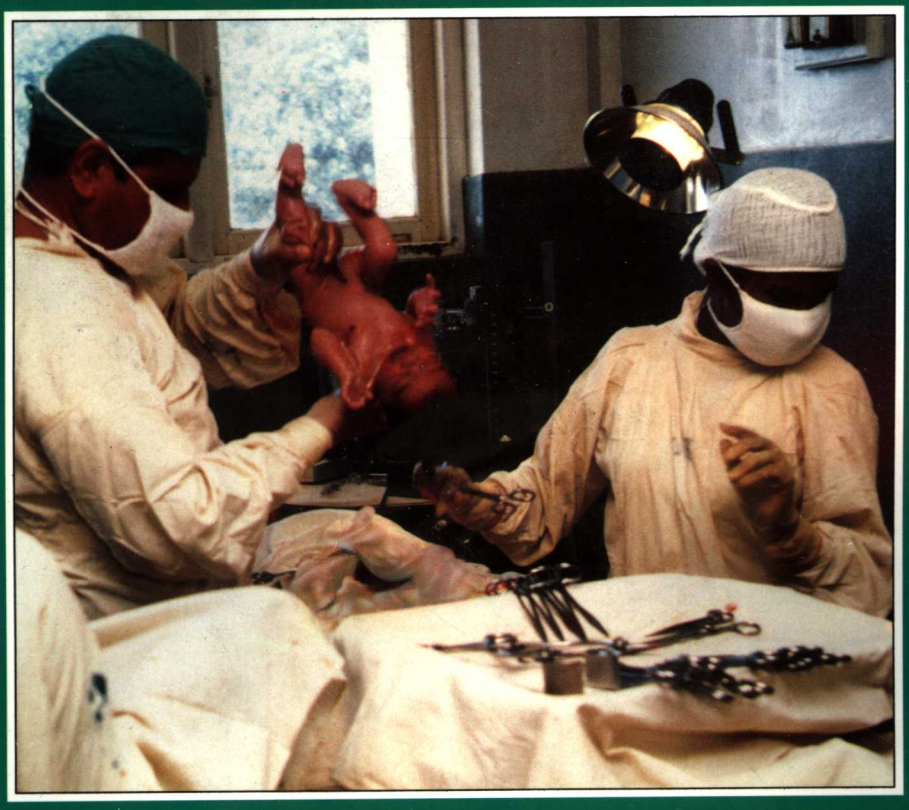
Essential elements of obstetric care at first referral level



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Preface

Maternal mortality accounts for a large proportion of the deaths occurring among women of childbearing age in most of the developing world. Each year, about half a million women die from causes related to pregnancy and childbirth, and 99% of these deaths occur in developing countries. International concern over this appalling situation has greatly increased in recent years and has been emphasized in the conclusions and recommendations of both the International Conference on Population in 1984 and the World Conference to Review and Appraise the Achievements of the UN Decade for Women in 1985. A major international meeting, the Safe Motherhood Conference, held in Nairobi in 1987, was devoted to the subject.

The World Health Organization has recently intensified its efforts to improve maternal health care, focusing specifically on the reduction of maternal mortality. With the support of the United Nations Population Fund, WHO has initiated a worldwide programme on the collection, analysis and dissemination of information on maternal mortality and on the improvement and extension of coverage of maternal health care.

As part of this programme, a WHO Interregional Meeting on Prevention of Maternal Mortality was held in Geneva in 1985. Experts from many parts of the developing world reviewed the results of more than 20 studies on maternal mortality from all regions of the world. They then considered the medical, health service, reproductive and socioeconomic factors responsible for the very high maternal death rates in developing countries and outlined a series of actions needed,[1] concluding that a reduction of maternal mortality and morbidity required the following:

- improved living standards, through general socioeconomic development;
- trained supervision of pregnancy and labour at the primary health care level, and recognition and referral of women at high risk;

[1] *Prevention of maternal mortality: report of a WHO Interregional Meeting, Geneva, 1985.* Geneva, World Health Organization, 1986 (unpublished document FHE/86.1; available on request from the Division of Family Health, World Health Organization, Geneva, Switzerland).

- better access to referral facilities for the management of complications of pregnancy and childbirth; and
- universal availability of appropriate family planning methods.

