



MEDECINS SANS FRONTIERES
DOCTORS WITHOUT BORDERS

AGAINST THE ODDS:

Integrating maternal
and newborn care

The Médecins Sans Frontières experience



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WHY 'PERINATAL'?



This premature baby has taken five weeks to gain 400g thanks to dedicated care including feeding by syringe. Nigeria. 2012 © Olga Overbeek

Most women around the world who consider a pregnancy have the same wish – a safe delivery and a healthy baby. However, the stark reality remains that many women living in situations of crisis or in countries with poor health systems are unable to experience this. Without access to quality antenatal, obstetric and newborn care, women's lives and those of their babies are placed at risk every day.

Since 1990, global efforts to reduce deaths of women during pregnancy and childbirth, as well as in children under five, have shown some positive results. At the same time, the proportion of newborn deaths among under-fives is increasing. The newborn period, the first four weeks of life, now represents over 40 percent of all mortality under five¹.

As part of its medical response to humanitarian crises around the world, Médecins Sans Frontières (MSF) is increasing its focus on the provision of an integrated approach to maternal and child healthcare during the perinatal period – the time before delivery, during delivery and one week after birth.

Losing a life is a tragic event, no matter where or when it happens. Losing a mother, particularly in the developing world, has a terrible impact on family and community; without her, her other children are left vulnerable and their risk of illness is greater. Saving the life of the mother is inarguably important. But while medical care for the newborn in resource-poor settings has been neglected in the past, saving the life of the newborn can and should be equally prioritised.

The intertwining of antenatal care, care during delivery and newborn care can go a long way to save the life of the mother and newborn and at the same time give her baby the best start to life. Recognising that this approach can occur at all levels of healthcare

delivery, MSF is highlighting this care predominantly in hospitals.

Low-cost, straightforward medical interventions are possible in the perinatal period, even in under-resourced countries. If birth attendants are skilled and trained in recognising and treating life-threatening complications in both mother and baby, the two have a greater chance of survival.

But there is a long way to go. A greater political and financial commitment to perinatal care in a hospital setting is essential. MSF believes that an improved perinatal approach means that:

- A dual mother-and-child focus is integrated in trained staff and appropriate equipment and infrastructure;
- skilled birth attendants need to be adequately trained to treat both mother and baby particularly in the first hours immediately after birth; and
- more robust research is needed into care for the newborn.

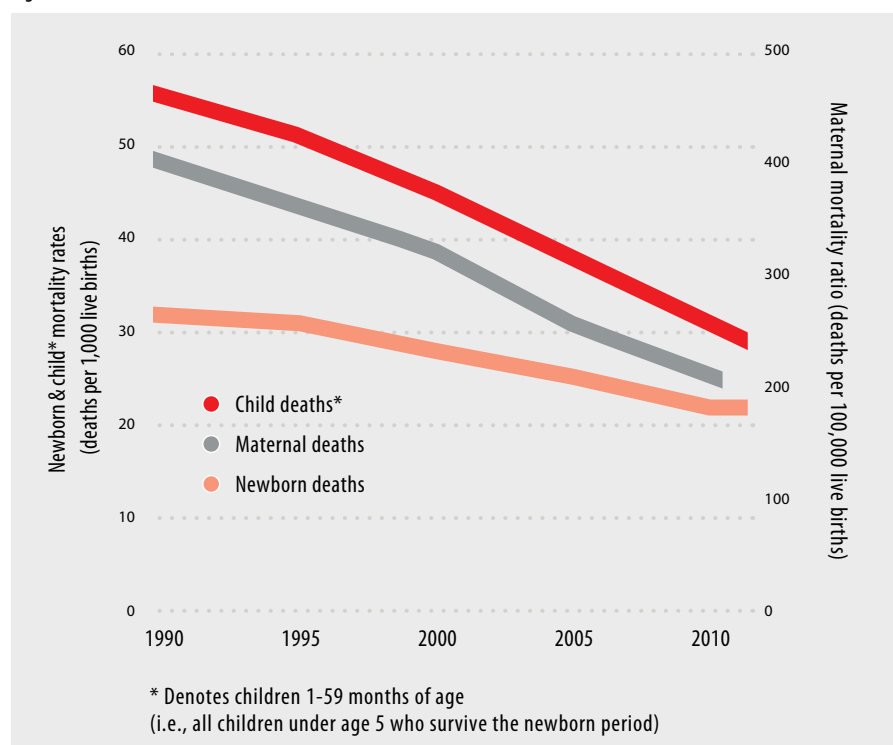
MSF's recommendations are outlined in detail at the end of this report.

Using examples from MSF's experience in nine countries, this report will examine the challenges the organisation faces in implementing perinatal care in its projects. It will also detail the feasible and inexpensive solutions that are possible in these contexts to ensure that more women survive their pregnancy and delivery and that their babies survive their most vulnerable time – the first four weeks of life.

¹ The number of women who die each year from causes related to pregnancy or childbirth has dropped substantially – from 543,000 deaths in 1990 to around 287,000 deaths in 2010. The global number of deaths in children under five years of age has dropped from nearly 12 million in 1990 to approximately 6.9 million in 2011.

