WHO: Mother Baby Package: 94-11 rev1WHO/RHT/MSM/94.11. Rev 1

Mother-Baby Package
Implementing safe motherhood in countries

World Health Organization
Geneva
Department of Reproductive Health and Research

CONTENTS

Glossary

AIDS Acquired immunodeficiency syndrome
ANCAntenatal care
EPIExpanded Programme on Immunization
FIGOFederation of International Obstetrics and Gynaecology
HDPHypertensive disorders of pregnancy
HIVHuman immunodeficiency virus
ICMInternational Confederation of Midwives
IECInformation, education and communication
IUDIntrauterine device
LGVLymphogranuloma venereum
MCHMaternal and Child Health
NGO Nongovernmental organization
PIDPelvic inflammatory disease
PPHPostpartum haemorrhage
STDSexually transmitted disease
TBTuberculosis
TBATraditional birth attendant
UTIUrinary tract infection

Acknowledgements

The World Health Organization would like to thank the many individuals and agencies who collaborated in and supported the development of the Mother-Baby Package, notably the United Nations Development Programme (UNDP), the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA) and the World Bank.

Special thanks are due to the Rockefeller Foundation whose support provided an opportunity to share the development of the Mother-Baby Package with a number of developing countries whose valuable input at various stages of preparation has been incorporated into the final document.
United Nations
Development Programme (UNDP)

United Nations
Children's Fund (UNICEF)

United Nations
Population Fund

The World Bank

Message from the Director-General

We stand at the threshold of a new century. At this moment, the future is our concern and must be our common responsibility. The future is for human beings -- their lives and deaths, their personal relations, their happiness and suffering.

Women are crucial to social and economic development. Their health and well-being matters to themselves, to their families and to communities. Moreover, the health and well-being of women is a critical ingredient of the generation of the future. Women undertake a vital function of bearing and raising our children. Yet insufficient attention has been paid to ensuring that they do so in safety.

Pregnancy and childbirth are natural processes but they are by no means risk-free. Women and children die and suffer because they do not have access to the basic minimum of health care that is their right. Worldwide, only half the women in labour have someone nearby who can help if things go wrong. More than half a million women die each year as a direct result of pregnancy-related complications. Another 20 million at least suffer serious and long-lasting illnesses or disabilities. Every year, 4 million newborn infants die and millions more are disabled because of poorly managed pregnancies and deliveries.

It is not for lack of knowledge that the majority of the world's women still face the prospect of death or disability as a consequence of childbearing. The burden of death and the stigma of permanent injury are borne by women and their newborn infants in large part because we, the holders of knowledge, the bearers of political authority and the architects of health and social programmes, have failed to exercise our full creative capacity and to commit our energies and resources to the health and development needs of women.

WHO has pledged, along with its United Nations partners, to reduce mortality and morbidity significantly among mothers and infants by the end of this century. Achieving these goals does not require sophisticated technology. It requires comparatively modest but sustainable funding. It also requires a consistent strategy to promote safe motherhood and newborn care.

WHO has now made a strategy to deal with this issue available to countries. The Mother-Baby Package is a practical tool to intensify promotive, preventive, treatment and rehabilitation interventions for mothers and infants. It offers guidance on improving skills, equipment, research, standards of care, monitoring and evaluation, while focusing on the delivery of family-friendly services at the local level.

Several countries have already started the process of development and implementation of the strategies outlined in the Package. It is my conviction that a concerted and well-coordinated effort to implement these simple and cost-effective interventions will permit us to attain our goals of significantly reducing maternal and newborn mortality and morbidity and improving the health and well-being of women and children -- our common future.

Hiroshi Nakajima, M.D., Ph.D.

Preface

Much progress has been made in the last 10 years towards a better understanding of the problem of maternal mortality. However, despite heightened international awareness and commitment, only a few countries have adopted national programmes of sufficient magnitude to make a major impact on the level of maternal mortality. There is

an urgent need for immediate action if the goals of the Safe Motherhood Initiative are to be achieved by the year 2000.

The Programme of Action of the International Conference on Population and Development, adopted by consensus in September 1994, has recognized that meeting the reproductive health needs of women and men is a critical requirement for human and social development. The Conference affirmed that reproductive health care is an integral component of primary health care and should be provided in that context. Reproductive health care includes, at the very minimum, prevention and management of sexually transmitted diseases (STDs); family planning information and services that permit people to choose the timing, spacing and number of their children; and safe motherhood to ensure women are able to go safely through pregnancy and childbirth and have a healthy infant. These elements have a profound impact on the course and outcome of pregnancy, and the health service requirements for addressing them are closely related. The Mother-Baby Package addresses all these aspects of reproductive health and thus provides an opportunity to develop an integrated approach to service delivery.

The Mother-Baby Package does not focus solely on maternal mortality. It is clear that the factors that cause the more than 500 000 maternal deaths a year overlap with those that cause maternal morbidity, stillbirths and neonatal mortality and morbidity. What will reduce maternal mortality will certainly reduce the others as well. Moreover, it is impractical to separate maternal care from care of the newborn. In this Package, mother and baby are treated as one entity -- a dyad.

The Mother-Baby Package is based on a number of underlying principles which are intrinsic elements of primary health care. These are:

- Interventions must be based on the best scientific information available and must use only those methods that have been scientifically demonstrated to be valid.
- There must be equity in access to care for all, including the poor and disadvantaged.
- Services should be provided at the lowest level of the health care system capable of performing them adequately.
- Resources, both human and material, must not be concentrated at the apex of the health care system but must be redistributed to the periphery and to the communities where people live (decentralization).
- There should be delegation of responsibility and of authority, coupled with supportive supervision.
- Quality of care is as important as access to care and implies the existence of the skills and equipment that are necessary, as well as client-provider relationships that are appropriate.
- There should be appropriate use of technologies, avoiding high-technology interventions when equally effective alternatives are available.
- Communities should be involved in developing, implementing and evaluating the services that are provided for them.
- Health care providers should work together in a spirit of teamwork and collaboration.
- Health interventions must be cost-effective and sustainable.

This Mother-Baby Package is intended to facilitate national strategies and plans of action. It is addressed to national decision-makers and those responsible for health planning. It is also intended to be used by the staffs of United Nations and bilateral agencies and nongovernmental organizations (NGOs) concerned with maternal and neonatal health. However, it is not limited to "strategic" issues; components of the Package and its annexes give details on the "what" and "how" of the required actions. Detailed managerial guidelines and other support materials are available, or are in preparation, to facilitate the implementation of the interventions.

The problems of maternal and neonatal mortality are complex, involving women's status, education, employment opportunities and the availability to women of basic human rights and freedoms. While interventions in these areas should start now, it would not be

realistic to expect to make major changes in less than a generation. Thus it is necessary to identify interventions that will make a visible impact in the immediate term.

This document is intended to allay apprehensions that safe motherhood is just another "vertical" programme. The nature of the core elements of the Mother-Baby Package is such that they cannot operate on their own. They must be integrated with and operate through existing health systems. The strategies depend on augmenting and making the best use of existing resources. For this reason, the cost of implementing the Package may be less than anticipated, especially in countries where the infrastructure already exists. Moreover, as the World Bank's World Development Report 1993 implies, safe motherhood is a reliable, cost-effective investment.

The basic principles of the Mother-Baby Package are neither new nor controversial -- they are considered the "four pillars" of safe motherhood:

1. Family Planning -- to ensure that individuals and couples have the information and services to plan the timing, number and spacing of pregnancies;
2. Antenatal Care -- to prevent complications where possible and ensure that complications of pregnancy are detected early and treated appropriately;
3. Clean/Safe Delivery -- to ensure that all birth attendants have the knowledge, skills and equipment to perform a clean and safe delivery and provide postpartum care to mother and baby;
4. Essential Obstetric Care -- to ensure that essential care for high-risk pregnancies and complications is made available to all women who need it.