Improvement in the quality and coverage of primary health care will do much to reduce the risks of childbearing, but the major complications of pregnancy, labour and the puerperium require skills and facilities which should be made available at the first referral level—the district or subdistrict hospital or a suitably staffed and equipped health centre—as well as at the secondary referral level of care. Many maternal deaths occur at first referral level, either because women come from too far and arrive too late, or because the essential obstetric care they urgently need is not available.

In 1986, WHO convened a Technical Working Group (Annex 1) to define the essential obstetric care necessary at first referral level for the reduction of maternal mortality and morbidity, and to describe the staff, training, supervision, facilities, equipment and supplies needed (Annexes 2–5). Dr. R. Cook (formerly Division of Family Health, WHO, Geneva) was Secretary to the group and subsequently arranged for its report[1] to be reviewed by some 50 experts in maternal health from many parts of the world. The present publication is based on this report, revised to take account of the comments received. It has been prepared by Dr M. Fathalla (Special Programme of Research, Development and Research Training in Human Reproduction, WHO, Geneva), Dr K. A. Harrison (University of Port Harcourt, Nigeria) and Dr B. E. Kwast (Maternal and Child Health, WHO, Geneva), with the collaboration of Dr G. Stott (formerly WHO, Geneva).

The book is intended for those responsible at district, provincial, regional, national and international levels for the planning, financing, organization and management of maternity care services, in particular in developing countries. The guidelines provided should not only make it possible to raise the standards of referral services at the district level to those required, but also help decision-makers to determine how far and by what means it may be possible to extend some of these services to more peripheral levels. This may

[1] *Essential obstetric functions at first referral level: report of a WHO Technical Working Group, Geneva, 1986.* Geneva, World Health Organization, 1986 (unpublished document FHE/86.4; available on request from the Division of Family Health, World Health Organization, Geneva, Switzerland).

involve upgrading both staff and facilities, where feasible and affordable, or may only require the extension of the skills of certain categories of health personnel, together with quite a modest addition of equipment and supplies and redeployment of space.

The severe economic constraints faced by many countries have been a major consideration in the preparation of this publication. Every effort, therefore, has been made to include only those requirements considered indispensable in assisting health authorities to reduce maternal mortality and morbidity by bringing competent obstetric care within the reach of all who need it. For certain procedures and techniques that are not at present in widespread use at first referral level in developing countries, points of technical relevance have been included in the text.

The World Health Organization acknowledges with gratitude the financial contribution of the United Nations Population Fund, which since 1984 has supported the WHO interregional project on the prevention of maternal mortality. It is as part of this project that this publication has been prepared.

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1
Introduction

Maternal mortality and morbidity in developing countries

Maternal mortality rates in developing countries average about 450 per 100 000 live births, compared with an estimated 30 per 100 000 in developed countries (*1*). Rates vary widely between regions, between countries within a given region, and between urban and rural areas. In some countries, national rates exceed 1000 per 100 000 live births, with urban rates of 500 or more and rural rates several times as high. There are more maternal deaths in India in one day than there are in all the industrialized countries in a month. In areas where the problem is greatest, most maternal deaths go unregistered. The prevention of such deaths is considered in detail in a recent WHO publication (*2*).

Living conditions and the pattern of childbearing in most areas of developing countries lead to high rates of maternal morbidity. People prefer large to small families and, for most women, childbearing starts too soon, occurs too frequently, and does not cease until the age of 40 years or even later. Given this situation, the chances of something going wrong are considerable. In addition, for large sections of the population of the developing world, there is a general background of poverty, malnutrition, inadequate sanitation and water supply, illiteracy, and sociocultural problems relating to the status of women.

In many countries, maternal morbidity is particularly high in rural areas. In some respects, however, the quality of life in urban slums and periurban squatter settlements is worse than that in rural areas, partly because of poor hygiene and sanitation and overcrowding. As fuel and transport costs are often higher in urban areas, there is less money available for food, which itself tends to be more expensive than in rural areas; consequently, urban dwellers may eat less well and suffer more from undernutrition and malnutrition. For maternal health care, urban dwellers have certain advantages in that clinics and hospitals are often more readily available. However, the services are not always accessible; for

example, charges may be levied that are difficult for disadvantaged urban dwellers to afford.