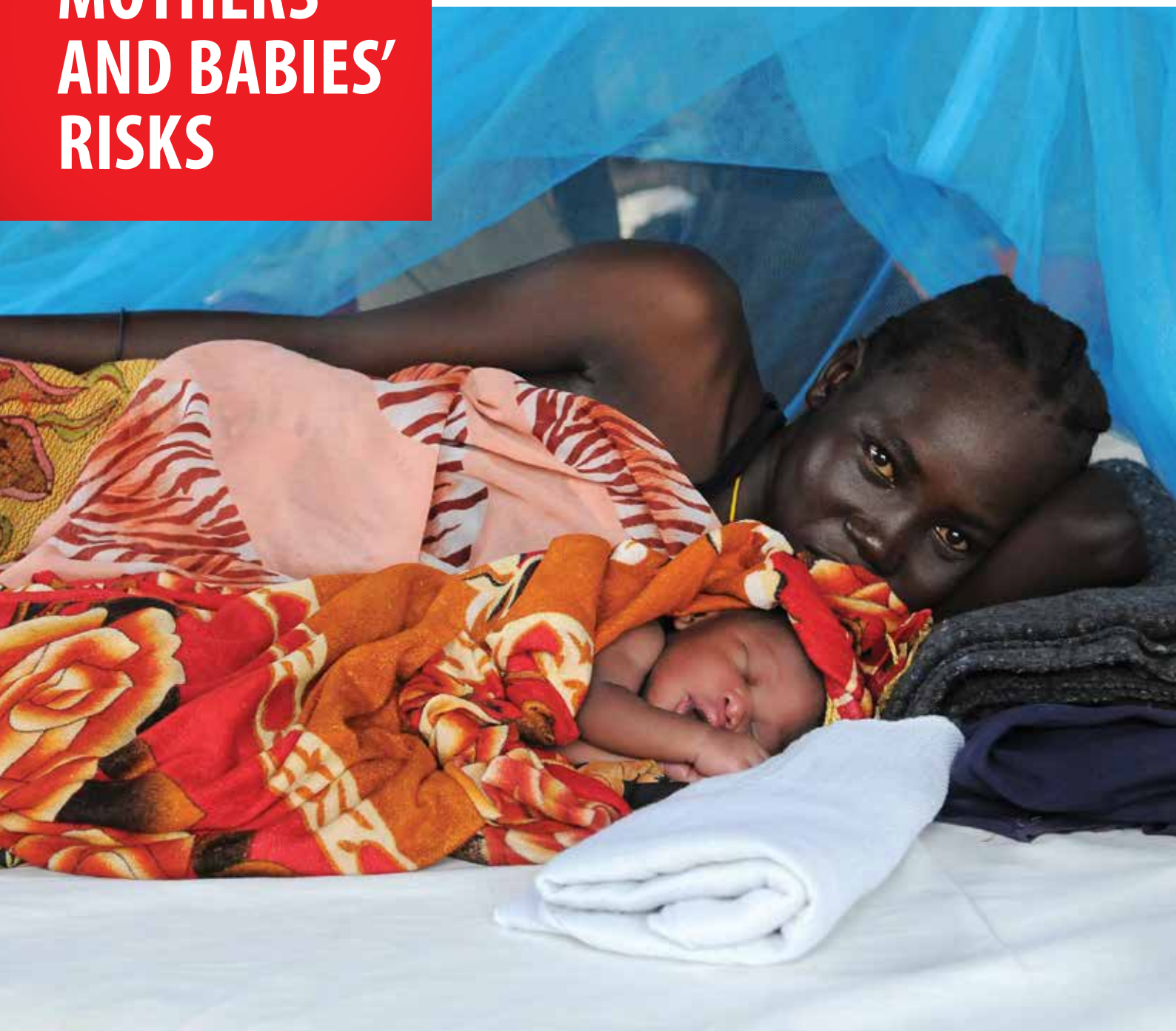
Unless otherwise stated in this report, all statistics (except for MSF activities) are sourced from the World Health Organization or the World Bank and collaborating agencies.

Figure 1



This graph demonstrates how maternal and under-5 mortality has successfully declined over the past 20 years. In comparison neonatal deaths have declined at a minimal rate. (Reproduced from Save The Children.)

REDUCING MOTHERS' AND BABIES' RISKS



DEFINITIONS

The **perinatal period** is the time before labour, during delivery and extending to one week after birth.

The **neonatal period** is the first four weeks of life. The first week, in particular the first 24 hours, is the most vulnerable period for the baby.

A **skilled birth attendant** is a health professional such as a midwife, obstetrician, nurse or doctor, who is trained to care for women during pregnancy and childbirth.

Stillbirths refer to babies that die in utero at or after 22 weeks of pregnancy.

Maternal death can occur at any time during pregnancy or up to 42 days after childbirth.

A refugee mother stays for observation with her newborn in the MSF-run field hospital in Doro refugee camp, South Sudan. 2012
© Florian Lems

Newborn death: a global snapshot

Every hour around the world, nearly 400 newborns lose their short claim on life. The vast majority of these babies will not even live for a few days. A similar number of babies will be stillborn, dying in utero at any stage after 22 weeks of pregnancyⁱⁱ. The developing world sees the most startling statistics: 99 percent of newborn deaths occur in resource-poor countries.ⁱⁱⁱ

Research in the past ten years has overwhelmingly favoured children under five over newborns. For instance, of more than 1300 randomised controlled trials in under-fives carried out in developing countries between 2002 and 2012, not even four percent of trials addressed newborn mortality or outcomes.^{iv} MSF believes that much more needs to be done to scale up research to understand the causes of death for newborns in developing countries.

The majority of newborn deaths are due to preventable complications that arise during pregnancy, delivery or soon after childbirth. At least half of newborn deaths occur when women give birth without a skilled birth attendant and without access to healthcare facilities.

Prematurity and low birth weight, infections and asphyxia are the main causes of newborn deaths, together comprising over three quarters of newborn mortality. Page 6 of this report details these causes further.

Nevertheless, with a unified focus on maternal and newborn health before delivery, during delivery and in the immediate post-delivery phase – the perinatal period – the majority of newborn and maternal deaths can be prevented. The World Health Organization reports that up to two thirds of newborn deaths can be prevented if effective health measures are provided at birth and during the first week of life.

Mothers still at risk

Despite some improvements in global statistics on maternal deaths, the news remains alarming for women. Every day, 800 women die during childbirth or from a pregnancy-related complication. As with newborns, nearly all of these deaths – 99 percent – occur in the developing world.

The five main direct killers – haemorrhage, sepsis, unsafe abortion, eclampsia and obstructed labour – account for almost three quarters of all maternal deaths.

Last year, MSF issued a report on maternal death during humanitarian crises. *Maternal death: the avoidable crisis* highlighted the need for access to emergency obstetric care during delivery, the most dangerous time for mother and baby.^v

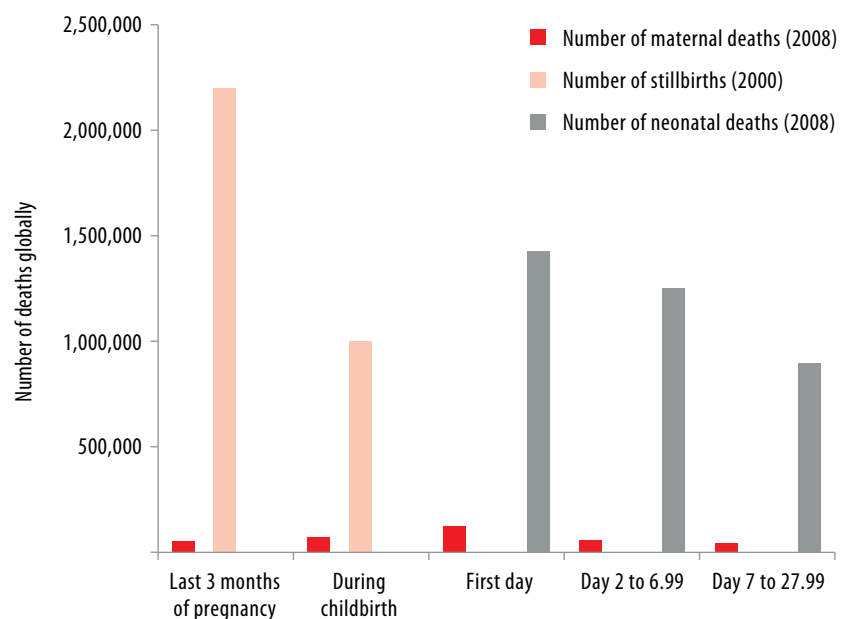
Treating mothers and babies together

A healthy mother has the best chance of having a healthy baby. An **integrated approach** including **antenatal care** (care during

pregnancy), **care during labour and delivery** and **newborn care** in the first week is the key to improving the outcomes for both.

