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## chapter four

# attending to 136 million births, every year

**For both mother and baby, childbirth can be the most dangerous moment in life. This chapter examines the main complications of childbirth, which claim an estimated 529 000 maternal deaths per year – almost all of them in developing countries. Most of the deaths and disabilities attributable to childbirth are avoidable, because the medical solutions are well known. Immediate and effective professional care during and after labour and delivery can make the difference between life and death for both women and their newborns. Each and every mother and each and every newborn needs skilled maternal and neonatal care provided by professionals at and after birth – care that is close to where and how people live, close to their birthing culture, but at the same time safe, with a skilled professional able to act immediately when largely unpredictable complications occur. The challenge that remains is therefore not technological, but strategic and organizational.**

### RISKING DEATH TO GIVE LIFE

For anyone who has been through the experience, or seen someone else go through it, there is no doubt that childbirth is a life-changing event. Unfortunately, as wonderful and joyful experience as it is for many, it can also be a difficult period, bringing with it new problems as well as the potential for suffering. In the most extreme cases the mother, or the baby, or both, may die; these deaths are only the tip of the iceberg. Many health problems are laid down in the critical hours of childbirth – both for mother and for child. Many more continue to unfold in the days and weeks after the birth. The suffering related to childbirth adds up to a significant portion of the world's overall tally of ill-health and death (1). Most of the deaths and disabilities attributable to childbirth are avoidable, because the medical solutions are

well known. The challenge that remains is therefore not technological, but strategic and organizational.

Maternal mortality is currently estimated at 529 000 deaths per year (2), a global ratio of 400 maternal deaths per 100 000 live births. Where nothing is done to avert maternal death, “natural” mortality is around 1000–1500 per 100 000 births, an estimate based on historical studies and data from contemporary religious groups who do not intervene in childbirth (3). If women were still experiencing “natural” maternal mortality rates today – if health services were discontinued, for example – then the maternal death toll would be four times its current size, totalling over two million

maternal deaths per year worldwide. The truth is that three quarters of these deaths are currently avoided throughout the world: nearly all the “natural” maternal mortality in developed countries, but only two thirds in the South-East Asia and Eastern Mediterranean Regions and only one third in African countries.

There are immense variations in death rates in different parts of the world. Maternal deaths are even more inequitably spread than newborn or child deaths. A tiny 1% of maternal deaths occur in the developed world. Maternal mortality ratios range from 830 per 100 000 births in African countries to 24 per 100 000 births in European countries. Of the 20 countries with the highest maternal mortality ratios, 19 are in sub-Saharan Africa. Regional rates mask very large disparities between countries. Regions with low overall mortality rates, such as the European Region, contain countries with high rates. Within one single country there can be striking differences between subgroups of the population. Rural populations suffer higher mortality than urban dwellers, rates can vary widely by ethnicity or by wealth status, and remote areas bear a heavy burden of deaths.

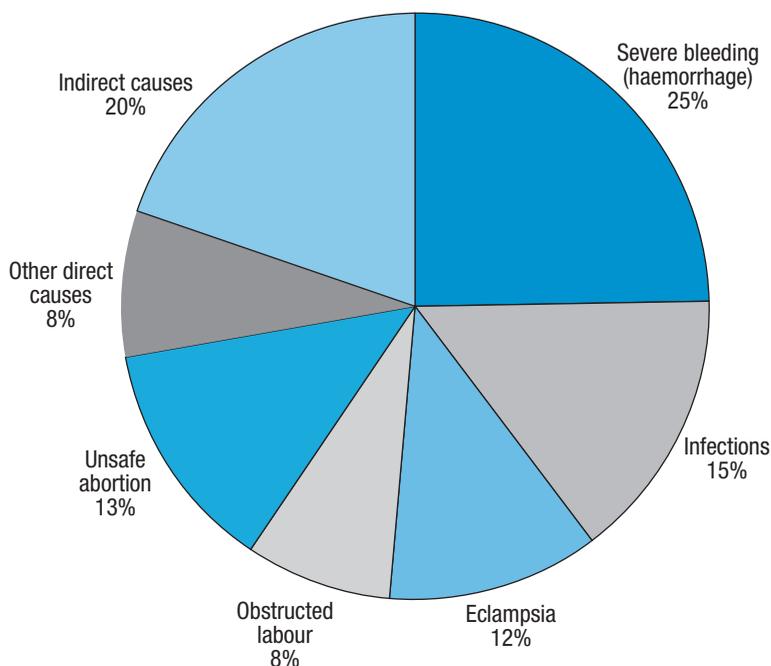
Maternal deaths are deaths from pregnancy-related complications occurring throughout pregnancy, labour, childbirth and in the postpartum period (up to the 42nd day after the birth). Such deaths often occur suddenly and unpredictably. Between 11% and 17% of maternal deaths happen during childbirth itself and between 50% and 71% in the postpartum period (4–8). The fact that a high level of risk is concentrated during childbirth itself, and that many postpartum deaths are also a result of what happened during birth, focuses attention on the hours and sometimes days that are spent in labour and giving birth, the critical hours when a joyful event can suddenly turn into an unforeseen crisis. The postpartum period – despite its heavy toll of deaths – is

often neglected (4, 9). Within this period, the first week is the most prone to risk. About 45% of postpartum maternal deaths occur during the first 24 hours, and more than two thirds during the first week (4). The global toll of postpartum maternal deaths is accompanied by the great and often overlooked number of early newborn deaths and stillbirths.