Figure 1 The "four pillars" of safe motherhood

These four strategic interventions must be delivered through primary health care and rest on a foundation of greater equity for women. Even though the five major causes of maternal death are common to all developing countries, there are considerable variations between countries and even within individual countries. These variations make regional and national adaptation essential. The value of this Package can be determined only through its adaptation, its wide dissemination and, above all, its use.

The Mother-Baby Package is the product of extensive consultation. The World Health Organization (WHO) received valuable feedback from its partners in safe motherhood, especially UNDP, UNFPA, UNICEF and the World Bank, as well as governments, universities, NGOs and bilateral agencies. Their comments have been carefully taken into consideration in preparing this version. The World Health Organization is most grateful to all who have contributed to this initiative to reduce the tragic damage and loss caused by maternal and neonatal mortality.

The World Health Organization welcomes comments on the Mother-Baby Package, especially from those working to alleviate the burden of maternal deaths and disabilities in developing countries. Please complete the form online at the end of the document or print it out and send it to:

Department of Reproductive Health and Research
World Health Organization
20 Avenue Appia
CH-1211 Geneva 27
Switzerland

Executive Summary

Why the Mother-Baby Package?

Of the annual total of more than 500 000 maternal deaths that occur

each year, most happen in developing countries. They are the result of the same major complications of pregnancy -- haemorrhage, sepsis, hypertensive disorders of pregnancy, obstructed labour and abortion. Millions of women survive such complications but nonetheless suffer acute or chronic ill-health or lifelong disabilities.

The complications that affect women during pregnancy and childbirth affect the fetus as well. Around 8.1 million infants die each year, one half of them within the first month of life and a large proportion within a few days of birth. Many of these neonatal deaths are a direct consequence of poorly managed pregnancies and deliveries. Millions of infants survive but with a degree of damage that renders them physically or mentally disabled throughout their lives. The causes are similar around the world -- newborn babies die or are damaged because of birth asphyxia, trauma or infections.

Pregnancy-related deaths and disabilities result not only in human suffering but also in losses to social and economic development. The women who die are in the prime of life, responsible for the health and well-being of their families. They generate income, grow and prepare food, educate the young, care for children, the elderly and the sick. Their deaths represent a drain on all development efforts.

Above and beyond the social and economic rationale for preventing this burden of mortality and morbidity is the moral imperative. Pregnancy is not a disease, and pregnancy-related mortality and morbidity are preventable with attainable, simple and cost-effective interventions. Failure to do so is to deny women a fundamental human right -- the right to the highest attainable level of health.

Most pregnancy-related complications can be effectively prevented or managed without recourse to sophisticated and expensive technologies or drugs. Experience has shown that maternal and neonatal mortality can be reduced when communities are informed about danger signs and symptoms, and quality health services are available and accessible including a referral system to manage complications at a higher level of the health care system.

The international health community has been working to support countries to reduce maternal and neonatal morbidity for several years. Considerable efforts have been expended to implement activities that would lead to substantial improvements in maternal and newborn health. However, many of these efforts have been hampered by a lack of agreement about the most appropriate and effective interventions. Since the start of the Safe Motherhood Initiative in 1987, much has been learned about the effectiveness of different interventions for maternal health and about the feasibility of implementing them in resource-poor settings. Furthermore, there is now general agreement that the interventions needed to save the lives and preserve the health of mothers and babies cannot be implemented in a vertical and uncoordinated manner but must form part of a broad strategy to improve reproductive health through primary health care. This implies that safe motherhood interventions should be applied holistically within a general health context that promotes equity in access to and quality of care.

Making motherhood safe requires action on three fronts simultaneously:

- reducing the numbers of high-risk and unwanted pregnancies
- reducing the numbers of obstetric complications
- reducing case fatality rate in women with complications.

Strategies and interventions are available for dealing with each of these aspects of the problem and it is these that form the essence of the interventions described in the Mother-Baby Package.

Increasing the availability and accessibility of family planning information and services will substantially reduce the number of pregnancies -- particularly high-risk and unwanted pregnancies -- and thus result in a reduction in maternal deaths.

The number and severity of obstetric complications may be reduced by ensuring that all women have access to quality antenatal, delivery and postpartum care to provide information, prevention and management of diseases during pregnancy, and early detection and management of complications.

Providing access to essential obstetric care to all women who need

it will help to reduce case fatality rates among women experiencing complications.
These interventions, coupled with special attention to the needs of the newborn -- resuscitation when necessary, immediate breast-feeding, warmth, clean delivery and cord care -- will also help ensure the survival and health of infants.

What is the Mother-Baby Package?

The Mother-Baby Package describes each intervention needed to achieve safe motherhood in the short term. It represents the synthesis of activities at different levels of the health care system and defines a basic set of health system interventions and activities that cannot be further reduced. The Package describes simple interventions needed before and during pregnancy, during delivery, and after delivery for mother and newborn. It outlines what can be done to prevent and manage the major obstetric complications in the community, at the health centre and at the hospital. Throughout, it focuses only on those interventions known to be effective which can be implemented by making the most efficient use of available resources.
Some interventions can be delivered at community level by ensuring that women and their families have the information they need to care for themselves during pregnancy and delivery and seek assistance when appropriate. Much of this information can be channelled through community-based facilities such as health posts, dispensaries and trained traditional birth attendants (TBAs).
Other interventions must be carried out at a higher level of the health care system -- through the health centres and hospitals and the auxiliary health care providers, midwives and doctors staffing them. A continuum of care must be available, linking all three levels and ensuring the necessary support and supervision.
The Mother-Baby Package brings together the core cluster of interventions to which all women are entitled. The fourfold approach -- comprising family planning, quality antenatal care, clean and safe delivery, and access to essential obstetric care for high-risk pregnancies and complications -- recognizes that it is not always possible to predict which women will develop complications and that many complications occur among women who are not considered high risk. Therefore, it is essential to ensure that a chain of effective maternity care is available to all women, wherever they live and whatever the circumstances of their pregnancy and delivery.
Ensuring that women and families have access to information and services for family planning can help reduce the number of high-risk pregnancies. Equally it can help reduce the numbers of unwanted pregnancies associated with a higher risk of poor maternal and newborn outcome. Reducing unwanted pregnancies will also reduce the numbers of unsafe abortions that are a major cause of maternal mortality around the world.

Mother-Baby Package interventions

1. Before and during pregnancy

    Information and services for family planning
    STD/HIV prevention and management
    Tetanus toxoid immunization
    Antenatal registration and care
    Treatment of existing conditions (for example, malaria and hookworm)
    Advice regarding nutrition and diet
    Iron/folate supplementation
    Recognition, early detection and management of complications
    (eclampsia/pre-eclampsia, bleeding, abortion, anaemia)

2. During delivery
    Clean and safe (atraumatic) delivery
    Recognition, early detection and management of complications at health
    centre or hospital (for example, haemorrhage, eclampsia,

prolonged/obstructed labour)

3. After delivery : mother
Recognition, early detection and management of postpartum complications
at health centre or hospital (for example, haemorrhage, sepsis and
eclampsia)
Postpartum care (promotion and support to breast-feeding and
management of breast complications)
Information and services for family planning
STD/HIV prevention and management
Tetanus toxoid immunization

4. After delivery : newborn

Resuscitation
Prevention and management of hypothermia
Early and exclusive breast-feeding
Prevention and management of infections including ophthalmia neonatorum
and cord infections

All women should have access to basic maternity care during pregnancy and delivery. Basic maternity care comprises quality antenatal care and clean and safe delivery whether the delivery takes place at home or in an institutional setting. It also includes early postpartum care for mother and infant to detect and manage complications, such as secondary postpartum haemorrhage, eclampsia and sepsis and to offer support for breast-feeding.
One of the most important functions of antenatal care is to offer the woman advice and information about the appropriate place of delivery given her own particular circumstances and health status. Antenatal care is also an opportunity to inform women about the danger signs and symptoms for which assistance should be sought from a health care provider without delay.
Antenatal care can help reduce the numbers and severity of pregnancy-related complications by careful monitoring and early treatment of diseases aggravated during pregnancy, such as malaria and anaemia. It also provides the opportunity to offer prophylactic treatments such as iron and folate supplementation and management of conditions such as sexually transmitted diseases. It also facilitates the early detection and management or referral of pregnancy-related complications.
Accurately predicting antenatally which women will develop complications is not possible. Any woman can develop complications at any stage of pregnancy, delivery or the postpartum period. And when complications happen, they are often emergencies. Since obstetric complications are unforeseeable and require rapid intervention, every effort should be made to provide all essential obstetric services as close as possible to where women live. Women and communities need to be informed about danger signs during pregnancy and delivery and be encouraged to seek assistance with the minimum delay.