This integrated approach means that staff, protocols, tools and infrastructure need to be equipped with a dual mother-and-baby focus. For example, as it expands its commitment to newborn care, MSF is emphasising training on newborn care for all staff who attend a delivery. This involves training on newborn resuscitation, identification of babies at risk and responding immediately to babies who are very unwell. MSF is also working to introduce specialised newborn units in all of its obstetric programmes so that babies that need this extra monitoring and treatment can receive dedicated care. And once these units are established, MSF is also working to improve links between staff in the maternity and newborn care units so that there is greater sharing of information about mother and baby.

Figure 2: When do maternal deaths, stillbirths and neonatal deaths occur?



This graph illustrates that the riskiest time for mothers and babies is the time around delivery and the first week of life. Regarding stillbirths, it displays that while the majority happen in the last three months of pregnancy, one third – or nearly one million – occur during childbirth. (Reproduced from Lawn JE et al.^{vi})

NEWBORN DEATH: THE THREE BIG KILLERS



Care for this sick newborn in Duékoué hospital includes the basis components of a beanie and blankets to avoid hypothermia. Ivory Coast. 2012 © Isabelle Ferry/MSF

Sepsis (infection)

More than one third of neonatal deaths worldwide are caused by infections, a large number of which start during pregnancy and are then transmitted to the unborn baby. Quality care during pregnancy, childbirth and the first weeks of life is therefore vital in preventing these deaths. For instance, antenatal care can go a long way in preventing the transmission from mother to baby of infections such as HIV and syphilis. Infections can also be transmitted from mother to baby during childbirth, especially when labour is prolonged. Women and babies who have access to skilled obstetric care during this critical time have a much greater chance of survival.

Once born, there are external dangers, both in under-equipped health facilities and at home. For example, unclean equipment used to cut the umbilical cord creates risk of infection. Newborn babies can acquire infections during their hospital stay that are transmitted through health personnel. These infections carry a high chance of death for the vulnerable newborn. Premature babies are particularly at risk. It is critical that infections are identified and managed early in both the mother and baby throughout the entire perinatal period to avert complication or death.

Asphyxia (lack of oxygen)

Perinatal asphyxia (moderate to severe lack of oxygen) accounts for nearly one quarter of newborn deaths worldwide. Asphyxia can cause damage to vital organs such as the heart, lungs, digestive system and kidneys. It can also cause damage to the brain, resulting in convulsions, developmental delay, long-term disability or even death. Asphyxia can occur at any time during labour and delivery. At this point, the woman must have access to a skilled birth

attendant who is trained in monitoring the baby's heart rate and who knows how to respond in the case of complications. Immediately after birth, approximately ten percent of newborns will require some assistance to start breathing.^{vii} Again, the presence of a skilled birth attendant who can dry, stimulate the baby and clear its airway as well as resuscitate using bag and mask ventilation, if required, is essential.

Prematurity or low birth weight

Premature babies and those born with a low birth weight are particularly vulnerable when they enter the world. Preterm babies have a higher risk of suffering from severe infections, breathing problems, feeding difficulties, hypothermia and brain injury. They also have an increased risk of ensuing disabilities which are an even bigger challenge when living in a developing country. Preterm births (less than 37 weeks) and complications associated with them can be reduced or prevented not only through antenatal care but also through education in family planning, the importance of seeking care if complications arise, prevention and screening for infections, hygiene and

nutritional supplementation. Newborn complications due to prematurity, especially under-developed lungs, can be prevented or reduced by providing steroids to a mother in premature labour.^{viii}

Low birth weight is defined as a birth weight of less than 2.5 kg and is a risk factor for newborn death. If a baby who is born too small or too early is well enough, breathing, and has no signs of infections, it should still be kept warm and close to its mother and be fed frequently to maintain adequate blood sugar levels. Kangaroo Mother Care is a simple method of care for these babies (see page 19).

If a baby has a very low birth weight (less than 1.5kg) or is born very early, more specialised newborn care is required, including more rigorous monitoring and sometimes additional oxygen, fluid support and early treatment of infections.

Syringe feeding supplements or temporarily replaces breastfeeding for newborns unable to breastfeed. South Sudan. 2012 © Isabel Corthier





- For pregnant women living in the remote southern area of Buin, in the Autonomous Region of Bougainville in Papua New Guinea, it can be a huge challenge simply to get to a health facility that can deal with complications in their delivery or with their sick newborn. Many have to travel enormous distances over poor quality roads. The overall outlook for pregnant women and newborns in Papua New Guinea does not paint a good picture, with some of the highest rates of maternal and newborn death in the Asia Pacific region. Women have a one in 110 lifetime risk of dying as result of pregnancy or childbirth, and for every 1,000 live births, 23 babies will die in their first four weeks of life. Just over half of births are attended by a skilled health professional.^{ix}

MSF has been supporting the Buin Health Centre since 2011, with a focus on improving access to perinatal care. Working alongside the Division of

Health, MSF provides antenatal care, and postnatal care, a 15-bed maternity ward and a basic neonatal unit. A maternity waiting home has also been set up, where women can stay in the last weeks of pregnancy in order that they are not far from care when they go into labour.

“One of the main problems we have is that women do not come for antenatal care and that they do not seek care until it’s too late,” says Anthony Flynn, Head of Mission/Medical Coordinator in Bougainville. “They may have difficulty coming to the centre because of distance, or they may not perceive that they have any problems. Part of our work here is encouraging members of the community to deliver in a health facility with a skilled birth attendant.

“Distance is a huge challenge in this area, with 98 percent of Bougainvilleans living in remote areas. We see many cases of prolonged and

obstructed labour as many women have to walk up to four hours to reach a health centre. We also see babies who have been delivered in the village who come to hospital with a complication that may lead to infection.”

MSF has also extended its support to the five surrounding smaller health centres in the area for the women who can’t come to Buin. This support has enabled staff to recognise high risk pregnancies and high risk newborns, and therefore know when a woman or baby needs to be referred to a facility that can deal with complications.

Skilled birth attendants trained in care for the woman and baby are a crucial component of integrated perinatal care. © Eddy McCall/MSF

ELIZABETH MILROY IS A MIDWIFE WHO HAS BEEN WORKING WITH MSF IN BOUGAINVILLE



MSF Midwife Elizabeth Milroy performs the initial health check for a newborn in Buin Health Clinic, Papua New Guinea. 2013
© Eddy McCall/MSF

“Last year, a woman who had just gone through her first pregnancy arrived at Buin Health Centre holding her premature baby which had been born at home in a village approximately 1.5 hours’ walk away. The mother had received antenatal care and had no obvious risk factors for a premature labour. The baby, a little girl, weighed just over one kilogram. She was already three hours old and was hypothermic, with a temperature of 34.5 degrees.

We had to act quickly. We immediately provided warmth, oxygen and ensured skin to skin contact with her mother. We also isolated the baby from other newborns to prevent infection. We fed the baby via a nasal tube with her mother’s expressed breast milk.

By the third day we saw that there were dramatic fluctuations in her temperature. Although everything else appeared ok, we knew that she had a high risk of developing an infection as she was born before arrival, was premature and had a very low birth weight. So we made the decision to commence intravenous antibiotics, which we continued for seven days.