A feature of the health care services in developing countries is the inequality in their distribution. In India, four-fifths of the population, but only one-fifth of the physicians, are in rural areas. The position is even worse in some African countries where health care coverage is largely restricted to cities, even though they support only 10–20% of the population. In many rural areas, there may be no health services at all or lack of roads and difficulties of transportation may make them inaccessible. A high proportion of maternal deaths in these areas occur at home, without trained assistance at delivery, or when the woman is actually on the way to a district hospital.

Anaemia, haemorrhage, eclampsia, infections, abortions and the complications of obstructed labour account for over 80% of maternal deaths in most developing countries. But these deaths represent only a small proportion of the total morbidity attributable to the same causes. For every maternal death, there are many more women in whom, after childbirth, disabilities develop that impair their general health and reproductive functions, with a possible reduction in their economic activity.

Most of these causes of maternal mortality and morbidity are preventable through properly organized primary health care and appropriate and accessible referral facilities. The following examples illustrate the need for care at different levels of the district health system.

Anaemia

In terms of its social and economic consequences, anaemia is the most important cause of morbidity in non-pregnant women of childbearing age in developing countries. Women in this period of life have a precarious iron balance due to loss of iron during menstruation. Where dietary intake of iron is low or its absorption is impaired, and where hookworm infection is prevalent, iron deficiency anaemia may be widespread and often severe, and is aggravated by pregnancy, delivery and lactation. In malarial areas, anaemia is often due to the combined effects of destruction of red blood cells and folic acid deficiency. Commonly, both types

of anaemia are present in the same population. The control of anaemia at community level can be effective in greatly reducing maternal mortality and morbidity (*3*). In addition, the life-threatening consequences of anaemia can be mitigated by appropriate medical treatment, blood replacement and, in some cases, timely surgical intervention at first referral level.

Pelvic sepsis

Pelvic sepsis may follow non-operative deliveries conducted under unhygienic conditions, abortions and operative deliveries. Properly treated, the infection often resolves. Untreated, as is so frequently the case after unattended births in developing countries, the infection leads to chronic pelvic inflammatory disease, which is the underlying cause of many of the cases of infertility, menstrual disorders and ectopic pregnancies so commonly seen in these countries. Infertility is particularly tragic because, in some societies, much stigma is attached to it; the affected woman loses her social standing and may even be divorced. As a result of pelvic inflammatory disease, numerous adhesions form in the peritoneal cavity. In some countries, virtually all women requiring abdominal operations have intraperitoneal adhesions, which add to the risk of surgery and increase demands on health services in terms of postoperative care and prolonged convalescence. Pelvic sepsis may be largely avoided if trained personnel are available to conduct deliveries, supervise the puerperium and give antibiotic treatment if signs of infection appear.

Obstetric fistulae

The commonest cause of vesicovaginal fistula is neglected obstructed labour; scarce or underused health services, lack of accessible referral facilities and certain traditional attitudes to childbirth and the status of women provide the perfect setting for this injury. In communities where such conditions prevail, those at greatest risk are young teenage girls, who have not finished growing when they first become pregnant, and women with little or no formal education or who are illiterate, who often do not, or cannot, avail themselves of maternity care facilities. Women with vesicovaginal fistula become totally incontinent of urine and may also suffer from vaginal stenosis, amenorrhoea,

infertility and nerve palsy. Those with rectovaginal fistula also suffer from incontinence of faeces. The severity of the damage done to the birth canal and the ensuing psychological upset make life a misery, sometimes to the extent that, even after surgical repair, affected women never recover their self-esteem. The scale of this problem in some parts of Africa and Asia may be greater than is generally realized. The tragic effects of prolonged obstructed labour need never occur if the progress of labour is properly monitored and if suitable referral facilities are available.

Maternity care in district health systems

Planning and action to improve the coverage and quality of health care in developing countries are generally focused on district health systems. The district, or its equivalent, is the most peripheral unit of government that is self-contained and includes all elements of the national administration. Usually covering a population of between 100 000 and 200 000, the district health system comprises a district hospital (first referral level), a district health office, a district health centre, with dependent subcentres, dispensaries and health posts, and the community itself with its various types of health worker. Each of these must be involved in any programme to reduce maternal mortality and morbidity.

Maternal care at community level

At family and community level, maternal care includes prenatal examination, screening for those at high risk, treating such conditions as anaemia before they become so serious as to threaten safe childbirth, immunization against tetanus, early detection of abnormal pregnancy and labour, health education, instruction on infant care and feeding, family planning counselling, and delivery at home by trained attendants for women who desire it and are not at high risk.