Maternal deaths result from a wide range of indirect and direct causes. Maternal deaths due to indirect causes represent 20% of the global total. They are caused by diseases (pre-existing or concurrent) that are not complications of pregnancy, but complicate pregnancy or are aggravated by it. These include malaria, anaemia, HIV/AIDS and cardiovascular disease. Their role in maternal mortality varies from country to country, according to the epidemiological context and the health system’s effectiveness in responding (10).

The lion’s share of maternal deaths is attributable to direct causes. Direct

Figure 4.1 Causes of maternal death<sup>a</sup>



<sup>a</sup> Total is more than 100% due to rounding.

maternal deaths follow complications of pregnancy and childbirth, or are caused by any interventions, omissions, incorrect treatment or events that result from these complications, including complications from (unsafe) abortion. The four other major direct causes are haemorrhage, infection, eclampsia and obstructed labour (see Figure 4.1). The levels of maternal mortality depend on whether these complications are dealt with adequately and in a timely manner (10).

The most common cause of maternal death is severe bleeding, a major cause of death in both developing and developed countries (11, 12). Postpartum bleeding can kill even a healthy woman within two hours, if unattended. It is the quickest of maternal killers. An injection of oxytocin given immediately after childbirth is very effective in reducing the risk of bleeding. In some cases a fairly simple – but urgent – intervention such as manual removal of the placenta may solve the problem. Other women may need a surgical intervention or a blood transfusion, both of which require hospitalization with appropriate staff, equipment and supplies. The proportion needing hospital care depends, to some extent, on the quality of the first-level care provided to women; for example, active management of the third stage of labour reduces postpartum bleeding. The proportion that dies depends on whether appropriate care is provided rapidly. The situation with regard to postpartum bleeding could improve if the promising potentialities of the drug misoprostil are realized. Misoprostil is less effective than oxytocin, but it is cheaper, easier to store safely and does not require an injection. Therefore it remains attractive where women do not have access to professional care at birth. If further research can demonstrate its effectiveness in the many cases where oxytocin is not an option, misoprostil could save many lives and reduce the number of women who suffer anaemia as a result of a postpartum haemorrhage – currently 1.6 million every year.

The second most frequent direct cause of death is sepsis, responsible for most late postpartum deaths. During the 19th century puerperal sepsis took on epidemic proportions, particularly in lying-in hospitals. The introduction of aseptic techniques brought a spectacular reduction of its importance in the developed world (13). However, sepsis is still a significant threat in many developing countries. One out of 20 women giving

**Table 4.1** Incidence of major complications of childbirth, worldwide

Complication	Incidence (% of live births)	Number of cases per year	Case-fatality rate (%)	Maternal deaths in 2000	Main sequelae for survivors	DALYs lost (000)
Postpartum haemorrhage	10.5	13 795 000	1	132 000	Severe anaemia	4 418
Sepsis	4.4	5 768 000	1.3	79 000	Infertility	6 901
Pre-eclampsia and eclampsia	3.2	4 152 000	1.7	63 000	Not well evaluated	2 231
Obstructed labour	4.6	6 038 000	0.7	42 000	Fistula, incontinence	2 951

Source: (12).

birth develops an infection, which needs prompt treatment so as not to become fatal or leave sequelae (14). Puerperal sepsis leads to tubal occlusion and infertility in 450 000 women per year.

Hypertensive disorders of pregnancy (pre-eclampsia and eclampsia) – which are associated with high blood pressure and convulsions – are the cause of 12% of maternal deaths. They usually occur during pregnancy but also during childbirth (15). Mild pre-eclampsia can be monitored in pregnancy, but the transition to severe pre-eclampsia or eclampsia requires care in a hospital environment.

Obstructed labour – owing to disproportion between the fetal head and the mother's pelvis, or to malposition or malpresentation of the fetus during labour – varies in incidence: as low as 1% in some populations but up to 20% in others. It accounts for around 8% of maternal deaths globally, while the baby may be stillborn, suffer asphyxia and brain damage or die soon after birth. Skilled practitioners, such as midwives, can deal with many of these problems before labour becomes obstructed, or recognize slow progress and refer for caesarean section or instrumental delivery. Disabilities associated with obstructed labour that is dealt with late or inadequately can be very significant both for mother and child (12). For the mother the most distressing potential long-term conditions following obstructed labour are obstetric fistulae (see Box 4.1).

Of the 136 million women who give birth each year, some 20 million experience pregnancy-related illness after birth (30). The list of morbidities is very diverse, ranging from fever to psychosis, and the range of care responses needed is correspondingly varied. For those women who have almost died in childbirth, recovery from organ failure, uterine rupture, fistulas and other severe complications can be long, painful and leave lasting sequelae. Other, non-life-threatening illnesses are frequent as well: in India, for example, 23% of women report health problems in the first months after delivery (31). Some of these problems are temporary but others become chronic. They include urinary incontinence, uterine prolapse, pain following poor repair of episiotomy

## Box 4.1 Obstetric fistula: surviving with dignity

An obstetric fistula is a devastating yet often neglected injury that occurs as a result of prolonged or obstructed labour (usually resulting in a stillbirth as well). Trauma to the vaginal wall results in an opening between the vagina and the bladder, the vagina and the rectum, or both; this leaves the woman leaking urine and/or faeces continuously from the vagina (16). Without surgical repair, the physical consequences of fistula are severe, and include vaginal incontinence, a fetid odour, frequent pelvic and/or urinary infections, pain, infertility and often early mortality (16–18). The social consequences of fistula are immense: women with fistula are ostracized and frequently abandoned by their husbands, families and communities; they often become destitute and must struggle to survive (19, 20). To make matters worse, many women are so embarrassed by this condition that they suffer

in silence, rather than seek medical help, even if such help were available.