By day five, her temperature had become more stable. The heater we were using at a certain time period each night helped this. But by the eighth day, her weight had dropped to just 950 grams, so we increased the feeds.

We informed the mother and grandmother about the importance of protecting the baby from infection, and they were vigilant at ensuring visitors washed their hands before touching her. By three weeks of age, the baby appeared to be stable. Her feeds were gradually increased, and eventually she was able to start breastfeeding.

It was a slow and steady race. We all watched in awe as ‘One Kilo’ grew, showed her strong personality and thrived. At 6 weeks of age, ‘One Kilo’ was given a name – Alicia.

Eight weeks after she was born, Alicia and her mum were finally discharged. Alicia now weighed 1.9 kilograms. She had put up a good fight and won. When all the odds were against her, this little character battled hard, much to the joy of her mother and the MSF team. It was with much joy, and a heavy heart or two, that we said goodbye.

Two weeks later, Alicia and her mum returned for a follow up weigh. She had continued to thrive, breastfed well and mum voiced no concerns. After much anticipation, she weighed a remarkable and almost unrecognisable 2.4 kilograms.”

ANTENATAL CARE



Top: An MSF nurse performs a prenatal check on a young mother in Gondama Referral Hospital, Bo District. The rate of maternal deaths here is roughly 60% less than the country average because of MSF's comprehensive services. Sierra Leone. 2012 © Lynsey Addario/VII

Bottom left: This prenatal check-up during the perinatal period is just one of the comprehensive services provided in Gondama Referral Hospital, Sierra Leone. 2012 © Lynsey Addario/VII

Bottom right: Antenatal care can have a life-saving effect on a baby. Here the dangers of malaria are explained to pregnant women in a prenatal class in Bo District, Sierra Leone. 2012 © Lynsey Addario/VII

Why healthcare before delivery can save lives

While antenatal care does not have a direct impact on reducing maternal deaths, it plays a very important role in improving a mother's health during her pregnancy and can have a life-saving impact on her baby in utero and her newborn during the first days of life. Some complications, such as hypertensive disorders, can be identified and managed; immunisations can be given against diseases like tetanus; infections (a risk factor for premature delivery) can be treated; preventive treatment for malaria can be given; HIV and TB can be detected and treated in the mother and transmission of HIV from the mother to the child can be prevented. A woman will receive education on breastfeeding and family planning and will be given iron and folate supplements to prevent and treat anaemia. Education given during antenatal care has been proven to increase the uptake of women delivering in a health care facility with access to skilled birth attendants, drugs and equipment.^x

The World Health Organization recommends four antenatal visits during pregnancy. While MSF seeks to follow this guideline, the reality is vastly different. In many countries, women will only come once or twice, with most women arriving well into the third trimester. They may face danger travelling due to conflict, health facilities may have been destroyed after natural disasters, or they may simply not be able to access care due to distance or insecurity on the roads.

“Like many other organisations working in difficult places, MSF needs to adapt its approach to deal with this situation more effectively. Community outreach and clinics could be used more effectively in ensuring that all women have access to antenatal care. Additionally, formal referral networks created between these smaller health clinics and hospitals, with the availability of ambulances, impacts positively on the outcomes for mothers and babies.”

– Kara Blackburn, Women's Health Advisor

Maternity waiting homes: a way to be closer to obstetric care during pregnancy

One initiative that MSF has been using in places such as Papua New Guinea, Democratic Republic of Congo and Madagascar is 'maternity waiting houses'. This service is intended for women who live far from a health facility. Maternity waiting houses are generally built in or near the hospital, and women can stay there for several weeks prior to their delivery. They are monitored by midwives or other qualified staff, and are close to obstetric care when labour commences. This strategy has proven successful in improving the management of deliveries and reducing maternal and perinatal mortality, but is at times culturally challenging as it can be difficult for women to be away from their traditional role in the family for an extended period.

HIV AND TUBERCULOSIS: TWO BIG KILLERS OF MOTHERS AND BABIES

Worldwide, HIV/AIDS is the leading cause of death for women of reproductive age, and maternal mortality cannot be reduced if HIV care is not integrated into maternal care. The virus places babies at high risk of infection: in utero, during labour, or post-delivery. Early detection and treatment is crucial to reduce the chance of mother-to-child transmission. Antenatal visits and prevention of mother-to-child transmission (PMTCT) programmes are the key opportunities to ensure this. But if antenatal care is limited or deficient, and PMTCT programmes not in place, the mother's poor health will likely have a negative impact for her baby.

Tuberculosis, the most common HIV-related illness, threatens both mother and baby, and is a significant killer for women of childbearing age. Maternal TB has been found to cause greater obstetric complications including a two-fold increase in haemorrhage and an even more noteworthy ten-fold increase in miscarriage.^{xi}

Maternal TB also causes considerably adverse outcomes for newborns: for example, low birth weight and premature births are two times more common, and death within the first 28 days of life six times more prevalent.^{xii}

The challenges with TB are enormous. Access to diagnosis and treatment for adults remains limited worldwide and appropriate tools for diagnosis and treatment for children and babies are scant. It is likely that deaths due to TB are significantly under-reported. Unless TB care is integrated and internationally prioritised in maternal and child health, there is a limit to what can be done for babies and their older siblings with TB.

- In Ethiopia, women and newborns are continuing to die in large numbers in the perinatal period. Just over one third of under-five deaths are newborns, stark evidence of how precarious the first 28 days of life remain for children born in this resource-poor country.

In south-western Ethiopia, MSF runs maternal and child health projects supporting the main health centres in two divisions in Sidama Zone, Mejo and Chire. This rural and mountainous area presents huge obstacles for pregnant women and their babies to access adequate care in the perinatal period. There is a significant lack of functional health facilities and trained staff in the region as is the case in the country in general.

Together with the Ethiopian Ministry of Health, MSF provides antenatal and postnatal care, obstetric care, family planning, care for children with complicated acute malnutrition and care for survivors of sexual and gender based violence. Specifically, the team is enhancing its focus on health education in the community and during antenatal care, as well as improving obstetric care. They are

also conducting training in newborn resuscitation and basic newborn care including kangaroo mother care and feeding.

“Most women particularly in the remote areas tend to deliver in their community and with a senior relative or alone,” says Jean François Saint-Sauveur, the Medical Coordinator for MSF in Ethiopia. “Most women will only come to a health centre if there is a complication. When they are in labour they often arrive too late. This means that babies are born in poor condition, often prematurely, of a low birth weight, or with sepsis.”

“Here the complications are really serious,” says midwife Eva Dominguez. “One woman presented with a molar pregnancy. Another woman had two uteri. Normally, we would know about them early in the pregnancy if women come to antenatal visits. But here, too often we find out later. Sometimes you have the chance to save two lives, the mother and the baby, but sometimes we can only save the mother.”

In order that women can avoid further complications during labour on their long journey to the clinic, MSF has established a maternity waiting

house in Mejo, and one will soon be functioning in Chire. Eva explains: “It is important that women arrive in time for delivery, not on the way. The women come to the waiting house at least a week before their estimated due date. MSF provides cooking material, healthcare, one consultation per week, and one visit by a midwife per week. Normal deliveries are done in the health centres by the midwife and complicated cases are referred to nearby hospitals.”