How to operationalize the Mother-Baby Package

Making motherhood safer requires the establishment of a chain of care linking women, families and communities with the health system. Therefore, interventions will be needed at community level and also within health services. The interventions described in the Mother-Baby Package focus largely on those that are the prime responsibility of the health sector. Many interventions needed to improve maternal and newborn health will require the collaboration of other sectors for their successful application. This is the case with, for example, interventions to improve women's social status and access to resources. As countries carry out safe motherhood interventions, the roles and responsibilities of other sectors should be defined and attention directed to these areas.

The district health system is the basic unit for planning and implementing the interventions outlined in the Mother-Baby Package. The district provides a mechanism for linking families and communities with health centres and hospitals in a functional cost-effective manner. Through district-based implementation of interventions, it is possible to ensure that health services are available as close as possible to people's homes.

Obstetric procedures should be carried out by the person closest to the community who is competent to perform them safely and effectively. The person best equipped to provide community-based, appropriate technology, safe and cost-effective care to women during their reproductive lives is the person with midwifery skills who lives in the community alongside the women she serves. She can ensure the health system serves women equitably and effectively and that the health services available respond to the needs of clients. Sometimes pregnancy complications require obstetric procedures, such as surgery and anaesthesia. This type of service should be available at the district hospital, along with effective referral and transfer system. General practitioners have an important role to play in ensuring the availability of such services at the peripheral level, especially when there are insufficient numbers of obstetricians available.

Where TBAs attend most home deliveries, upgrading their skills is a way of bridging the gap until all women and children have access to acceptable, professional and modern health care services. Programmes for TBA training should include ongoing support and supervision.

The goals of the Mother-Baby Package are, by the year 2000, to reduce maternal mortality by half and perinatal and neonatal mortality by 30 to 40% of 1990 levels. Reduction of mortality will substantially reduce maternal and neonatal disabilities. The aim, through partnerships between agencies, national governments and NGOs, is to create a global momentum for support to health services, enabling them to deliver maternal and newborn care more effectively.

The objectives of the interventions are:

- to promote family planning and reduce the incidence of mistimed and unwanted pregnancies
- to reduce maternal deaths due to complications of abortion
- to provide basic maternal care to all pregnant women
- to promote, protect and support early and exclusive breast-feeding

- to reduce anaemia in pregnant women
- to reduce sexually transmitted diseases in pregnant women
- to reduce maternal deaths due to eclampsia
- to reduce maternal deaths due to haemorrhage
- to reduce maternal deaths due to prolonged/obstructed labour
- to reduce maternal deaths due to puerperal or post-abortion sepsis

- to eliminate neonatal tetanus
- to reduce neonatal deaths due to or associated with birth asphyxia

- to reduce neonatal deaths associated with neonatal hypothermia
- to reduce neonatal infections.

The Mother-Baby Package is a technical tool intended to provide guidance to countries as they seek to improve maternal and neonatal health and reduce mortality and morbidity. Implementation within countries will require adaptation of the interventions, definition of nationally relevant goals, objectives and targets and the preparation of national action plans. The district should be the locus of implementation of the detailed activities.

The Package does not provide a detailed breakdown of the activities that national authorities have to undertake to carry out the interventions but provides a general outline of the essential steps. These include:

- definition of national policy and guidelines
- assessment of needs
- estimation of costs
- identification of available and attainable resources

preparation of national action plans
implementation of activities as defined in district level plans through strengthening of health services; human resources development and management; assuring equipment, drugs and supplies; ensuring quality of care; organizing information, education and communication; and social mobilization
monitoring and evaluation.

An important first step in implementing the interventions described in the Mother-Baby Package is the analysis of the policy framework within which maternal health care providers operate. This analysis, coupled with a detailed review of the maternal health situation, provides the basis upon which national action plans can be developed. Once gaps in health care provision and policy, legal and regulatory barriers have been identified, a national action plan can be developed which identifies priority activities and assigns responsibilities for implementation.

A basic level of infrastructure is essential if all women are to have access to maternal health care. Much will depend on the local situation. In some places, where existing infrastructure is very weak and distances great, efforts will have to concentrate on the upgrading of peripheral facilities such as health posts and health centres so that they are able to provide the best level of care given the skills available. In other areas, where existing infrastructure is available, it is often the quality of care provided that needs to be improved. Within each district, a needs assessment is an essential step in determining the most appropriate approach. The objective in all cases is to make the highest attainable level of care available as close as possible to where women live.

Development of human resources for safe motherhood, through in-service, skills-based training as well as through initial training, is a prerequisite for success. Staff should be trained in settings closely resembling those in which they will be working. Priority should be given to the development of midwifery skills to provide routine maternal care and to respond to obstetric emergencies. Training may be needed in obstetric surgery, anaesthesia, newborn care, laboratory support and blood transfusion services.

However, training alone cannot bring about the changes required for developing skills and changing attitudes. Decisions as to the functions to be performed by different members of the health care team (for example, authorization of midwives to carry out certain tasks) are essential for effective delegation of responsibility, training and practice.

Information, education and communication (IEC) strategies are needed to enable women and their families to recognize complications and to encourage health-promoting behaviours before, as well as during and after, pregnancy and delivery. Community-based health posts and dispensaries and community-based health care providers, such as auxiliary health workers and trained TBAs, can be important resources in such efforts. In addition, health centres can serve an important outreach function by bringing needed information, advice and services to outlying populations.

Communities can be mobilized to ensure access to effective transport of women and babies with complications. Nongovernmental organizations and women's groups can be important allies in organizing emergency transport. They can also participate in the development of ways and means so that families are able to pay for the care they need, if necessary.

The performance of the health system must be monitored closely to improve the effectiveness of these interventions. Existing information systems should serve as the basis upon which to establish regular monitoring and feedback in order to ensure that programmes meet their targets and objectives and that the goals of safe motherhood are attained.

The role of WHO

The Mother-Baby Package is one of a series of documents which WHO

has developed to provide guidance on the development and implementation of safe motherhood action plans. Many of these guidelines concern clinical and managerial aspects of maternal care. Others, currently in preparation, are primarily concerned with managerial issues such as needs assessment, costing, logistics and management. A list of guidelines are available directly from the Department of Reproductive Health and Research.

The role of international collaboration

WHO and other international agencies, notably UNDP, UNICEF, UNFPA and the World Bank, together with a range of bilateral and multilateral agencies, are committed to supporting national authorities in their efforts to reduce the burden of maternal deaths and disabilities and improve the health of women and children. The Mother-Baby Package is a technical tool designed to assist these efforts.

MOTHER-BABY PACKAGE

Most maternal deaths have the same causes
Most pregnancy complications can be prevented or treated
Safe motherhood benefits babies too
Safe motherhood is attainable

WHY?

Goals and objectives
Family planning
Basic maternity care
Prevention, early detection and management of complications

WHAT?

Define national policy and guidelines
Assess needs
Prepare national plan of action
Estimate costs
Identify sources of financial support
Develop detailed implementation plan
Implement planned activities
Monitor and evaluate

HOW?

WHY the Mother-Baby Package?

