 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.

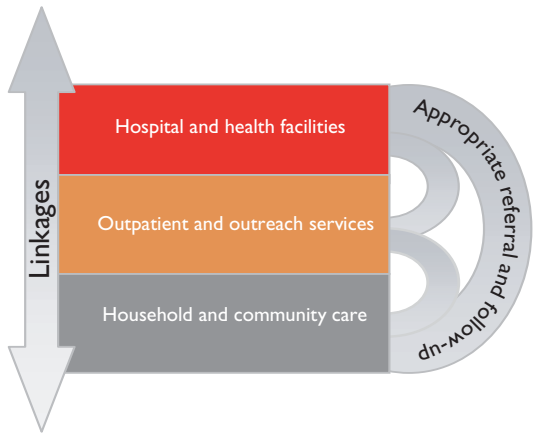
An effective continuum of care strengthens the links between the home and the first level facility and the hospital, assuring the appropriate care is available in each place (Figure II.2). This is the second dimension of a continuum of care. Strategies involve improving the skills of health workers, 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.

FIGURE II.1 Connecting care throughout the crucial time periods in the lifecycle



Source: Adapted from references[5,6]

FIGURE II.2 Connecting places and approaches of care giving



Source: Adapted from reference[6]

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

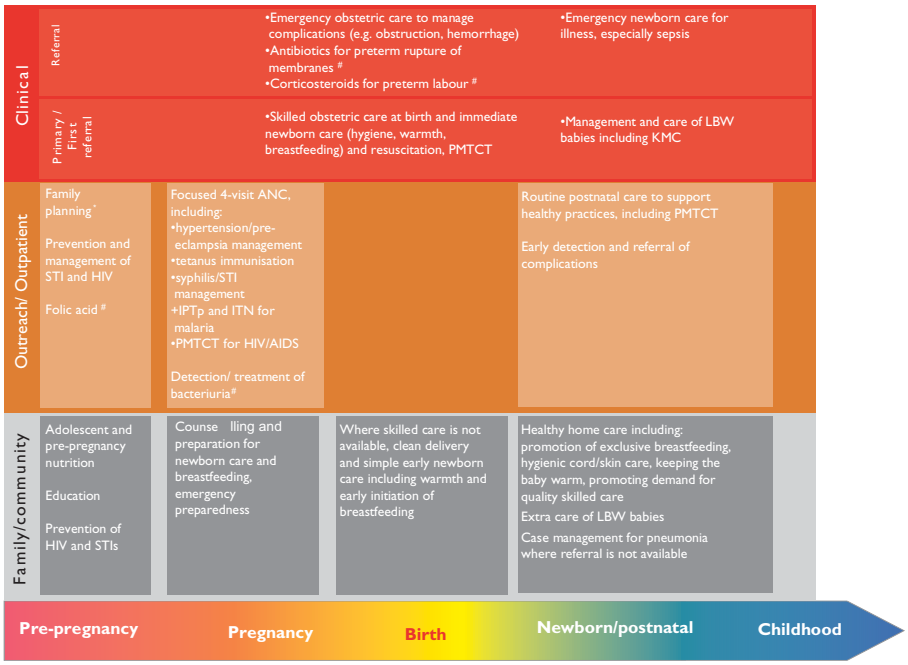
Newborn health is a sensitive marker of a functional continuum of care because the health of babies relies on good linkages between maternal and child health programmes, and minimising delays in care for complications during childbirth and for the baby with illness. As described in the *World Health 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 survival[10] and on newborn survival[11] and maternal health[12] 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 outcomes[17]

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

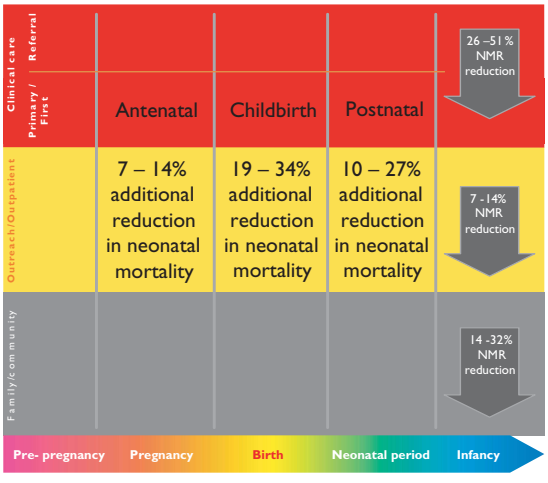
Acronyms:
KMC=Kangaroo Mother Care,
ANC=antenatal care,
IPTp=intermittent preventive treatment in pregnancy for malaria,
ITN=insecticide treated bednets,
LBW=low birthweight

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 survival[20] 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 model[21]) 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 unreached? 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

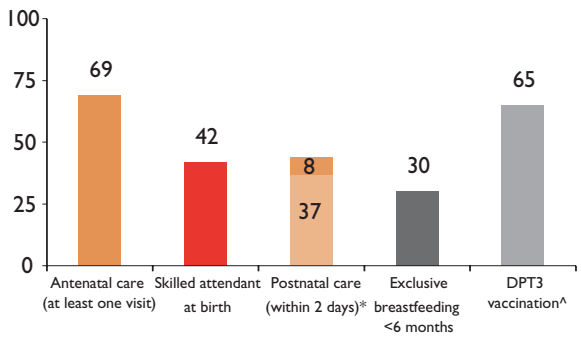
There are conflicting demands for health investment at the national level in all countries. MNCH, as the backbone of the health system requires substantial investment, yet often gets leftovers from the bigger "vertical" programmes.