This devastating condition affects more than two million women worldwide (21). There are an estimated 50 000 to 100 000 additional cases each year (22), a figure some believe to be an underestimate (23, 24). Most are young women or adolescents. Early marriage, early or repeated childbearing, along with poverty and lack of access to quality health care in pregnancy and at birth, are the main determinants (25). Fistulae occur in areas where access to care at childbirth is limited, or of poor quality, mainly in sub-Saharan Africa and parts of southern Asia (26). In the areas where fistulae are most often seen, few hospitals offer the necessary corrective surgery, which is not profitable and for which surgeons and nurses are often poorly trained. In 2003, the United Nations Population Fund along with WHO and

other partners launched a Global Campaign for the Elimination of Fistula (27).

Good-quality first-level and back-up care at childbirth prevents fistula. Once the condition has occurred it is treatable (28). The plight of women living with fistula is a powerful reminder that programmatic concerns should go beyond simply preventing maternal deaths. Decision-makers and professionals should be aware that the problem is not infrequent, that the girls and women who suffer from it need support to get access to treatment, that enough trained doctors and nurses need to be available to provide surgical repair, and that further support is necessary for women who return home after treatment. Collective action can eliminate fistula and ensure that girls and women who suffer this devastating condition are treated so that they can live in dignity (29).

and perineal tears, nutritional deficiencies, depression and puerperal psychosis, and mastitis (32) (see Box 4.2). Even less is known about these morbidities than about maternal deaths. They are difficult to quantify, owing to problems with definitions and inadequate records (33). More and more reliable information on the whole range of morbidities would be an important step towards better planning of services and improved care around childbirth.

## SKILLED PROFESSIONAL CARE: AT BIRTH AND AFTERWARDS

Immediate and effective professional care during and after labour and delivery can make the difference between life and death for both women and their newborns, as complications are largely unpredictable and may rapidly become life-threatening (34, 35). Both maternal and neonatal mortality are lower in countries where mothers giving birth get skilled professional care, with the equipment, drugs and other supplies needed for the effective and timely management of complications (10, 34). The history of successes and failures in reducing maternal mortality (including in industrialized countries) shows that this is not a spurious statistical association (3, 36). Reversals in maternal and neonatal mortality in countries where health systems have broken down provide further confirmation that care matters.

### Successes and reversals: a matter of building health systems

Industrialized countries halved their maternal mortality in the early 20th century by providing professional midwifery care at childbirth; they further reduced it to current historical lows by improving access to hospitals after the Second World War (37). Quite a number of developing countries have gone the same way over the last few decades (3). One of the earliest and best-documented examples is Sri Lanka, where maternal

## Box 4.2 Maternal depression affects both mothers and children

Women are between two and three times more likely to experience depression and anxiety than men. Mothers who are pregnant or caring for infants and young children are more vulnerable. Depression in women during pregnancy and in the year after birth has been reported in all cultures. Rates vary considerably, but average about 10–15% in industrialized countries. Contrary to what was previously thought, even higher rates are reported from developing countries. This contributes substantially to maternal mortality and morbidity. Parasuicide – thoughts of suicide or actual self-harm – occurs in up to 20% of mothers in developing countries. It is associated with entrapment in intolerable situations such as unwanted pregnancy (particularly in young single women), forced displacement as a refugee, or intractable poverty. Suicide is a leading cause of maternal mortality in countries as diverse as the United Kingdom and Vietnam.

Many factors contribute to maternal depression during pregnancy and after birth, including:

- unwanted pregnancy;
- poor relationship with a partner, including his being unavailable during the baby's birth, providing insufficient practical or emotional support, having little involvement in infant care, holding traditional rigid sex role expectations, or being coercive or violent;
- lack of practical and emotional support, or criticism from mother or mother-in-law;
- insufficient social support, including absence of attachment to a peer group, few confiding relationships and lack of assistance in crises;
- poverty and social adversity, including crowded living conditions and lack of employment;
- previous personal history of depression or past psychiatric hospitalization;
- persistent poor physical health;
- coincidental adverse life events, such as the loss of a partner.

Maternal depression has serious physical and psychological consequences for children. Inde-

pendent of other risk factors, the infants and children of mothers who are depressed, especially those experiencing social disadvantage, have significantly lower birth weight, are more than twice as likely to be underweight at age six months, are three times more likely to be short for age at six months, have significantly poorer long-term cognitive development, have higher rates of antisocial behaviour, hyperactivity and attention difficulties, and more frequently experience emotional problems.