The maternity waiting house has started to show very promising results. In Mejo, the average number of births attended by skilled attendants has increased 900% per month. Before the project began, around five deliveries per month were attended by a skilled health professional. Just three months after, this had risen to 50 deliveries per month, an average maintained from June to December 2012.

From July to December 2012, there were 316 live births in both MSF-supported facilities in Sidama Zone. This figure should increase as the maternity waiting house in Chire becomes functional.



An MSF health promoter discusses the importance for pregnant women to go to the MSF clinic for maternal care, Ethiopia. 2010 © July Remy



► Afghanistan is widely known as one of the most dangerous places in the world to give birth. A woman has a one in 32 chance of dying in childbirth, and for every 1,000 live births, 36 babies will not survive their first four weeks. Helmand continues to be one of Afghanistan's most volatile provinces and its one million inhabitants are among those most affected by conflict. MSF started working in Boost Hospital, in Helmand's capital Lashkargah, in 2009. It is one of only two functioning referral hospitals in southern Afghanistan.

MSF is providing a range of care in Boost, including maternity and paediatrics. In 2012, there were 6,078 babies delivered without complication, however the team also managed 1,769 complicated pregnancies and deliveries.

Ongoing conflict in the region has a direct impact on women's ability to access care during their pregnancy and delivery. Insecurity is rife in Helmand,

one of the main reasons why women do not seek help sooner. They often have to travel from remote villages on unsafe roads, or they avoid travelling at night when insecurity is heightened. Many women who have complicated deliveries therefore arrive at hospital very late, making it difficult to respond.

"The majority of complications in pregnancy and childbirth that we see here could have been avoided if professional medical advice was sought earlier," says Fatima, MSF's midwife supervisor at Boost Hospital.

Fatima, who has been with MSF since the project in Helmand province was launched, says prematurity is another factor that leads to newborn deaths, especially as mothers rarely seek antenatal care, which could help save these babies. "We have just admitted a patient who is 16. She got married when she was 12 and already had three pregnancies. All of the babies were premature and they died."

Human resources is a major problem in Helmand Province as there are not enough educated, skilled midwives and thus people tend to depend on traditional birth attendants, which lack the training necessary to identify and treat complications in pregnancy, labour and with the newborn baby. Some prefer to go to mullahs or traditional birth attendants to seek help rather than coming to hospital.

A baby weighs in after being safely delivered in Boost Hospital, one of only two functioning referral hospitals in southern Afghanistan. 2010 © Ton Koene

DELIVERY



The critical moment

The majority of maternal deaths occur just before, during, or just after delivery, often from complications that cannot be predicted. At this critical moment, a woman needs access to quality emergency obstetric care: skilled birth attendants who can identify complications in both mother and child, and drugs and equipment necessary to take prompt action to save her life and the life of her baby. These skilled birth attendants should know when to refer a woman in a timely manner for an instrumental delivery or a caesarean section if necessary (see box).

The nearly one million stillbirths that occur during childbirth – one-third of all stillbirths – could be almost entirely prevented with quality care at the time of labour and delivery.^{xiii}

When labour is prolonged, there can be a significant risk to mothers and newborns. Staff at MSF hospitals use

a partogram, a graph which tracks labour progress and monitors the baby's heartbeat. Birth attendants need to be trained in the use of the partogram, to record all key data during labour, and to react quickly. Asphyxia for example, one of the three main killers of newborns, occurs most commonly due to lack of recognition of problems during labour.

Infection, the most prominent killer of newborns, can be passed to the baby during prolonged labour. As soon as possible after the baby is born, it is vital that it is screened and treated for potential infections. Conditions during delivery must be clean, and care of the umbilical cord with disinfectant is imperative.

Immediately after birth, every health professional attending deliveries should be able to administer basic newborn resuscitation measures. Since 2011, MSF has been rolling out the *Helping Babies Breathe* training

course, an initiative of the American Academy of Pediatrics. It consists of a one-day training in small groups on the concept of the Golden Minute^{TM, xiv}, meaning that within one minute of birth a baby should be breathing well or should be adequately ventilated with a bag and mask.

Specialised medical assistance – and thus training for skilled birth attendants – is also needed to manage the risk of premature and low birth weight delivery and to provide care to the baby.

Drugs to slow down contractions and therefore prolong the pregnancy can be used in certain cases.

Top: Comprehensive obstetric services are saving women's and babies lives in Gondama Referral Centre, Sierra Leone. 2010 © Lynsey Addario/VII

Right: In Kabezi, MSF combines emergency obstetric care and neonatal services. A referral system by ambulance service has also greatly assisted access to care for women with complications. Burundi. 2012 © Sarah Elliott

CAESAREAN SECTION: A DIFFICULT CHOICE

As MSF works predominantly in hospitals (often referral facilities), its staff see a high level of complications in the deliveries they attend, meaning the choice must often be made to provide a caesarean section. The World Health Organization considers caesarean section rates of 5-15 percent the optimal range for deliveries.^{xv} However, there are significant challenges in many of the countries where MSF works, and a caesarean section has to be carefully considered due to the implication for future pregnancies. In places with very high fertility rates, performing a caesarean section to save a baby might expose the woman to a higher risk of major obstetric complications in subsequent pregnancies. Also, political or economic developments in the country may make surgery unavailable to her the next time. So although the decision to have a caesarean section ultimately resides with the mother, MSF's medical guidance must reflect a range of factors that may not exist in countries in the developed world.

"In the Ivory Coast I had a patient, a first-time mother aged 17, who was having difficulty breathing, and we didn't know why. Her labour had just started —she was only dilated to 3cm, some seven or so hours away from being 10cm and able to give birth.

When her waters broke they were meconium-stained (with fecal matter), which is a sign that the baby is in distress.

We quickly understood that it was her baby that might not survive and had to decide whether or not to provide a caesarean section to save its life.

I listened to the baby's heart rate, and it had dropped significantly. The mother herself was still not stable. She was still short of breath. We discussed as a team whether we should wait or not. We knew that for her baby a caesarean would probably be life-saving.

In this case, it became clear that the baby could not wait. So we did the caesarean, and mother and baby survived. Had we not reacted in time she might have had a stillborn baby."

— Tane Luna, Women's Health Advisor for MSF



WHEN ACCESS TO CARE IS A MATTER OF LIFE AND DEATH

In a conflict or a crisis, pregnant women are even more vulnerable because health services have collapsed, are inadequate or non-existent. But these women need access to quality emergency obstetric care regardless of their situation. In Rakhine State in western **Myanmar**, women's access to professional medical care is often restricted. MSF has been working in Rakhine for the last twenty years, providing primary and reproductive healthcare and HIV and tuberculosis care. But current policies against the Rohingya Muslim minority include restrictions on their movement, requiring permits that can take up to three days to get in order to travel to different areas within the state. This has resulted in cases of women with complicated labours dying as they were unable to receive professional care.