Most maternal deaths have the same causes

Every year more than 200 million women become pregnant. Most pregnancies end with the birth of a live baby to a healthy mother. For some, however, childbirth is not the joyous event it should be but a time of pain, fear, suffering and even death.

Because of difficulties associated with human birth, women often require assistance during delivery. Childbirth may be surrounded by traditions, many of which are beneficial but others may be harmful. All too often, the needs of the woman in labour are neither recognized nor acknowledged. As a result, childbirth may end in disability or death for the mother, infant or both.

The World Health Organization estimates that at least 15% of all pregnant women require skilled obstetric care in the absence of which they will suffer serious and long-term morbidities and disabilities. Where unsafe induced abortion is common, this figure is likely to be considerably higher. Not all of these women need to be treated in hospital; some can be managed at the health centre level.

For half a million women each year, the complications of pregnancy are fatal. The causes of these deaths are essentially the same around the world. It is estimated that 127 000 women (25%) die due to haemorrhage, 76 000 (15%) due to sepsis, 65 000 (12%) due to hypertensive disorders of pregnancy, 38 000 (8%) due to obstructed labour, and almost 67 000 (13%) due to abortion. Around 20% of women die as a result of a disease which is aggravated by pregnancy, such as malaria, iron deficiency anaemia, hepatitis, tuberculosis (TB) or heart disease (Table 1). While the majority of women survive such complications, they may nonetheless suffer acute or chronic ill-health and debilitating conditions such as anaemia or reproductive tract infections or lifelong disabilities, such as obstetric fistulae, which may render them outcasts from their own families (see Table 2).

Maternal deaths occur due to the same complications throughout the developing world; yet the technology to prevent them exists.

Table 1:Estimated global incidence and mortality from the main obstetric complications worldwide (1993)(1)

Obstetric complicationsIncidence %Number of cases (000s)Number of deaths (000s)% of all maternal deaths
Haemorrhage10 14 000127 25
Sepsis 8 12 000 76 15
Hypertensive disorders of pregnancy 4.5 6 400 22 4
Eclampsia 0.5 700 43 8
Obstructed labour 5 7 000 38 8
Unsafe abortion* 20 000 6713
Other direct causes 3 4 000 39 8
Indirect causes 9 13 500100 20
Total **77 600510100

(Note: This table is a global estimate and may vary in different

settings. Figures may not add to totals due to rounding.)
* estimated to be equivalent to 10% of all pregnancies
** estimated number of events, not women
Source: Maternal Health and Safe Motherhood Programme, unpublished estimates

Underlying these medical causes of death are the social and cultural factors implicated in maternal mortality and morbidity. Maternal death is only the last chapter in a story that starts much earlier in a woman's life. In many parts of the world, girls are subject to discrimination in terms of the allocation of family resources and access to health care. Where women's status is low, their health, education and emotional needs take second place to those of men. Studies indicate that girls may not get medical treatment when they are ill or they may receive inadequate care. Relegated to a position of subordination from the moment of birth, girls eat last and eat least, are overworked and under-educated, and can prove their worth only by bearing many children from an early age.

The interrelationship between women's low status and their access to health care is a complex issue. Health care for women is both the outcome of their status in society and a determinant of their health and productivity and, ultimately, of their status. Another barrier to women's use of health care services is the failure of the health system to take their needs into account.

Figure 2 The intervention pyramid

It is important to acknowledge the impact of such social and cultural factors on maternal health. However, the immediate cause of maternal deaths is the absence, inadequacy or underutilization of the health care system. From a public health point of view, it is necessary to identify which interventions can address the problem in the short term, and which will require more long-term investment and a multisectoral approach. In seeking to address maternal and newborn mortality, the priorities are to identify and implement strategies and interventions that will have an immediate impact on the health of mothers and children. The Mother-Baby Package focuses on these types of interventions. Medium-term and longer-term impacts will result when interventions aimed at addressing the underlying causes of mortality and ill-health are developed (Figure 2). These interventions need to be initiated simultaneously through multisectoral action though their impact may take some time to become evident.

Figure 2 shows the intervention pyramid and which interventions for maternal health have an immediate or longer term impact.

Maternal mortality is a symptom of the neglect of women that cannot be allowed to continue. In the name of equity and human rights, it is now time to move from advocacy for safe motherhood to action at national level. To do so implies making available to countries the techniques and instruments they need to implement, on a massive scale, interventions that require a minimum investment of additional resources.

Most pregnancy complications can be prevented or treated

Any woman can develop complications during pregnancy, labour and the postpartum period. Although some pregnancies carry more risk than others, predicting complications in the individual woman is uncertain. Therefore, pregnancy should be viewed as a special period during which all women should take particular care and seek treatment for certain signs and symptoms.

Efforts to reduce maternal and perinatal mortality have often sought to identify both population groups and individuals who are at high risk. The first leads to the creation of specific public health strategies based on priorities in relation to resources, while the latter leads to specific clinical decisions involving the treatment of the individual (e.g. advice, referral, clinical management). For instance, a history of problems during a previous labour and delivery is a warning that a similar event may occur in the present one. If potential emergencies such as these are anticipated during the course of antenatal care, the woman can be advised to deliver at a health centre or hospital, or can be directed to a maternity

waiting home during the final weeks of pregnancy.
Risk assessment during antenatal care, however, is not by itself sufficient to identify all the women who will develop complications during pregnancy, labour and delivery. One reason for this in many countries may be related to poor "quality of care", including the skills, attitudes and motivation of health workers. Another limitation is that complications also occur in women who are not identified as high risk. Since obstetric complications are often unforeseeable, every effort should be made to provide essential services that are available, acceptable and accessible to all childbearing women.
Many complications can be prevented through provision of quality antenatal, delivery and postpartum care and avoiding certain harmful practices.
In the immediate term, reducing maternal mortality can be achieved through a combination of several interventions. Maternal and neonatal deaths can be reduced by reducing the total number of pregnancies, especially those that are high risk. Family planning information and services can help avoid births that are unwanted, too early, too close together, too many or too late. Such high-risk fertility patterns contribute considerably to high numbers of maternal and neonatal deaths.

Pregnancy is a period of potential risk.

Any pregnant woman can have complications and die.

Accurately predicting which women will develop complications is not possible.

Early detection and management of complications is vital.

Results from demographic and health surveys (1985-1990) conducted in 25 developing countries show that approximately 75% of married women in South-East Asian, Latin American and North African countries and more than half in sub-Saharan African countries want to space or limit births.
Figure 3 Percentage of all births associated with "too young" or "too old" and/or "too soon" and "too many" (in selected countries)*

*Notes:
Too young = 17 yrs 3 months or younger at time of interview
Too old = 34 yrs 3 months or older at time of interview
Too soon = had a birth less than 15 months ago
Too many = five or more children
In all but three countries, less than 50% of married women use modern contraception. Furthermore, 76% of women in North Africa, 72% in sub-Saharan Africa, 57% in Asia and 53% in Latin America, fall into the high-risk categories of "too young, too old, too soon and/or too many" (Figure 3).
However, family planning can provide only part of the solution to the problem. Once a woman is pregnant, a dual intervention strategy is needed. First, the numbers of obstetric complications can be reduced through the provision of a continuum of antenatal, delivery and postpartum care. Second, the fatality rate among women with complications can be reduced by ensuring that all women have access to skilled care for management of complications and emergencies.

Reduce the number of high-risk and unwanted pregnanciesthroughfamily planning

Reduce the numbers and severity of obstetric complicationsthroughpre-pregnancy and antenatal care to prevent problems and detect complications early

clean and safe delivery
postpartum care

Reduce case fatality rates in women with complicationsthroughaccess to essential obstetric care

Nearly all maternal deaths occur in developing countries and among the most vulnerable and disadvantaged population groups. Yet historical evidence indicates that maternal and newborn health can be improved in a relatively short time if the political will exists. The deaths and disabilities of mothers and infants can be greatly reduced with attainable skills and resources.