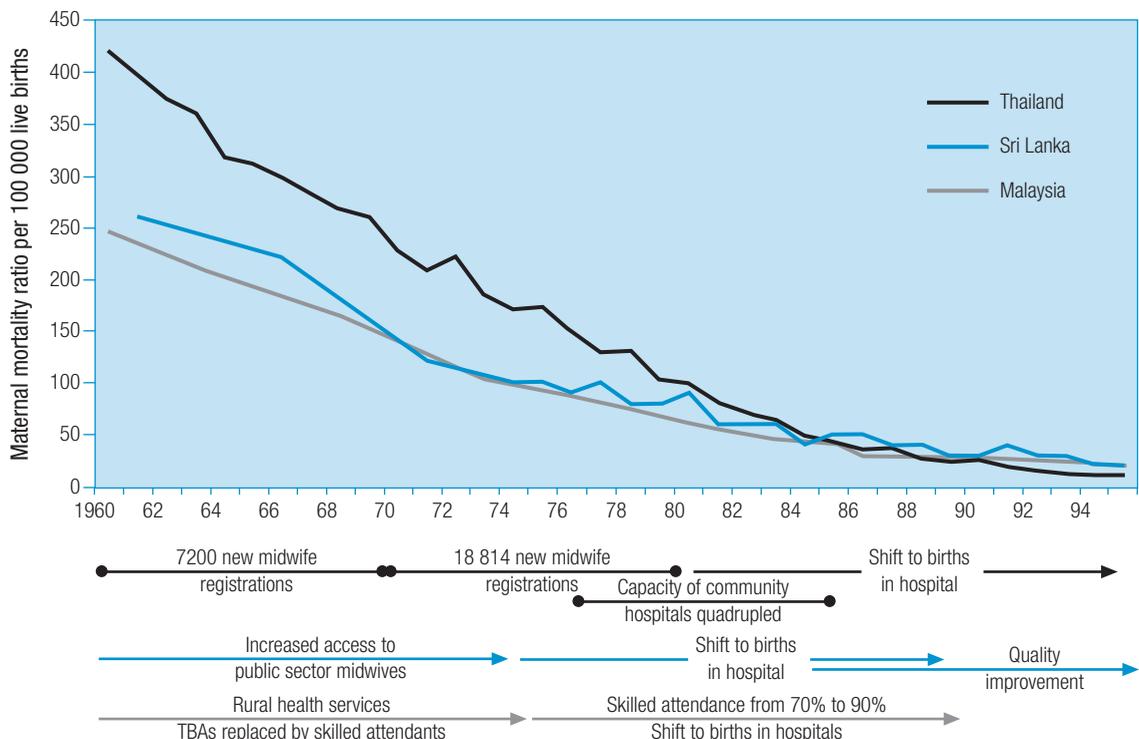
Effective psychological and pharmacological treatment strategies for depression exist. In industrialized countries less than half of the mothers who would benefit from such treatment receive it. The situation is much worse in the developing countries where care may be available to only 5% of women. It is important that maternal, newborn and child health programmes recognize the importance of these problems and provide support and training to health workers for recognizing, assessing and treating mothers with depression.

mortality levels, compounded by malaria, had remained well above 1500 per 100 000 births in the first half of the 20th century – despite 20 years of antenatal care. In this period midwifery was professionalized, but access remained limited. From around 1947 mortality ratios started to drop, closely following improved access and the development of health care facilities in the country (38). This brought mortality ratios down to between 80 and 100 per 100 000 births by 1975. Improved management and quality then further lowered them to below 30 in the 1990s, according to Ministry of Health time series (36).

Malaysia also has a long-standing tradition of professional midwifery – since 1923. Maternal mortality was reduced from more than 500 per 100 000 births in the early 1950s to around 250 in 1960. The country then gradually improved survival of mothers and newborns further by introducing a maternal and child health programme. A district health care system was introduced and midwifery care was stepped up through a network of “low-risk delivery centres”, backed up by high-quality referral care, all with close and intensive quality assurance and on the initiative of the public sector authorities. This brought maternal mortality to below 100 per 100 000 by around 1975, and then to below 50 per 100 000 by the 1980s (36, 39, 40).

Until the 1960s Thailand had maternal mortality levels well above 400 per 100 000 births, the equivalent of those in the United Kingdom in 1900 or the USA in 1939. During the 1960s traditional birth attendants were gradually substituted by certified village midwives, 7191 of whom were newly registered within a 10-year period: mortality came down to between 200 and 250 per 100 000 births. During the 1970s

Figure 4.2 Maternal mortality since the 1960s in Malaysia, Sri Lanka and Thailand



Source: (3).

the registration of midwives was stepped up with 18 314 new registrations. Midwives became key figures in many villages, proud of their professional and social status. Mortality dropped steadily and caught up with Sri Lanka by 1980. The main effort then went into strengthening and equipping district hospitals. Within 10 years, from 1977 to 1987, the number of beds in small community hospitals quadrupled, from 2540 to 10 800, and the number of doctors in these districts rose from a few hundred to 1339. By 1990 the maternal mortality ratio was below 50 per 100 000 births (see Figure 4.2).

More recently, Egypt reduced its maternal mortality by more than 50% in eight years, from 174 in 1993 to 84 per 100 000 live births in 2000: major efforts to promote safer motherhood doubled the proportion of births attended by a doctor or nurse and improved access to emergency obstetric care (41). Honduras brought maternal deaths down from 182 to 108 per 100 000 between 1990 and 1997 by opening and staffing seven referral hospitals and 226 rural health centres and by increasing the number of health personnel and skilled attendants (42).