In a more fortunate case, one woman from Rakhine State, Shawkila, presented to MSF's clinic across the border in Bangladesh after she was unable to

deliver one of her babies. "I did not have any medical care during my pregnancy. I was scared to go to the hospital because I am a Muslim. I began to feel extreme pain when I was three months' pregnant and by the time I was six months' pregnant I could not walk. During my labour my first baby was breech (feet first), but I was able to give birth without medical assistance. However, my second baby was stuck and I could not do it alone. I was afraid to call the midwife for help. In the end I had to, because I could not push anymore. When the midwife came she told me that she could not help me and that I would have to go to Bangladesh to the hospital." Shawkila was carried on a stretcher to the river. She and her husband then took a boat to Bangladesh. After crossing the border she was taken to the MSF clinic outside Kutupalong makeshift camp, where she was able to safely deliver her second child.

BIRTH WITHOUT MEDICAL ASSISTANCE: A DANGEROUS CHOICE

In many resource-poor settings, women will initially try to give birth in their homes or communities with a traditional birth attendant (TBA). In these situations, with a TBA who cannot manage complications and often far away from a health-care facility if a complication develops, women and their babies are often in a critical condition by the time they finally reach the nearest hospital. This can be a real risk for the life of the mother as well as the baby.



Birth in an equipped facility with skilled care is often the difference between life and death for a complicated delivery. Yemen. 2010 © Agnes Montanari

In the north of Amran governate, **Yemen**, where MSF manages the maternity, paediatric, surgical and emergency departments at Khamer's Al-Salam Hospital, this kind of situation is all too common.

Deborah Heng is a medical doctor who was working with MSF in Yemen, and witnessed this situation first hand. "Arifa,* a woman from the Al Qaflah area, came to our hospital. Before reaching us, she'd been given oxytocin, a drug used to increase contractions, in the community. Unfortunately the baby was in a breech position. Its body came out easily but the head became stuck. Although there is a health centre in Al Qaflah the practitioner there was not experienced at breech delivery. As a result, Arifa had to travel for over an hour to the MSF clinic with the baby painfully stuck in her vagina. Sadly by the time she arrived, the baby was dead as its blood supply had been severely compromised over several hours and Arifa was in shock from the bleeding and the pain. This could have been prevented had she had access to emergency obstetric care earlier."

* Name has been changed to protect patient's identity



► The start to life for a newborn in Nigeria is a precarious one: for every 1,000 live births, 39 will die in their first four weeks. Maternal death rates are also startling, with a woman having a one in 23 chance of dying as a result of pregnancy or childbirth related complications.

In north-western Nigeria, in Sokoto State, MSF runs a mother and child health project, including a component to improve care during the perinatal period. MSF is working in the Goronyo hospital, providing a range of care including a busy 12-bed maternity ward which sees around 130 deliveries per month. Sick newborns are cared for in a small five-bed special care neonatal unit. Up until December 2012, MSF also provided antenatal care, but this has now been handed over to the Ministry of Health, who also provide postnatal care.

In 2012, MSF recorded that 90 babies did not even make it to their seventh day. Many of these babies were brought in after the woman had delivered outside of the health facility. The most common causes of neonatal death

seen in the hospital include tetanus, neonatal infection, malnutrition due to death of the mother, and birth asphyxia.

MSF's work over the last four years has included extensive education in the community about the importance of delivering in a health facility, especially in cases where the pregnancy is high risk for the mother and the newborn. However in many cases, even if a woman decides to make the journey to a health facility, the delay caused by poor roads or lack of transport can be deadly for her and her baby.

"We do know through information gathered in the community that it is quite common for babies to die in childbirth or in the immediate neonatal period," says Jean Stowell, Medical Team Leader for MSF in Goronyo. "However, in the absence of complete registration of births and deaths, getting an accurate picture of what the general neonatal mortality rate in Sokoto is impossible. What we are seeing in this health facility may well only be the tip of the iceberg."

MSF tries to implement kangaroo mother care in Goronyo, however challenges exist, as Jean explains: "Kangaroo mother care is definitely encouraged," she says. "But this is one area where our methods can sometimes be met with resistance by the mothers. This is particularly the case if the mother feels the baby is so sick it will likely die. Even after we tell them the benefits, mothers will often refuse."

MSF delivered 1,603 babies in Goronyo in 2012.

Unfortunately due to security risks, it is no longer considered safe to have an international staff presence in this area of Nigeria. As such MSF has taken the very difficult decision to close its activities in Goronyo, and at the time of writing was in the process of handing over all the activities to its partner, the Ministry of Health.

This baby boy became sick after being born, due to insufficient feeding. Malnutrition is one of the causes of neonatal death in Goronyo, Nigeria. 2012
© Olga Overbeek/MSF

THE THREE LEVELS OF NEWBORN CARE



Top: Kangaroo mother care keeps this premature baby warm, and encourages breastfeeding. Haiti 2012
© Emilie Régner

Bottom left: Administering vitamin K in the delivery room to reduce the risk of haemorrhage in the newborn, Chatuley Hospital, Haiti. 2012 © Emilie Régner

Bottom right: Assessing a sick, premature newborn in need of intensive care in Rutshuru hospital, Democratic Republic of Congo. 2012 © MSF

In MSF hospitals providing obstetric care, ideally three levels of care should be available for newborns depending on their needs. The basic or first level, the **maternity unit**, is designed to provide essential care to all babies. The second level – **kangaroo mother care** – is for ‘at risk’ newborns: those who are born prematurely or who are low birth weight. The **neonatal unit** takes care of very premature, very low birth weight and all sick babies.

MATERNITY UNIT

Essential, routine care for mother and baby

If there are no complications, the newborn receives routine care in the maternity unit and mother and baby can be discharged after 24 hours.

Routine care should include:

- a) immediately drying and then giving the newborn to its mother for skin-to-skin contact to keep the baby warm;
- b) cleaning the umbilical cord with a disinfectant in order to prevent infections;
- c) assisting the mother to breastfeed in the first hour of life, providing the baby with essential nutrients, while also supporting the mother-baby bonding process;
- d) giving one injection of vitamin K to the baby to reduce the risk of haemorrhage;
- e) providing antibiotic eye drops to avoid infections most commonly transmitted from the mother in the birth canal; and
- f) administering the three essential vaccines to prevent polio, tuberculosis and Hepatitis B.

KANGAROO MOTHER CARE

A simple method of care saving babies’ lives

Kangaroo mother care provides extra support to premature babies and babies who weigh less than two kilograms. It is one of the most effective forms of care for a low birth weight newborn who is not sick. Its premise is very

simple: promoting continuous skin-to-skin contact between mother and baby.

First introduced in the late 1970s by a Colombian obstetrician and gynaecologist and later endorsed by the World Health Organization in 2003, kangaroo mother care has generated significant benefits worldwide. It has been shown to reduce by half newborn death for babies who were born less than two kilograms in resource-poor settings as compared to incubator care.^{xvi}

A typical kangaroo mother care unit should have the space to include comfortable chairs or beds for the mother while she holds the baby to her chest to provide warmth and to encourage exclusive breastfeeding, vital components for the development of a newborn. The unit should also have the capacity to provide other care that the baby and mother might need, such as equipment to enable breast milk to be expressed if the baby is not latching, supplementary milk if breast milk is not available or insufficient, and a nasogastric tube so either milk can be fed to the baby.