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 page226 for more details.

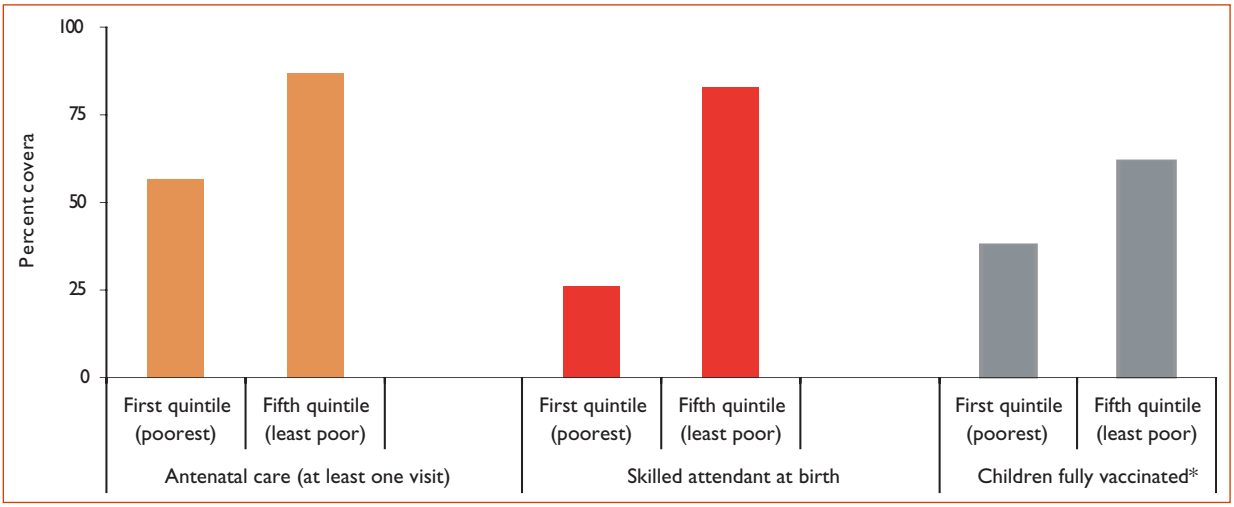
^DPT3 refers to percentage of infants receiving three doses of diphtheria, pertussis and tetanus vaccine.

Sources: ANC, skilled attendant at birth, exclusive breastfeeding <6 months, DPT3 vaccination from reference[26] 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 that 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 mobilsation 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 pneumonia[40] 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, NGOsand 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: Reference[43]

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: Reference[46]

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 reference[13]
More details on operational strategies and examples are given in Section IV

Underlying causes	Operational strategies
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	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.)
Access and transport to communities Cost of commodities; deficient markets; lack of legal framework for retail of commodities	Strengthen logistics including community based distribution Develop social marketing (e.g. ITNs, clean birth kits) and legal frameworks Subsidise commodities if appropriate
Inconsistent policies for primary health care Poorly defined roles and training, lack of supervision Relying on volunteerism, lack of remuneration or other rewards	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
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	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
Poor management of supply chain Transport and cold chain failures	Develop essential commodity policies Strengthen skills of supply management team Consider use of appropriate technology
Lack of information, negative experiences with health system, distance and cost.	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
Inadequate human resource policies; low numbers trained, low pay, disincentives to work in rural areas; skilled staff limited to urban areas; absenteeism; "brain drain"	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
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	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
Delays in recognition of illness, decision making, and lack of transportation; social and cultural gap between health staff and patients, especially poor	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
Low income/resources, lack of social security systems Corrupt practices by public sector providers High cost of private sector care	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

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

- WHO. World Health Report 2005: Make every mother and child count. Geneva, World Health Organization; 2005.
- WHO. World Health Report 2005: Policy brief one. Integrating maternal, newborn and child health programmes. Geneva, World Health Organization; 2005.
- de Graft-Johnson J, Daly P, Otchere S, Russell N, Bell R. Household to Home Continuum of Maternal and Newborn Care. Baltimore, Maryland, The ACCESS Program, JHPIEGO; 2005.
- Sines E, Tinker A, Ruben J. The Maternal–Newborn–Child Health Continuum of Care: A Collective Effort to Save Lives. Washington, DC, Save the Children and the Population Reference Bureau; 2006.
- Otchere S and Ransom E. Bringing Care Closer to Mothers and Newborns: using the Gap Analysis Tool to develop a home to hospital continuum of care. Washington, DC, Save the Children; 2005.
- Lovich R, Rubardt M, Fagan D, Powers M. Partnership defined quality: a tool book for community and health provider collaboration for quality improvement. Washington, DC, Save the Children; 1996.
- Howard-Grabman L and Snetro G. How to mobilize communities for health and social change. Baltimore MD, Health Communication Partnership.