These examples illustrate that long-term initiatives and efforts to provide skilled professional care at birth produce results; unfortunately, the converse is true as well. Breakdowns of access to skilled care may rapidly result in an increase of unfavourable outcomes, as in Malawi or Mongolia (see Chapter 1). In Tajikistan too, economic upheaval following the break-up of the Soviet Union and newly won independence in 1991, compounded by civil war, led to a startling erosion of the capacity of the health care system to provide accessible care and a dramatic tenfold increase in the proportion of women giving birth at home with no skilled assistance (43). Maternal



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Some countries are trying to make good the shortfall in the number of midwives. This picture of nurse-midwifery graduates was taken on the day of their graduation from the University of Malawi Kamuzu College of Nursing.

mortality ratios rose as a result. Similarly, in Iraq, sanctions during the 1990s severely disrupted previously well-functioning health care services, and maternal mortality ratios increased from 50 per 100 000 in 1989 to 117 per 100 000 in 1997, and were as high as 294 per 100 000 in central and southern parts of the country (44). Iraq also experienced a massive increase in neonatal mortality during this period: from 25 to 59 per 1000 between 1995 and 2000.

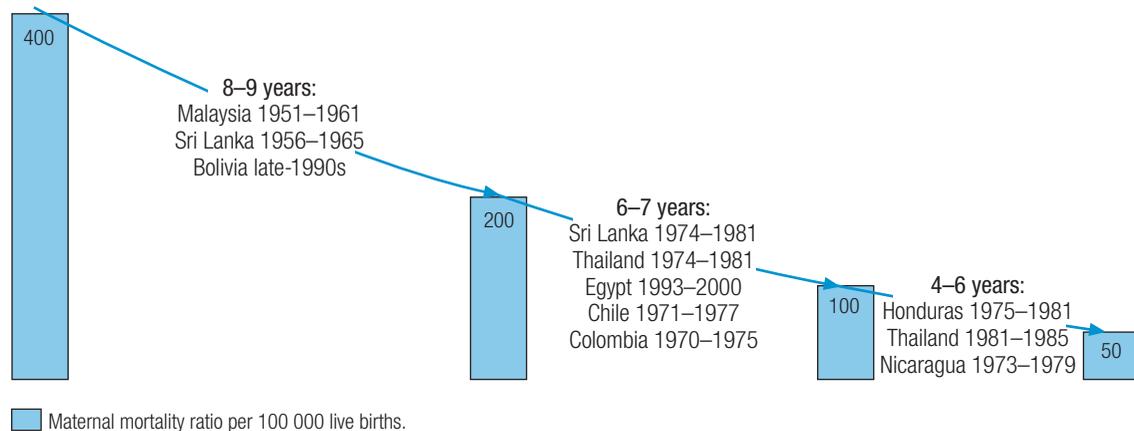
The good news is that countries that make a deliberate effort to provide professional childbirth care with midwives and other skilled attendants, backed up by hospitals, can improve maternal survival dramatically. As Figure 4.3 shows, it does take time, and, particularly at high levels, difficulties in measuring the evolution of maternal mortality may make it difficult to sustain the commitment that is needed.

### Skilled care: rethinking the division of labour

The countries that have successfully managed to make motherhood safer have three things in common. First, policy-makers and managers were informed: they were aware that they had a problem, knew that it could be tackled, and decided to act upon that information. Second, they chose a common-sense strategy that proved to be the right one: not just antenatal care, but also professional care at and after childbirth for all mothers, by skilled midwives, nurse-midwives or doctors, backed up by hospital care. Third, they made sure that access to these services – financial and geographical – would be guaranteed for the entire population (3). Where information is lacking and commitment is hesitant, where strategies other than that of professionalization of delivery care are chosen (see Box 4.4), or where universal access is not achieved, positive results are delayed. This explains why the USA lagged so far behind a number of northern European countries in the 1930s, and why many developing countries today still have appallingly high levels of maternal mortality (3).

To provide skilled care at and after childbirth and to deal with complications is a matter of common sense – it is also what mothers and their families ask for. Putting it into practice is a challenge that many countries have not yet been able to meet. They have not been helped by the confusing technical terminology used by the international community: BEOC, CEOC, BEmOC, CEmOC, EOC<sup>1</sup>, etc., to be provided by “skilled attendants” (who may be doctors, nurses or midwives), for whom the division

Figure 4.3 Number of years to halve maternal mortality, selected countries



of tasks across these various acronyms is often unclear. Part of the confusion lies in the distinction between “basic” and “comprehensive” care, which was originally conceived as a device to monitor facilities, and not as a description of who can give care to whom in any given situation. The acronyms are even more bewildering because of the difference, still disputed, between “essential” and “emergency” care. It is time to clarify the issues.

### Care that is close to women – and safe

All mothers and newborns, not just those considered to be at particular risk of developing complications, need skilled maternal and neonatal care provided by professionals at and after birth. There is a value in the rituals surrounding birth, and in keeping these as a central feature of family life. There is a consequent need and demand for care that is close to where and how people live, close to their birthing culture, but at the same time safe, with a skilled professional able to act immediately when largely unpredictable complications occur. The defining features of the type of care that is required is that it should be responsive, accessible in all ways, and that a midwife, or a person with equivalent skills, is there to provide it competently to all mothers, with the necessary means and in the right environment. This level of care is appropriately referred to as “first-level” care. Labelling it as “basic”, “primary” or “routine” undervalues the complexity and skill-base required to attend to situations that can suddenly and unexpectedly become life-threatening. Table 4.2 summarizes the key features of first-level and back-up maternal and newborn care.