Less than a century ago, there was little that the medical profession could do to prevent or treat the common complications of pregnancy. That is no longer the situation. In Northern Europe, the risk of death in childbirth is now very low, at less than 20 per 100 000 live births. The steep decline in maternal mortality coincided with improvements in the management of pregnancy and delivery, including:

- better aseptic techniques
- antibiotics
- oxytocics
- blood transfusion
- safe operative delivery
- management of eclampsia.

Implementation of such interventions in some developing countries has resulted in substantial declines in maternal mortality. Sri Lanka witnessed significant decreases in maternal mortality in a relatively short period. From a level of 555 per 100 000 live births in 1950-55, maternal mortality fell to 239 per 100 000 ten years later and to 95 per 100 000 in 1980. These declines followed the introduction of a system of health centres around the country accompanied by the expansion of midwifery skills and the spread of family planning. During the 1950s, most births in Sri Lanka took place at home with the assistance of untrained birth attendants. By the end of the 1980s, only 30 years later, over 85% of all births were attended by trained people.

An analysis of the causes of maternal death in Sri Lanka during the period 1953 to 1968 shows that the decline was most rapid among sepsis deaths. At the beginning of the period, one-quarter of all non-abortion deaths were due to sepsis. By the end of the period, the proportion had fallen to 10%. Unlike the rapid decline in deaths from sepsis, deaths from haemorrhage declined more slowly, particularly in the early years. Haemorrhage as a cause of death is less easy to prevent because of the short time between the onset of serious bleeding and death.

Similar evidence for the effectiveness of health care interventions is available from Cuba and China. Both countries established community-based maternal health care systems comprising antenatal, delivery and postpartum care and a referral system for complications. Cuba set up maternity waiting homes where pregnant women who lived far from a health facility could await delivery close to a health centre or hospital. In China, a widespread campaign to raise awareness about the need for clean delivery resulted in a massive fall in sepsis related mortality. Haemorrhage continues, however, to present problems in rural areas with scattered populations where access to health care is difficult.

The experience of Sweden is equally relevant. In the second half of the 19th century, training and rural assignment of qualified midwives led to a considerable reduction of maternal mortality in Sweden, showing clearly the gain that skilled midwifery can bring, even in a largely rural country with a scattered population.

Table 2: How complications affect mother and baby

Problem or complicationMost serious effects on mother's healthMost serious effects on fetus/newborn baby

Severe anaemiaCardiac failureLow birth weight, asphyxia, stillbirth
HaemorrhageShock, cardiac failure, infectionAsphyxia, stillbirth
Hypertensive disorders of pregnancyEclampsia, cerebrovascular accidentsLow birth weight, asphyxia, stillbirth
Puerperal sepsisSepticaemia, shockNeonatal sepsis
Obstructed labourFistulae, uterine rupture, prolapse, amnionitis, sepsisStillbirth, asphyxia, sepsis, birth trauma, handicap
Infection during pregnancy, sexually transmitted diseasesPremature onset of labour, ectopic pregnancy, pelvic inflammatory disease, infertility Premature delivery, neonatal eye infection, blindness, pneumonia, stillbirth, congenital syphilis
HepatitisPostpartum haemorrhage, liver failureHepatitis
MalariaSevere anaemia, cerebral thrombosisPrematurity, intrauterine growth retardation
Unwanted pregnancyUnsafe abortion, infection, pelvic inflammatory disease, haemorrhage, infertilityIncreased risk of morbidity, mortality; child abuse, neglect, abandonment
Unclean deliveryInfection, maternal tetanusNeonatal tetanus, sepsis

Safe motherhood benefits babies too

Birth is a risky event for babies too. The complications that cause the deaths and disabilities of mothers also damage the infants they are carrying (Table 2). Of 8.1 million infant deaths each year, around one-half occur during the neonatal period, i.e. before the baby is one month old. Every year, there are 4 million neonatal deaths of which two-thirds occur during the first week of life. And, for every early newborn death, at least another infant is stillborn. These perinatal and neonatal deaths are largely the result of the same factors that cause the deaths and disabilities of mothers. Newborns die or are disabled because of poor maternal health, inadequate care during pregnancy, inappropriate management and poor hygiene during delivery, during the first critical hours after birth, lack of newborn care and discriminatory car? Most newborn deaths are due to infections that occur either at birth (neonatal tetanus and sepsis) or shortly after birth (pneumonia, diarrhoea). Almost a third of newborn deaths are due to birth asphyxia and trauma. Prematurity on its own causes some 10% of newborn deaths. However, because premature newborns are much more susceptible to asphyxia and infections, their deaths are often classified under other categories (Table 3). Many infants survive with lifelong disabilities. An unknown proportion of newborn deaths results from neglect of the female newborn infant.

Table 3: Newborn deaths in developing countries (1993)

Cause of death	Number of newborn deaths	Proportion of all newborn deaths (%)
Birth asphyxia	840 000	21.1
Birth injuries	420 000	10.6
Neonatal tetanus	560 000	14.1
Sepsis and meningitis	290 000	7.2
Pneumonia	755 000	19.0
Diarrhoea	60 000	1.5
Prematurity	410 000	10.3
Congenital anomalies	440 000	11.1
Others	205 000	5.1
Total	3 980 000	100.0

Appropriate care during pregnancy and delivery can substantially reduce newborn deaths but it must be accompanied by special newborn care and measures to reduce deaths and disabilities due to postnatal causes such as infections (tetanus, sepsis), hypothermia and poor management of asphyxia. Most postnatal infant deaths are caused by

preventable and/or treatable diseases. Preventive interventions are simple, inexpensive, attainable and cost-effective. Moreover, not only is newborn care given at the same time as maternal care, it is also the responsibility of the same health care provider.

Babies who survive the death of the mother seldom reach their first birthday. Older children may find themselves obliged to halt their schooling to look for paid employment or, if they are girls, to look after the rest of the family. For a girl child in many societies, the loss of the mother can be particularly catastrophic. While the death of either parent is damaging to the chances of survival of the remaining children, the loss of the mother is most often fatal for girl children, as shown in Fig. 4 which is based on evidence from Bangladesh.

Figure 4 What happens to the remaining children when the mother dies?

Safe motherhood is attainable

Effective and feasible interventions

The interventions described in the Mother-Baby Package do not require high-technology investments or expensive drugs and equipment. They require, instead, revitalization of existing systems and improvement of attainable skills. The interventions selected are only those known to be effective in preventing deaths and disabilities (see Table 4). Implementation of these interventions will permit the reduction of maternal mortality by 50% by the year 2000 and a significant reduction in newborn mortality (see Table 6)

Table 4:Mother-Baby Package interventions

Before and during pregnancy
Information and services for family planning
STD/HIV prevention and management
Tetanus toxoid immunization
Antenatal registration and care
Treatment of existing conditions (for example, malaria and hookworm)
Advice regarding nutrition and diet
Iron/folate supplementation
Recognition, early detection and management of complications (eclampsia/pre-eclampsia, bleeding, abortion, anaemia)
During delivery
Clean and safe (atraumatic) delivery
Recognition, early detection and management of complications at health centre or hospital (for example, haemorrhage, eclampsia, prolonged/obstructed labour)
After delivery: mother
Recognition, early detection and management of postpartum complications at health centre or hospital (for example, haemorrhage, sepsis and eclampsia)
Postpartum care (promotion and support to breast-feeding and management of breast complications)
Information and services for family planning
STD/HIV prevention and management
Tetanus toxoid immunization
After delivery: newborn
Resuscitation
Prevention and management of hypothermia
Early and exclusive breast-feeding
Prevention and management of infections including ophthalmia neonatorum and cord infections

District health system

The district health system is the basic unit for planning and implementing the interventions outlined in the Mother-Baby

Package. A schematic model of the health care pyramid at district level is shown in Figure 5. Most health care should take place at the lowest level of the health care pyramid.