However, while kangaroo mother care is easy, affordable and effective, there are still challenges in the countries where MSF works and it is often not implemented or utilised as much as it could be. There are gaps in training that mean staff are unaware of the role kangaroo mother care can play. Often there is not enough space allocated for this type of care. It can also be culturally confronting or unfamiliar for a mother to care for a baby in this way, especially when normally she may not expect it to survive.

NEONATAL CARE UNIT

When extra care is needed

Sick newborns and very low birth weight babies require attention and regular monitoring in the neonatal care unit. Typically they may be suffering an infection, or they may be experiencing breathing difficulties, convulsions or other complications. Being sick or very small puts them at high risk of losing body heat and therefore becoming cold. This uses their already small energy reserves and they can fall severely ill. Therefore, these babies need their temperature and blood glucose levels monitored closely, to be kept warm, given antibiotics and/or oxygen if necessary, and to be regularly fed.

There are many challenges to establishing a neonatal care unit in the places where MSF works. Often the mother has to care for a large family back home and there is a long distance between the health facility and her home. On average newborns are discharged after a few days but the very small ones stay longer. Maintaining trained staff, such as neonatal nurses, and ensuring adequate equipment and space is often a challenge in resource-poor settings.

IVORY COAST: NEONATAL CARE DRASTICALLY REDUCING NEWBORN DEATH DURING CONFLICT



In 2011 as conflict flared in Ivory Coast, MSF began supporting a number of health facilities. One of these was Duékoué hospital. Dr Marianne Sutton, a paediatrician, arrived in early 2012, after the conflict had subsided. She oversaw the activities for six months and was able to help implement a significant drop in the newborn death rate.

"The situation was chaotic at the beginning, as there had been so many other needs in the hospital during the conflict. But women are still giving birth, conflict or not. We knew we could implement some simple things that would help in reducing the deaths of both mothers and newborns, the rate of which was enormous. My role was to help with the newborns.

The babies I saw dying in my first few weeks were mainly dying of sepsis. They would get an infection, become pale and then stop breathing. It was just terrible to see all these babies dying.

When I arrived, we established a neonatal unit with standardised protocols, and we also encouraged

exclusive breastfeeding, the sterilisation of all the baby laundry, and the use of warm blankets. The mortality rate dropped drastically. It's important to note that the rate stayed down – this wasn't just a blip in the statistics. Thanks to the Ivorian nurses' aides, who embraced teaching the mothers how to breastfeed or how to use the breast pump if the babies were not attaching to the breast, we were able to achieve this.

The nurses' aides would encourage the mums to use the breast pump 6-8 times per day, and then the milk was fed to the babies by syringe. This was all recorded in a flowchart. With the nurses' aides devotion to the job and the enormous task of feeding 15-20 babies by syringe every three hours for a 12 hour shift, so many babies' lives were saved.

MSF was able to have a huge impact on the wellbeing of the babies. It shows that we were able to use simple techniques to save the lives of the country's newest citizens."



Above: Dr Marianne Sutton at her station in the neonatal unit in Duékoué hospital, Ivory Coast 2012. © MSF

Left: The neonatal unit in Duékoué hospital (Ivory Coast) where plastic tubs are used to keep the babies under observation in a sterile, warm and safe environment. © MSF

THE FIRST SEVEN DAYS OF THE POSTNATAL PERIOD: AN EXTREMELY VULNERABLE TIME FOR MOTHERS AND BABIES



Even if a delivery has gone well for mother and baby, the first seven days after delivery are a high-risk time for maternal and newborn deaths. Postpartum haemorrhage is the biggest killer of mothers, accounting for nearly one-quarter of all maternal deaths globally.^{xvii} Haemorrhage can often occur unexpectedly after an otherwise normal delivery, and can be fatal if not treated quickly. Additionally, an otherwise well baby at birth can develop a life-threatening infection shortly after birth. It is for these reasons that MSF encourages mothers and babies to stay in a healthcare facility for 24 hours post birth, if feasible, for observation, and support of breastfeeding.

Exclusive breastfeeding (breastfeeding only for the first six months) is one of the most effective methods for newborn survival, preventing hypoglycaemia and hypothermia in the newborn. MSF ensures that all babies are offered a breastfeed within one hour of birth and should be breastfeeding well prior to discharge from the maternity unit.

Additionally, MSF strives to set up postnatal clinics in all of its maternity units or health centres, where mothers and babies can return at one week and six weeks for check-ups. These visits include a check of the mother – her bleeding, signs of infection, milk supply – and also offer family planning if appropriate. Babies are checked for weight gain, the umbilical cord is checked, and the baby should be observed for any signs of infection. These low-cost and easy-to-implement activities have the capacity to prevent many maternal and newborn deaths.

This South Sudanese mother gave birth in a country where few people have access to even the most basic health services. South Sudan 2010
© Cédric Gerbehaye/Agence Vu



► The world's newest country since claiming independence in 2011, South Sudan remains in many ways an unknown quantity. Pre-independence figures give a population of 8.2 million. Maternal mortality, then estimated at 2,054/100,000 live births,^{xviii} has not been updated since; neonatal mortality's most recent estimate is 35/1,000 live births.^{xix} The risk of childbirth and pregnancy-related death for women in South Sudan is of great concern to MSF, as is the mortality amongst their babies.

MSF commenced maternal and child health activities in Aweil Hospital, Northern Bahr el Ghazal State, in 2008. In the only referral hospital in the state, servicing a likely underestimated population of just under half a million, MSF provides comprehensive emergency obstetrics and newborn care, paediatric care including therapeutic feeding, and responds to peaks in epidemics such as measles and malaria. All other services are managed by the Ministry of Health.

Newborn care is an integral component of MSF's program in Aweil.

Babies are cared for in the maternity or speciality-care newborn unit. Kangaroo mother care is promoted in both but has a dedicated ward in the newborn unit, alongside two more wards: one each for intensive care and tetanus.

In 2012 there were 911 admissions to the newborn unit, with a mortality rate of 15%. Many of the babies are delivered outside the hospital and often arrive with complications that have set in and are thus all the harder to treat. Also, the number of stillbirths in the hospital is sadly very high, with many babies' deaths occurring before the moment of delivery due to prolonged or obstructed labour.

South Sudanese Maternity Supervisor Joseph Bol says access is the key challenge for women in and around Aweil. "A lot of places don't have access to the road, and some people don't have the money to catch public transport. They know MSF, they believe in MSF – MSF was here during the war—but they can't get to the hospital. The roads are even less accessible in the rainy season,

so women come in late, many with complications." Rain means mosquitoes, and malaria. Endemic in South Sudan, malaria is also a major factor in stillbirth.

MSF's outreach team is working to connect with primary healthcare centres around Northern Bahr el Ghazal State in order that pregnant women who develop complications during labour can be referred to the hospital in timely fashion. MSF also continues to encourage the Ministry of Health's antenatal care services at the hospital to ensure that diseases that increase the chance of illness in the mother and baby, and previous medical conditions in the mother that influence her prognosis, are identified and managed throughout pregnancy and delivery.