Recommended packages, the result of an international consensus, are extensively described in published guidelines (see Table 4.2). Most interventions, such as surveillance of the progress of labour, psycho-logical support, initiation of breastfeeding and others, have to be implemented for all mothers and newborns in all circumstances. Other elements in the package – such as manual removal of the placenta or resuscita-

<sup>1</sup> Basic Essential Obstetric Care, Comprehensive Essential Obstetric Care, Basic Emergency Obstetric Care, Comprehensive Emergency Obstetric Care, Emergency Obstetric Care.

## Box 4.3 Screening for high-risk childbirth: a disappointment

Antenatal screening has a long history, dating back to the first WHO expert committee on motherhood in the early 1950s (45). The idea was beguiling in its simplicity. If all women could be persuaded to attend antenatal care, screening tests could be carried out to determine which women were at high risk of developing complications; they could then be offered additional care. Although there had been evidence, from as early as 1932, that screening was not very effective (46, 47), risk scoring systems were exported to developing countries. They soon became common wisdom (48–51) and, during the 1970s and 1980s, a mainstream doctrine under the label “risk approach” (52, 53). This approach was a core component of safe motherhood strategies

for many years. International development agencies poured resources and efforts into information, education and communication campaigns to mobilize communities around a minimum of one antenatal visit for all pregnant women to identify those at risk, and those not at risk. The first group was told they should give birth in a health facility; for the others nothing further needed to be done.

In the early 1980s, the first evidence surfaced that questioned the cost-effectiveness of antenatal screening as a way to reduce maternal mortality (52). The accepted wisdom began to be challenged (54), with a growing view that the ineffectiveness of antenatal care “as an overall screening programme not only renders it less than what it claimed to be; it does not

even then say what it is” (55). Six years later, it could be clearly stated that “no amount of screening will separate those women who will from those who will not need emergency medical care” (56). Indeed, most women who eventually experience complications have few or no risk factors, and most of the women with risk factors go on to have uneventful pregnancies and deliveries. The Rooney report of 1992 formally changed the balance to scepticism (57). Antenatal care is important to further maternal and newborn health – but not as a stand-alone strategy and not as a screening instrument. To ensure safe childbirth, on the other hand, skilled professional care needs to be available for all births, even the ones not at risk, according to the criteria of the 1980s.

tion of the newborn – are only needed when the situation demands it. However, it is crucial that the whole package be available and on offer to all, immediately, at every childbirth.

These interventions can only be provided by professionals with a variety of integrated skills and competences for whom the shortcut label is “skilled attendants”. It is vital that a threshold of skills and competences is reached: it is not enough to be partially skilled, for example only able to carry out a so-called normal delivery. “*Any fool can catch a baby*”, as long as nothing goes wrong; as soon as a complication occurs, a situation which is difficult to predict, the level of skills and competence required to recognize the problem and decide on the right action is of a very high order. Choosing the wrong intervention or hesitating for too long to intervene or to refer the woman at the right time and in the right way can have disastrous consequences.

The prototype for a skilled attendant is the licensed midwife. Less cost-effective options include nurse-midwives and doctors, assuming they have been specifically prepared to do this kind of work (most are not – or not sufficiently). Gynaecologists-obstetricians – of whom there is a large deficit in stagnating and reversal countries – are, as a rule, perfectly able to provide first-level care, although they are less cost-effective and more appropriate for back-up referral care. There is no evidence that

## Box 4.4 Traditional birth attendants: another disappointment

In the 1970s, training traditional birth attendants (TBAs) to improve obstetric services became widespread in settings where there was a lack of professional health personnel to provide maternity care, and where there were not enough beds or staff at hospital level to give all women access to hospital for their confinement. TBAs already existed and performed deliveries (for the most part in rural areas), they were accessible and culturally acceptable and they influenced women's decisions on using health services. Training them in modern methods of delivery was seen as a new way forward. In fact, this analysis was not new. In some countries such efforts had begun many years before: in 1921 in Sudan, and in the early 1950s in India, Thailand and the Philippines (58, 59).

In 1970, an interregional seminar in Malaysia, organized by WHO, recommended a wide-ranging international study of patterns of care for pregnancy and childbirth – including TBAs – in order to improve the planning of maternal health programmes (60). The study recommended the preparation of guidelines for countries regarding the training and use of TBAs. Mobilization of the community was at the core of the primary health care strategy of the late 1970s, and this idea fitted into the movement's goals (61). Tens of thousands of TBAs were trained, principally in Asia and Latin America but also in Africa (62). It was even hoped that they might conduct antenatal

clinics (63–65) and be integrated into the health system as health personnel (66, 67).

While WHO continued to encourage this strategy until the mid-1980s, some specialists began to express their doubts about its effectiveness. Evidence emerged that training TBAs has had little impact on maternal mortality. It may improve “knowledge” and “attitude”, and be associated with small but significant decreases in perinatal mortality and birth asphyxia, but there are no elements to demonstrate that this training is cost-effective (68). Instead, it has become clear that the most effective measure is to provide professional skilled care, including the possibility to reach a well-equipped hospital if needed (69–73).

In most settings, it is unrealistic to suppose that a training course can have any effect on maternal mortality. Some important factors have been underestimated. First, the function, knowledge and experience of TBAs vary widely between one region and another, and even within the same country. It is not, therefore, technically valid to frame a general training strategy without taking account of these variations. Advocates, in response, claim that the fault lies not in the strategy itself but in the lack of supervision and support which has reduced its effectiveness (59, 74). However, because TBAs are in much greater need of supervision than obstetric specialists or professional midwives, this supervision would

not be sustainable in a situation in which health professionals have neither the time nor the resources for it.