The district is the basic unit for planning and implementing the Mother-Baby Package.

Figure 5 The health care pyramid at district level

Some complications require management and skills that are available only at higher levels of care. In order to facilitate access to a higher level of care, health services should be available as close as possible to where people live. This implies that procedures should be carried out by the person closest to the community level who is competent to perform them safely and effectively. The Mother-Baby Package describes the information that families and communities need in order to promote and protect their own health and in order to know when to seek assistance at a higher level of the health care pyramid. The Package describes what functions should be available at the health posts, dispensaries and health centres which form the central part of the pyramid and which can only be available at the apex -- the district hospital.

Health centres vary greatly in size, staffing pattern, level of resources, services offered and in the size of population they are expected to cover. The classification in Table 5 has been prepared on the basis of experiences gathered from a range of different country settings.

The district hospital -- first referral level -- is the facility to which a woman at high risk is referred prenatally or to which she is sent for emergency obstetric care. It holds an important 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 many maternal deaths occur due to the lack of suitably trained staff, facilities and equipment to carry the procedures. The elements of obstetric care that are essential at first referral level to reduce maternal and neonatal mortality and morbidity include surgical obstetrics, anaesthesia, medical treatment, blood replacement, manual procedures and monitoring labour, management of high-risk pregnancies, family planning and neonatal special care.

When the health care pyramid structure functions effectively it links the three levels -- family and community, health centre, and district hospital -- in a functional, cost-effective manner. The key to success is to have the persons with midwifery skills at all levels of the health care pyramid. One of the most critical functions of these persons is to serve as the locus of communication between the community and the referral level.

Health services should be made available as close to people's homes as possible.

Obstetric procedures should be carried out by the person closest to the community level who is competent to perform them safely and effectively.

Table 5: Classification of health centres

Type	NameCharacteristics
Dispensary	
Type I health centre	
Health subcentre	
limited ambulatory and curative services	
community development	
no beds -- possibly one maternity bed	
staffed by auxiliary nurse-midwife	
population served <10 000	
Type II health centre	
ambulatory and curative services	
health promotion, prevention and education	
support for subcentres	
maternity and observation beds	
outpatient operating room	
staffed by multidisciplinary team of professional and auxiliary health workers	
population served maximum 100 000	

The Mother-Baby Package does not attempt to describe in detail all the activities that are needed at community level. At this level the health centre plays a pivotal role between communities and the rest of the health system by providing continuing logistic support for community-based care through TBAs and community health workers and by ensuring links to the first referral centre. Detailed information about the role and functions of the health centre and its relation to the community level is available from the Maternal Health and Safe Motherhood Programme.(2) Subsequent guidelines will describe in greater detail the activities needed at community level.

Skilled health workers

Health care for mother and baby means making the most effective use of material and human resources. Maternal health systems must be strengthened so that they are able to offer a continuum of care from before conception, through pregnancy and delivery. The Mother-Baby Package defines a set of basic interventions to be applied before and during pregnancy, and during and after delivery. Each element can be applied appropriately at community level, in the health centre or the first referral facility. Only when this continuum of care is provided from the community through to the referral hospital will interventions have a significant impact in reducing maternal mortality and morbidity.

The person best equipped to provide community-based, technologically-appropriate and cost-effective care to women during their reproductive lives is the person with midwifery skills who lives in the community alongside the women for whom she cares. Midwives understand women's concerns and preoccupations. They accompany women through their reproductive life span, providing assistance at birth, then during adolescence, pregnancy and delivery, and providing family planning services when needed. Most interventions related to care of the mother and newborn are within the capacity of a person with midwifery skills. Experience shows that upgrading the skills of midwives to enable them to respond to obstetric emergencies can reduce maternal mortality. However, additional support is needed from doctors and obstetricians for the management of certain complications and the provision of surgical interventions. Special skills training in essential obstetric care should be available for these categories of health care providers.

Legislation to support the full use of midwifery skills should be based on the Definition of the Midwife, agreed between WHO,

the International Confederation of Midwives and the International Federation of Obstetricians and Gynaecologists over 20 years ago and revised in 1992.(3) This definition makes it clear that midwives should be equipped to take responsibility for the full range of women's reproductive health needs, including the management of life-threatening conditions where this becomes necessary. Local regulation of practice which inhibits the full range of midwifery skills should be changed in order to support the delivery of the most comprehensive and effective care to women.

In countries where TBAs attend a large proportion of home deliveries, training courses can be effective in upgrading their knowledge. Training of TBAs should be seen as a way of bridging the gap until all women and children have access to acceptable, professional health care services. Such programmes for TBA training should include ongoing support and supervision.

The most effective way to link TBAs and other community workers with the health care system is to involve the staff, especially the midwife from the nearest health facility, in the processes of explaining the role of TBAs in safe motherhood to the local community, and in the selection, training, and supervision of TBAs.

MOTHER-BABY PACKAGE

Most maternal deaths have the same causes
Most pregnancy complications can be prevented or treated
Safe motherhood benefits babies too
Safe motherhood is attainable

WHY?

Goals and objectives
Family planning
Basic maternity care
Prevention, early detection and management of complications

WHAT?

Define national policy and guidelines
Assess needs
Prepare national plan of action
Estimate costs

Identify sources of financial support
Develop detailed implementation plan
Implement planned activities
Monitor and evaluate

HOW?

WHAT is the Mother-Baby Package?

The Mother-Baby Package consists of a cluster of interventions designed to support countries in striving to attain the goals of the Safe Motherhood Initiative. These interventions focus on family planning to prevent unwanted and mistimed pregnancies, basic maternity care for all pregnancies and special care for the prevention and management of complications during pregnancy, delivery and postpartum.

Goals and objectives

The goals of the Package are to achieve substantial reductions in maternal and neonatal mortality and corresponding improvements in the health of mothers and newborns. The Mother-Baby Package is a technical tool to achieve these goals.

The Mother-Baby Package presents global goals and targets and outlines the general strategies needed to attain them. Each country will have to define its own objectives and adapt the interventions accordingly.

Goals:

Reduction of maternal mortality ratio to half of 1990 levels by the year 2000 and substantial reduction in maternal morbidity.

Reduction of perinatal and neonatal mortality rate from 1990 levels by 30 to 40% and substantial improvements in newborn health.

Objectives:

1.To promote family planning to reduce the incidence of unwanted and mistimed pregnancies.
2.To provide basic maternity care to all women.
3.To promote, protect and support early and exclusive breast-feeding.
4.To reduce anaemia in pregnant women.
5.To reduce sexually transmitted diseases in pregnant women.
6.To reduce maternal deaths due to complications of abortions.
7.To reduce maternal death due to eclampsia.
8.To reduce maternal deaths due to haemorrhage.
9.To reduce maternal deaths due to prolonged/obstructed labour.
10.To reduce maternal deaths due to puerperal sepsis.
11.To eliminate neonatal tetanus.
12.To reduce neonatal deaths due to birth asphyxia.
13.To reduce neonatal deaths associated with neonatal

hypothermia.
14.To reduce ophthalmia neonatorum.

Attainment of these objectives will lead to significant reduction in maternal and newborn deaths and corresponding reductions in disabilities (Table 6).