This new mother has adjusted well to kangaroo mother care in Aweil Hospital, South Sudan. 2013
© Yann Libessart/MSF

DELIVERING INTEGRATED CARE FOR MOTHER AND CHILD



Midwife Maura Daly is currently working in Aweil in South Sudan and sees twins born almost daily. Twins are often low birth weight and smaller than single pregnancies, but can have good outcomes with basic care and some extra monitoring.

“Having integrated care for the mother and child is really important. We’ve introduced nursing care and kangaroo mother care in the maternity for the babies who are not too small. For example we had twins born and I wrapped them up for kangaroo mother care that night, one with the mother, the other with the grandmother. The grandmother seemed very excited about it! The babies were both about 1.5kg each. If the mother’s doing kangaroo mother care, if there’s no fever and they don’t look like they have any other risk factors I will keep them in maternity. I will keep observing them until I can see that they’re growing and that the mothers are producing breast milk.”



Top: Midwife Maura Daly attends a safe delivery in the MSF-run maternity ward, Aweil Civil Hospital, South Sudan. 2013 © Yann Libessart/MSF

Bottom: Low birth weight twins are a common occurrence in maternity in Aweil Civil Hospital, South Sudan. 2013 © Yann Libessart/MSF



This premature newborn receives extra feeding and IV fluids in MSF's dedicated neonatal unit in Léogâne, Haiti. 2012 © Emilie Régnier

► Haiti continues to reel from the effects of a shattered health system, even three years after the devastating earthquake that killed 200,000 people and left one million homeless. For women and babies, the statistics remain alarming – a woman has a one in 83 lifetime chance of dying as a result of pregnancy or childbirth. For every one thousand live births, 25 babies will die in the newborn period.

Léogâne, a city 30km west of the capital, Port-au-Prince, was almost completely destroyed by the earthquake. In October 2010, MSF replaced the tent hospital it had set up in the city immediately after the earthquake with a semi-permanent container hospital. Today, the hospital has 160 beds and mainly focuses on trauma and obstetric emergencies. Perinatal care is also a core focus of the project, with care provided for women before and after they give birth, as well as a dedicated neonatal unit.

The hospital provides care for newborns across three departments: maternity, the neonatal unit and the kangaroo mother care unit. In 2012 there were 6,453 babies delivered in MSF's hospital. Also last year, 226 babies lost their lives before they

reached one month of age – this included babies born in the hospital, those who were born at home, and those who were referred from other health facilities.

“The majority of the newborn deaths are due to extreme prematurity,” says Florencia Romero, medical coordinator for MSF's activities in Léogâne. “We see many women with complications during pregnancy which have led to preterm labour. Twenty percent of the deliveries that the hospital sees have complications.”

“We also see a lot of birth asphyxia and infection. Babies born at home without a skilled birth attendant are more at risk of both of these complications.”

MSF is promoting awareness in the community and in the hospital about the importance of antenatal care to reduce complications in pregnancy and to bring down the number of neonatal deaths. Over half of the complications seen at delivery are due to hypertensive disorders (eclampsia and pre-eclampsia), and this is something that can be monitored throughout pregnancy. The team is also promoting the importance of hospital delivery with a skilled birth

attendant and the importance of birth spacing and family planning.

“The links between maternal health and newborn health are obvious,” continues Florencia. “The high numbers of complicated deliveries leads to an increased number of newborns with complications, and they in turn need specific neonatal care. Considering there is a severe lack of other health facilities available in the region, an integrated approach has been important since the beginning of the project.”

To continue to improve neonatal care in Léogâne, MSF has reinforced the supervision, support and on the job training for Haitian staff by experienced international staff. MSF will also carry out formal neonatal care training for staff in 2013.



Left: Perinatal care is a core focus in MSF's container hospital in Léogâne, Haiti. 2012 © Emilie Régner
Right: Twin brothers born by caesarean section just hours earlier in Chatuley Hospital, Haiti. 2012 © Emilie Régner

RECOMMENDATIONS



The maternity department of Masisi hospital provides safe care amidst conflict in Democratic Republic of Congo. 2011 © Yasuyoshi Chiba/Duckrabbit

MSF believes that in medical-humanitarian response there is a need for an improved perinatal approach which would include integrating antenatal, obstetric and newborn care.

This requires a greater political and financial commitment.

The following recommendations are measures to facilitate optimal care for the mother and her newborn.

1. Health workers caring for mothers and newborns, including doctors, nurses and midwives, should be better trained in perinatal care. The additional essential skills that all these staff should have are:

1.1 Skill in monitoring the condition of the mother and baby during pregnancy, including the ability to:

- a) identify risk factors during pregnancy and treat or refer accordingly;
- b) assess and manage severe bleeding; and
- c) manage infections.

1.2 Skill in responding to obstetric emergencies during labour and delivery. This includes the ability to:

- a) use the partogram;
- b) administer intravenous fluids;
- c) manage severe haemorrhage during labour and after delivery;
- d) manually remove the placenta;
- e) safely deliver babies in breech position; and
- f) respond to a woman with a hypertensive disorder, including eclampsia.

1.3 Proficiency in caring for the well newborn and mother, including the ability to:

- a) perform basic routine care for the baby;
- b) support kangaroo mother care;
- c) give breastfeeding advice; and
- d) monitor mother and baby for postpartum complications.

1.4 Proficiency in identifying at-risk babies, including the ability to:

- a) perform physical examination of the baby;
- b) identify babies who are born prematurely or low birth weight; and
- c) identify babies at risk of or with sepsis, hypothermia or hypoglycaemia.

1.5 Proficiency in caring for sick newborns, including the ability to:

- a) resuscitate the newborn; and
- b) identify, monitor and treat the newborn according to standard protocols.

2. Perinatal care should be better integrated into disaster and emergency response.

- 2.1 Skilled birth attendants should be included as part of the core team in any emergency response; and
- 2.2 supplies and equipment necessary for perinatal care should be incorporated into the emergency kit.

3. Space must be made available within health facilities for effective delivery of perinatal care.

4. Equipment used for care during the perinatal period must be better adapted to emergency contexts. This includes:

- 4.1 equipment and monitors for better delivery of oxygen to newborns;
- 4.2 equipment for delivering small quantities of intravenous fluid;
- 4.3 warming beds and heat lamps; and
- 4.4 phototherapy units to treat jaundice.

5. More research is needed into newborn care in emergency settings, including:

- 5.1 more, adapted antibiotic protocols; and
- 5.2 strategies to respond to the needs of newborns and mothers in resource-limited contexts.

6. Better data collection and standardised reporting on perinatal care, including:

- 6.1 standardised case definitions and data collection tools; and
- 6.2 better analysis and recording of the causes of maternal and newborn complications and deaths, as well as stillbirth.

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Front cover: Nigeria has rates of maternal and neonatal mortality amongst the highest rates in the world. This mother laboured for two days before emergency obstetric care provided by MSF in Jahun hospital, Nigeria. 2011 © Penny Bradfield