In recent years, much effort has gone into training traditional or village birth attendants and into the use of trained midwives in the community, but there are still many areas where trained personnel are not available and women deliver unaided or are attended only by close relatives. In the absence of professional

care, serious complications may go unrecognized, often until it is too late. Consequences of inadequate maternal care include anaemia, eclampsia, obstructed labour, uterine rupture, obstetric fistulae, postpartum haemorrhage, puerperal infection and unwanted pregnancy. Attempts to terminate unwanted pregnancies through unsafe induced abortion constitute a major health hazard in urban areas in most developing countries.

Inaccessibility of referral facilities

In developing countries, most of the population of rural areas has no proper access to any sort of obstetric care, with the result that when complications develop during pregnancy, labour and the puerperium, affected women report very late for treatment. This carries serious consequences: not only are death rates high, but so is the proportion of women who die before treatment has had time to take effect. Many hospital studies of maternal mortality show that 10% or more of these deaths occur within the first hour of arrival, and another 30–50% within 24 hours. Diagnosis is also affected: at the time of death, two or more pregnancy complications, both of equal severity, may be present, making it difficult to decide which is the principal cause of death. Religious and cultural beliefs may not permit autopsies, even where facilities are available, and so the causes of maternal deaths are often diagnosed on clinical grounds only.

Even where trained birth attendants and midwives are working in the community giving prenatal, delivery and postnatal care, women continue to develop, and die from, major complications of pregnancy, labour and the puerperium. The skills and facilities needed to save these women's lives are not available at community level and, in many parts of the world, access to a hospital is very difficult because of lack of roads or transport or is restricted for want of money.

Reducing maternal mortality and improving obstetric care at first referral level

Consideration of the circumstances surrounding maternal deaths in the developing world leads to the conclusion that far-reaching changes are needed in district health systems so that well organized

maternal care services with the following characteristics can be developed:

- Total population coverage, which means that every pregnant woman should receive essential prenatal care from trained personnel.
- Provision for every woman to be cared for by a trained birth attendant during labour.
- Provision for all women at high risk during pregnancy to be cared for by trained health personnel at a suitable facility.
- Accessible facilities that are equipped and staffed to tackle complications arising during pregnancy, labour and delivery, especially those most commonly associated with maternal deaths.
- Readily available transport to link all levels of maternal health care, especially in emergencies.
- Provision of family planning services as part of all maternal and child health programmes.
- Keeping of records in a form that permits periodic assessment of performance and appropriate action to improve efficiency and effectiveness.
- Registration of births and of maternal and perinatal deaths so that the situation may be kept under regular review and needs and priorities identified.

In addition, it is important that the maternity service should function in such a way that people have confidence in it as well as in the system of health care it represents.

Improvements in the coverage and quality of maternal care at district level are desperately needed and are achievable and affordable, in spite of the economic constraints faced by many nations. What counts is not so much the prosperity within the country but how available resources, including health services, are distributed. In Malaysia, the provision of basic maternity services, where they did not exist before or where they existed but were poorly organized, reduced maternal mortality rates from 320 in 1957 to 107 per 100 000 live births in 1972. The results of progress in maternal health care in China have been even more dramatic, the maternal mortality rate dropping from 1500 before 1949 to about 50 per 100 000 births in 1982. In Cuba, where maternal and child health care has been one of the priorities since the National Health Service was started in 1961, the maternal mortality rate fell from 118 in 1962 to 31 per 100 000 births in 1984.

The first referral level—the district or subdistrict hospital or health centre to which a woman at high risk is referred prenatally or sent for emergency obstetric care—holds a key place in the organization of maternal care. Certain essential obstetric procedures, most of them life-saving in emergencies, can only be performed at this level, and it is for want of suitably trained staff, facilities and equipment to carry them out that many maternal deaths occur. It is often difficult enough for many women with complications of pregnancy, labour and the puerperium even to reach the first referral level; it is a tragedy if, on arrival at the hospital or health centre, they find that the specialized care they need is not available.