A second problem is qualitative: it is not clear what TBAs ought to be taught. To change their behaviour it is necessary to understand it. This has seldom been proposed (75). Even if it were possible to alter some of the components of traditional knowledge, this can “destabilize” the whole. The social role of a TBA, like that of a traditional healer, is profoundly rooted in the local culture. It is not confined to the care to be provided for a particular pathology: it is all-embracing, and reinterprets the patient's suffering in its cultural context (76). The proponents of the TBA strategy have not appreciated the immense cultural gap between modern methods of care and the activities of TBAs.

Finally, while some specialists hope that TBAs will at least help to persuade women with complications to go to hospital (63, 65, 77), others observe the exact opposite – that they tend to delay or even deliberately discourage women from doing so (78, 79).

The strategy is now increasingly seen as a failure. It will have taken more than 20 years to realize this, and the money spent would perhaps, in the end, have been better used to train professional midwives.

Table 4.2 Key features of first-level and back-up maternal and newborn care

	First-level maternal and newborn care	Back-up maternal and newborn care
<b>Defining feature</b>	Close to client: demedicalized, but professional	Referral level technical platform
<b>For whom?</b>	For all mothers and newborns	For mothers and newborns who present problems that cannot be solved by first-level care
<b>By whom?</b>	Best by midwives; alternatively, by doctors or by doctors or nurses if correctly trained and skilled	Best by a team that includes gynaecologists-obstetricians and paediatricians; alternatively, appropriately trained doctors or mid-level technicians
<b>Where?</b>	Preferably in midwife-led facilities; also in all hospitals with maternity wards	In all hospitals

Note: For recommended interventions, see: *Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice*. Geneva, World Health Organization, 2003; *Managing complications in pregnancy and childbirth: a guide for midwives and doctors*. Geneva, World Health Organization, 2003; *Managing newborn problems: a guide for doctors, nurses and midwives*. Geneva, World Health Organization, 2003.

lower level staff or non-professionals can deal with the complex decision-making required when complications occur at birth (see Box 4.5).

Providing close-to-client first-level maternal and newborn care is not just a matter of “carrying out normal deliveries”. Such care has three functions. The first is to make sure that the birth takes place in the best of circumstances, by building a personal relationship between the pregnant woman and the professional. The second function is to resolve complications as they arise, making sure that they do not degenerate into life-threatening emergencies. The third is to respond to life-threatening emergencies when they do occur, either directly or by calling on referral-level care that has to be available as a back-up.

Contrary to what the current emphasis on life-saving emergency hospital care suggests, first-level maternal and newborn care is thus not only uneventful routine care. First-level care does save lives and manage emergencies. It does so by controlling conditions before they become life threatening (by treating anaemia, for example), or by avoiding complications (through active management of the third stage of labour, for example). A midwife or other professional with midwifery skills also actually deals with a range of emergencies on the spot, such as by administering vacuum extraction in case of fetal distress or by arranging emergency referral for caesarean section or other back-up care. What is specific about first-level care is that it takes place in an environment where a woman is comfortable with her surroundings, and where the fear and pain that go with giving birth are managed positively.

Maternal and newborn care at first level thus provides a whole package of care that can go a long way towards improving maternal and newborn outcomes. Experience shows that even in the absence of hospitals, first-level maternal and newborn care can bring maternal mortality below 200 per 100 000 – in optimal circumstances it may actually reduce maternal mortality to levels of 90 per 100 000 (37). Clearly the contrasting of routine, normal deliveries with life-saving emergency hospital care is not helpful.

First-level maternal and newborn care should preferably be organized in midwife-led birthing centres, combining cultural proximity in a non-medicalized setting, with professional skilled care, the necessary equipment, and the potential for emergency evacuation. Decentralization for easy access obviously has to be balanced by the need to concentrate the staff and equipment necessary to be available 24 hours a day, something more easily done in birthing centres with a team of several skilled attendants than in solo practices. Any hospital with a maternity unit naturally also has to provide such first-level care to all the mothers and babies it admits, alongside the back-up care that is the added value of the hospital. Even within the walls of a hospital, however, first-level care should maintain the demedicalized and close-to-client characteristics of midwifery-led birthing homes.

### A back-up in case of complications

In an ideal world, first-level maternal and newborn care would include all the useful interventions, including all the life-saving ones. That is obviously not possible – it would require an operating theatre in each village. That is where the back-up provided by hospitals comes in: to assist the minority of women and newborns who have problems requiring more complex care. Health workers who provide first-level care need back-up when a problem occurs that they are unable to deal with as it goes beyond their competence or beyond the means they have at their disposal. Mothers need the back-up to solve their problem, midwives (or their equivalent) need to be able rely on a back-up for their clients and to maintain credibility. Any pregnant woman has to be sure that if things go wrong, her midwife will either solve the problem or get her to a place where it can be solved.

Back-up maternal and newborn care encompasses emergencies (such as a hysterectomy for a ruptured uterus or treatment of neonatal tetanus or meningitis) as well as non-emergency interventions (such as treatment of congenital syphilis). The criterion to consider an intervention as part of back-up rather than first-level care is

## Box 4.5 Preparing practitioners for safe and effective practice

There is little evidence on the best methods or models of pre-service training to prepare professionals for their future roles and responsibilities. There is more material on in-practice training that tackles what is known as the “knowledge-skills gap”. Even in the latter case, however, there is little evidence that the millions of dollars spent on updating and improving skills result in improved outcomes.