Table 6: Impact of Mother-Baby Package interventions on deaths of mothers and newborns

MOTHER

CAUSES	NUMBER OF DEATHS(4)	POTENTIAL IMPACT IN DEATHS AVERTED(5) Percentage	Number
Haemorrhage	127 000	55%	70 000
Sepsis	76 000	75%	57 000
Eclampsia and HDP	64 000	65%	42 000
Obstructed labour	38 000	80%	30 000
Unsafe abortion	67 000	75%	50 000
Other direct causes	39 000	--	
Indirect causes	100 000	20%	20 000
TOTAL	510 000		269 000

NEWBORN

CAUSES	NUMBER OF DEATHS(6)	POTENTIAL IMPACT IN DEATHS AVERTED(5) Percentage(7)	Number
Birth asphyxia	840 000	40 - 60%	340 000 - 500 000
Diarrhoea	60 000	40 - 60%	24 000 - 36 000
Tetanus	560 000	80%	450 000
Pneumonia	755 000	40%	300 000
Sepsis and meningitis	290 000	40 - 60%	110 000 - 170 000
Birth injuries	420 000	40 - 60%	170 000 - 250 000
Congenital anomalies	440 000	--	
Prematurity	410 000	--	
Others	205 000	--	
TOTAL	3 980 000		1 394 000 - 1 706 000

Family planning

Ensuring access to family planning information and services is a key element of the Mother-Baby Package. Family planning can reduce maternal mortality in several ways. First, family planning can lead to a reduction in the number of births and, since every pregnancy is associated with some risk, this in itself helps reduce maternal deaths. Second, family planning can help reduce mistimed pregnancies. Although any pregnancy carries a risk of death or disability, some are more risky than others -- for example, those among very young women, women of high parity and those to older women. Third, family planning can help to reduce the number of unwanted pregnancies. Unwanted pregnancy is always a threat to the woman's health, either because she may resort to unsafe abortion with all its attendant risks or because she is less likely to take care of herself than if the pregnancy was wanted. Some estimates indicate that access to family planning to prevent mistimed and unwanted pregnancies could reduce maternal mortality by up to one third.

Objective:To promote family planning and to reduce the incidence of unwanted and mistimed pregnancies

Targets:

1.To increase contraceptive prevalence in women of reproductive age up to at least 56% by the year 2000.
2.To provide post-abortion family planning counselling to all women by the year 2000.
3.To increase through IEC, the number of women who space

their births by an interval of no less than 2 years from present levels to at least two-thirds by the year 2000.
4.To decrease the age-specific fertility rate in women below 18 years and above 40 years from the existing levels by one-third by the year 2000.

Strategy

1.A major Information, Education and Communication (IEC) strategy should be developed, focusing on birth spacing and birth timing as important health measures for mother and child. Informing and orienting the media about contraception should be an integral part of the effort. It will be essential to target IEC activities at community level and to involve men.
2.Training of health care providers should include not only the technical and managerial aspects of contraception but also appropriate interpersonal communication and counselling skills.
3.An optimal range of contraceptives should be made available to meet the needs of the widest possible range of users, following the principle of "free choice". However, it must be recognized that each additional contraceptive method means another potential weak point in the supply system and additional training for staff. Condoms, oral/injectable contraceptives and IUDs should be made available at type I health centres, while contraceptive subdermal implants should be added at type II health centres, and sterilization would be available at hospitals, according to national policies. Family planning information, as well as post-abortion counselling, should be offered at all service points.
4.Availability of contraceptives should be increased by offering them at immunization sessions, all health facilities and community-based outlets, and by counselling at health facilities and community-based outlets.
5.The protection offered by use of condoms against AIDS and other STDs should be highlighted.
6.Adolescent boys and girls need to be educated on issues related to reproduction, human sexuality and the inadvisability of early marriage and pregnancy. Peer counselling through youth and women's organizations can also be an effective strategy.

Basic maternity care

Pregnancy and delivery are normal physiological processes and the outcome of most pregnancies is good. However, all pregnancies involve some risk to the mother or infant and it is important to prevent, detect and manage complications early before they become life-threatening emergencies. Pregnant women, their families and all persons attending deliveries should be aware of what they can do to promote and protect the health of pregnant women and to ensure early referral when problems arise. This is of particular importance in parts of the world where most deliveries continue to take place within communities and where many mothers deliver unaided or with the assistance of only relatives or traditional birth attendants. Providing individuals and communities with the information they need to avoid harmful practices and promoting appropriate basic care including clean delivery can help prevent many pregnancy-related complications. Furthermore, giving people information about the signs and symptoms which require urgent assistance from a higher level of care helps to mobilize communities to seek timely referral when complications arise. Antenatal care during pregnancy is an opportunity for promotion and education; prophylactic measures, such as iron and folate supplementation; management of diseases, such as malaria and STDs; and to ensure the early detection and

management of complications.

Objective:To ensure that all women have access to basic maternity care, including antenatal care, health promotion and information about signs and symptoms of complications.

Strategy

1.All pregnant women, whatever the circumstances of their pregnancy and delivery, should have access to basic maternity care, comprising quality antenatal care, clean and safe delivery and postpartum care.

2.All women, families and communities should be aware of the special needs of pregnant and lactating women in terms of nutrition, rest, antenatal, delivery and postpartum care.

3.Communities should be informed about the signs and symptoms of complications and be aware of the need to plan for emergency transport to the health centre or hospital.

4.At all levels of the health care system -- community, health centre and hospital -- people should have the appropriate knowledge and skills to manage normal pregnancies and deliveries and to detect, manage and/or refer high-risk cases and complications.

5.All pregnant women should have a minimum of four antenatal visits (at least 20 minutes duration each) for prevention, early detection and management of complications. Antenatal care should comprise health promotion, assessment, management and/or referral through history-taking, physical examination, and laboratory tests, where necessary; tetanus toxoid immunization; iron and folate supplementation; malaria prophylaxis; hookworm treatment; and STD management.(8)

6.Antenatal care sessions should be used as an opportunity to provide information to women and their families about danger signs and symptoms during pregnancy and delivery and to help them develop an appropriate delivery plan, based on the woman's history and health status.

7.All women and birth attendants should be aware of the requirements for a clean delivery: clean hands, clean delivery surface, clean cord cutting and care. All health care providers should be trained in and practice clean and safe delivery techniques and avoid unnecessary vaginal examinations and episiotomies.

8.All women and their birth attendants should be aware of the need to refer cases of prolonged or obstructed labour to a higher level of care. All institutional deliveries should be monitored using an appropriately adapted version of a partograph(9) in order to prevent prolonged labour.

9.All women should receive a postpartum visit within the first week of delivery in order to ensure early detection and management of hypertension, haemorrhage and sepsis. The postpartum period should also be used to provide support to breast-feeding and is an opportunity to provide family planning information and services.

Breastfeeding

Breastfeeding is one of the most important contributors to neonatal, infant and child health, growth and development. The benefits are greatly enhanced if breastfeeding starts within one hour after birth, with demand feeding and no prelacteal feeds. Many neonatal health problems are greatly ameliorated by such a pattern of breast-feeding. These include such conditions as hypothermia, neonatal hypoglycaemia, infections and neonatal jaundice associated with scheduled breastfeeding.

Apart from the clear nutritional superiority of breast milk, breastfeeding protects against infant deaths and morbidity. Infants who are exclusively breastfed are likely to suffer only one-quarter as many episodes of diarrhoea and respiratory infections as babies who are not breastfed.
Mothers benefit from breast-feeding too. It reduces the risk of postpartum haemorrhage and lowers the risk of breast and ovarian cancer. It contributes to child-spacing and reduces fertility.

Objective:To promote, protect and support early and exclusive breastfeeding.
Target:Ensure early and exclusive breastfeeding in all births in health facilities by 1997 and in all births at home by the year 2000.

Strategy

1.Early and exclusive breastfeeding should be promoted for all infants. Health workers, families and mothers should be made more aware of the benefits of breastfeeding and the dangers of anything other than exclusive breastfeeding. The communication strategy of the Mother-Baby Package should include breastfeeding as an integral component.
2.Appropriate steps should be taken to change hospital practices in accordance with the "Ten steps for successful breastfeeding" (see steps).
3.Health workers should be trained in the skills necessary to support breastfeeding mothers.

