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 have 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).

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**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 reference
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. 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 transportation (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 reference 7

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. 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 available

- Information may be collected but is not always used to change procedures, or there may be delays in undertaking emergency care, particularly caesarean section

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66 Opportunities for Africa’s Newborns
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. 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. 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.

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

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

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. 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.

**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. 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 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. 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. 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.

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). 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.
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.\(^2\)\(^{28}\) 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,\(^2\)\(^{22}\) while working to achieve higher coverage with more complex care in the long term, including skilled attendance and EmOC.\(^3\) 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.\(^2\)\(^{31}\) 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.\(^2\)\(^{31}\)

**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.\(^7\) 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.\(^3\)\(^{25}\) 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 if 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

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

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. 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. 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, and several studies in Africa have shown significant reduction in stillbirths and neonatal deaths for women using maternity waiting homes. 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 reference
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.”

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. 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. 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.

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. 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).

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.

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.16 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).3

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
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.
**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. More research is required which also examines feasibility and cost-effectiveness.
Conclusion

If 90 percent of pregnant women 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. 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.