Pre-service education and training is often a continuation of past local practice, and varies considerably from place to place. In the South-East Asia Region for example, all the pre-service programmes for nurses, nurse-midwives and midwives who provide maternal care, give similar skills outcomes as their objective. Nonetheless, the length of training varies considerably, from as short as three months to as long as 48 months (the median length is 24 months). There is considerable variation in

other regions as well. Experience shows that revisions to training curricula rarely result in major alterations to the entry criteria or the balance between practice and theory. Revisions to pre-service education programmes are usually incremental, adding content and prolonging training because of concerns about academic status or shifting responsibilities between ministries of health and of education.

The evidence is too weak to make specific recommendations on the optimal duration and content of pre-service training. There are, however, no examples yet of satisfactory results with models based on the inclusion of midwifery subjects in a three-year general nursing curriculum, even when the entry level is more than 10 years' education. There are no examples either of satisfactory results with curricula for which the entry level is 10 years of general education or less, even when this is

followed by three years of basic nursing and one year of midwifery training. There are two formulas for which satisfactory results have been documented in some contexts. The first is the training of nurse-midwives, with an entry level of more than 10 years' education, three years of nursing training and one to two years of midwifery. This formula has shown good results in Australia, Botswana, Kenya, Senegal, Sweden and the United Kingdom. The second formula is direct-entry midwife training: three years' combined theoretical and practical specialist midwifery training after more than 10 years of general education. This has been successful in Canada, Indonesia and the United Kingdom. The provisional conclusion is that reaching the skills threshold where a midwife or nurse-midwife can work autonomously requires a considerable investment in high-level basic training.

not whether the complication is dangerous, life-threatening or an emergency: it is its complexity. If it is technically feasible to carry out an intervention at first level, then it should be part of the first-level maternal and newborn care package.

Back-up is ideally provided in a hospital where doctors – specialists, skilled general practitioners or mid-level technicians with the appropriate skills – can deal with mothers whose problems are too complex for first-level providers. To make the difference between life and death, the required staff and equipment must be available 24 hours a day, and the links between the two levels of care should be strong. To reduce the risks and costs inherent in medical interventions and at the same time provide a responsive, humanized environment for care, overmedicalization, so often seen as part of commercialized care, should be discouraged.

### Rolling out services simultaneously

First-level maternal and newborn care and the referral hospital services that should provide back-up have to be rolled out in parallel. In industrialized countries, and also in countries such as Malaysia, Sri Lanka and Thailand, first-level midwifery care has preceded reliance on back-up by hospitals. To replicate this sequence would not be acceptable today, not for authorities, not for the medical establishment, and, most importantly, not for the clients. However, reversing the sequence – that is, developing emergency hospital services only, without a network of first-level care – is not an option either. This happens now in many countries and means that a number of problems and complications are needlessly allowed to degenerate into emergency life-threatening situations.

The challenge of simultaneous roll-out has striking similarities to the one that led the primary health care movement to opt for the health districts, with both health centres and a district hospital, linked by referral mechanisms, and organized to ensure a continuum of care. More than for any other programme, the extension of coverage with maternal and newborn care depends on the development of district health care.

### Postpartum care is just as important

While the need for immediate postpartum care is widely acknowledged, later postpartum care is often completely forgotten or neglected. In many low-income countries, even where the proportion of institutional deliveries is already quite high or is increasing, women are often discharged less than 24 hours after a birth (34), but more than half of maternal deaths occur after this period, as do many of the newborn deaths. Despite the burden of morbidity during this period, uptake of postpartum care in developing countries is usually extremely low, typically less than half the level of uptake for antenatal or delivery care (80).

Women do not, and probably often cannot, embark on care-seeking paths even when they know that they have a life-threatening condition. For many women, poverty combines with cultural constraints to construct a “social curtain” around them which health services do not penetrate (81). In places where the majority of births take place at home, postpartum care may be unavailable or women may not know that services exist. Many service providers and families focus on the well-being of the new baby and may not be aware or able to assess the importance of women’s complications such as postpartum bleeding (82).

Where childbirth is under professional supervision, be it at home or in a health facility, women are usually expected to attend at a health facility for a postpartum check-up six weeks after delivery. This is clearly not sufficient to be effective. Moreover,

these check-ups are often provided by different people, in a different location from childbirth services. Women may not attend because they do not know that the service is available to them, they may not perceive any benefit in attending, or the opportunity costs of attending may be too great (83–85). Health staff themselves may not feel empowered or skilled in providing postpartum interventions (86). Apart from some countries, such as Sri Lanka, rates of postnatal visits among women are low and inequitably spread. The structures that exist are often not fully suited to the needs of poor women who require better first-level care as well as easy-to-reach back-up facilities for complications. In most areas, there are severe shortages of trained health workers with adequate capability to diagnose, refer and treat these problems.

Guidelines for postpartum care exist (87). They can be implemented by midwives, but also by multipurpose professionals, who may be less scarce. The need now is for a pragmatic approach to implementation in resource-poor settings, and for more attention to be paid to the handover between those who care for the mother and the baby at childbirth and those who ensure continuity afterwards.

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