2
Essential elements of obstetric care related to causes of maternal death

The elements of obstetric care that are essential at first referral level to reduce maternal mortality and morbidity are shown in Table 1. They can be classified into the following categories:

1. Surgical obstetrics
2. Anaesthesia
3. Medical treatment
4. Blood replacement
5. Manual procedures and monitoring labour
6. Management of women at high risk
7. Family planning support.
8. Neonatal special care

Neonatal special care, while clearly not directly concerned with the reduction of maternal mortality, has been included because it is difficult to imagine maternal care facilities at first referral level that do not provide some special care for neonates, many of whom may be in less than optimal condition for the same reasons that put their mothers at risk. Thus the requirements for such care need to be included for practical planning purposes.

The order in which the categories are presented is not indicative of their ranking in importance. For each, the procedures and facilities considered essential for obstetric care are identified in the following sections, as related to the prevention or management of the major causes of maternal death, almost all of which are interrelated. All the requirements need not be met at the same time; priorities for action can be set by health planners according to the ranking of the main causes of maternal death prevailing in each

country, so that maternal health care at first referral level is gradually improved. Two principles should guide the implementation of any changes:

- services should be organized so that women with potentially fatal obstetric complications can obtain proper treatment without having to travel long distances; and
- there should be no economic barrier that prevents poor people from receiving maternal care at any level.

In planning the improvement or expansion of obstetric services, it is necessary to take into account certain aspects of management and the specific skills of health staff, the facilities, special equipment, and essential drugs and supplies required (Table 2). Requirements for accommodation, equipment, instruments, drugs and supplies are listed in Annexes 2 to 5. Practical details of surgical procedures are given in *Surgery at the district hospital: obstetrics, gynaecology, orthopaedics, and traumatology* (*4*).

Surgical obstetrics

Caesarean section

Caesarean section is significant in reducing the high maternal mortality rate in developing countries, since complications necessitating caesarean section (e.g. obstructed labour, antepartum haemorrhage and severe pregnancy-induced hypertension) are among the commonest causes of maternal death. If caesarean section is performed in emergencies where such complications have been neglected, there is a much higher mortality than if it is performed in less urgent circumstances. The risk of uterine scar rupture in subsequent pregnancies and deliveries stresses the need for women who have had caesarean sections to return for future deliveries to the care of a well equipped maternity unit.

Caesarean section is a major operation and should be performed only by persons who have been adequately trained. The categories of health worker to be trained should be decided by the health authorities and professional bodies of each country. The decision should be based on the availability of different kinds of health personnel, the number of caesarean sections required annually to maintain surgical skills, the availability of transport for referral, and properly conducted and evaluated health systems research.

Table 1. Essential elements of obstetric care related to the major causes of maternal mortality[a]

Essential elements of obstetric care at first referral level	Major causes of maternal mortality								
	Obstructed labour	Ruptured uterus	Antepartum haemorrhage	Postpartum haemorrhage and retained placenta	Abortion	Hypertensive disorders of pregnancy and eclampsia	Puerperal or post-abortion sepsis	Ectopic pregnancy	Severe anaemia
Surgical obstetrics									
Caesarean section	•	•	•			•			
Surgical treatment of sepsis	•	•		•	•		•		•
Repair of high vaginal and cervical tears				•			•		•
Laparotomy for repair of uterine rupture/hysterectomy		•		•					
Removal of ectopic pregnancy presenting as "acute abdomen"								•	
Evacuation of uterus in abortion					•		•		
Intravenous oxytocin infusion to augment labour			•			•			
Amniotomy with/without oxytocin infusion			•			•			
Anaesthesia	•	•	•	•	•	•		•	

Medical treatment									
Sepsis	●	●			●		●		●
Shock	●	●	●	●	●		●	●	●
Hypertensive disorders of pregnancy and eclampsia			●			●			
Severe anaemia		●	●	●	●		●	●	●
Blood replacement	●	●	●	●	●		●	●	●
Manual procedures and monitoring labour									
Manual removal of placenta				●					
Exploration of uterus				●					
Vacuum extraction						●			●
Partograph	●	●							

Management of women at high risk	
Maternity waiting homes	Places where women at high risk of complications can stay and receive supervision during the last month of pregnancy
Family planning support	
Tubal ligation, vasectomy Intrauterine contraceptive device (IUD) Oral, injectable and implantable contraceptives	To prevent unplanned or unwanted pregnancies

[a] A filled circle indicates that the element of obstetric care specified in the left-hand column is essential for the prevention of maternal mortality due to the named obstetric complication.