Ten steps for successful breastfeeding

1. Have a written breastfeeding policy that is routinely communicated to all health care staff
2. Train all health care staff in skills necessary to implement this policy
3. Inform all pregnant women about the benefits and management of breastfeeding
4. Help mothers initiate breastfeeding within an hour of birth
5. Show mothers how to breastfeed, and how to maintain lactation even if they are separated from their infants
6. Give newborn infants no food or drink other than breast milk, unless medically indicated
7. Practice rooming-in -- allow mothers and infants to remain together 24 hours a day
8. Encourage breastfeeding on demand
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic

Prevention, early detection and management of complications

Many obstetric complications can be prevented by appropriate pregnancy management. However, should complications occur, they must be detected early and dealt with promptly and effectively. The sections that follow deal with the most common complications arising during pregnancy, labour, delivery and the postpartum period.

Anaemia in pregnancy (10)

WHO estimates that more than half the pregnant women in the world have a haemoglobin level indicative of anaemia. For developing countries only, the figure is 56%, or 61% if China is excluded. Over one-third of all women in the world suffer

from anaemia. In some areas of the Indian subcontinent, 7% of women are afflicted by severe anaemia which is associated with a five-fold increase in maternal mortality. Iron or folate supplementation of pregnant women may prevent a deterioration of the anaemic condition during the increased physiological burden of pregnancy. However, it does not address the underlying iron deficiency that already existed when pregnancy began. In developing countries, where perhaps most women are nutritionally deficient and generally unhealthy and where constant supervision in pregnancy is impracticable, there is a case for universal supplementation, especially in women of reproductive age. More research is required to identify the optimal mix of strategies that will ensure the reduction of anaemia. However, based on available information, a broadly applicable strategy has been defined for the Mother-Baby Package.

Objective:To reduce anaemia in pregnant women

Targets:
1. Increase coverage of iron supplementation from the existing level to 90% by the year 2000.
2. In malaria holoendemic areas, coverage of antimalarials for pregnant women to be increased from the existing level to 90% by the year 2000.

Strategy
1. All pregnant women should be given the standard dose of iron/folate (two tablets of 60 mg elemental iron) every day for 100 days. In some areas, one tablet per day may be appropriate based on the prevalence of anaemia.
2Dietary advice should be given about the consumption of adequate quantities of iron-rich foods. Foods rich in vitamin C enhance absorption, while tea and coffee inhibits absorption of iron, so appropriate advice should be given (tea should not be drunk with meals, or within one hour of eating a meal). Vitamin C increases absorption of iron, so fruits should be consumed with meals.
3. All pregnant women should be clinically examined for anaemia as a part of the antenatal check-up at the type I health centre or in the community. Haemoglobinometry should be available at the type II health centre and hospital.
4. Pregnant women found to be anaemic should be recommended a higher dose of iron/folate.
5Pregnant women residing in holoendemic malaria areas should be given anti-malaria prophylaxis according to country policies.
6. In malaria endemic areas, any pregnant women with anaemia and/or fever should be assessed and treated for malaria in accordance with country policy.
7. Women who are severely anaemic (very pale, reporting symptoms such as easily fatigued, breathless on mild exertion, weakness, dizziness) should be given a higher dose of iron/folate and referred from the type I health centre to a type II health centre or hospital for monitoring and further treatment.
8.Blood loss following delivery should be minimized by practising the active management of the third stage of labour (i.e. routine use of oxytocics, prompt repair of lacerations).
9. Type II health centres should be able to provide intramuscular iron therapy and hospitals should provide packed red blood cells transfusion and total dose infusion of iron. When using blood or blood products, testing for HIV is a necessary precaution, especially in areas of high prevalence.
10. During the pre-pregnancy and inter-pregnancy period, any contact between the health system and the woman (e.g. infant immunization, family planning) should be used for identifying

and treating anaemia. Lactating mothers should also be given prophylactic or therapeutic iron/folate, as should women who suffer postpartum haemorrhage.
11. Hookworm infections contribute to iron-deficiency anaemia and in areas where these infections are endemic (prevalence >20 to 30%), hookworm control should be included in strategies designed to improve the health, development and nutritional status of girls and women

PREGNANCY AND MALARIA

In areas with endemic malaria, most women will begin their pregnancies with some levels of immunity. In these populations, malaria increases the risk of maternal anaemia, abortion, stillbirth, premature birth and low birth weight, particularly in the first pregnancy. This risk diminishes with further pregnancies. Interventions for the prevention of malaria in pregnancy include the use of bed nets to prevent contact between the mosquito and the pregnant women and the use of an effective chemoprophylactic drug.
In areas with epidemic malaria or where non-immune women are travelling to malarial areas, the risk of malaria and infection during pregnancy is greater and can result in maternal death and spontaneous abortion in up to 60% of cases. In such women, prevention of infection and prompt effective treatment of the disease is important to prevent maternal and perinatal mortality and morbidity.

Table 7: Anaemia in pregnancy

SUSPECT:If :- tired and/or breathless
- last delivery within a year
-any history of bleeding, malaria or hookworm disease
ASSESS FOR:
Paleness of tongue, conjunctiva, or palmsPALE NOT PALE
CLASSIFY ASClinical anaemia (severe)Clinically not severe anaemia (moderate or mild forms possible)
TREAT AT
Type I health centre
- Give higher dose of iron/folate
- Give malaria prophylaxis and treatment (if under policy)
- Refer to type II health centre- Give standard dose of iron/folate
- Give malaria prophylaxis and treatment (if under policy)
- Refer to type II health centre if clinical signs of anaemia develop
Type II health centre
- Estimate severity of anaemia/Hb
- If severe anaemia

Treat for a month with higher dose
In third trimester, if asymptomatic, give IM iron (if Hb level not raised after treatment, refer to hospital)
- If very severe anaemia or symptomatic, refer to hospital
- If malaria is suspected, examine and treat, give prophylaxis according to national policy- Estimate severity of anaemia/Hb
- If moderate anaemia, give standard dose iron/folate
- If severe anaemia, see treatment of severe anaemia
- If malaria is suspected, examine and treat, give prophylaxis according to national policy
Hospital
- Treat with total dose infusion of iron, blood or packed cell transfusion according to gestational age and severity of anaemia
- If malaria is suspected, examine and treat, give prophylaxis according to national policyAs above +
- Blood transfusion if necessary

Anaemia in pregnancy is defined as a haemoglobin concentration of less than 110 g/l (11 g%).
Degree of anaemia: moderate (70-109 g/l), severe (40-69 g/l) and very severe (<40 g/l). Corresponding haematocrit (PCV) values are 24-37%, 13-23% and <13% respectively.
All pregnant women should be given a standard dose of iron/folate during pregnancy.
In areas of high prevalence of hookworm, all pregnant and lactating women should receive single dose oral anthelminthic treatment. Single-dose, oral anthelminthic treatment for hookworm infection is recommended also for pregnant and lactating women, using mebendazole or pyrantel. As a general rule, in the case of pregnant women, treatment should not be given in the first trimester unless there is specific medical need to do so.

Sexually transmitted diseases and HIV (11)

WHO estimates that between 150 to 330 million new cases of curable sexually transmitted diseases (STDs) occur annually, more than half of them among women in the reproductive age group. STDs not only cause acute morbidity, complications and sequelae, but also contribute to maternal and fetal mortality and adverse pregnancy outcome. In Zambia, 18% of early fetal deaths and 43% of late fetal deaths were attributed to maternal syphilis. In Swaziland, perinatal mortality, due to syphilis, was estimated to be 35/1000 births, more than half of the total of perinatal deaths (53/1000 births), whereas in Zambia, 30% of perinatal mortality was associated with syphilis. In Kenya, 44% of women with postpartum pelvic inflammatory disease (PID) had gonorrhoea or chlamydial cervicitis. In Africa, the rate of ectopic pregnancy, largely a sequela of STDs, is three times that found in industrialized countries and remains an important cause of maternal mortality in developing countries, especially in rural areas where easy access to care is often lacking. Prematurity is also often caused by STDs, while congenital syphilis, ophthalmia neonatorum and chlamydial neonatal pneumonia remain frequent causes of infant morbidity and mortality.

Objective: To reduce sexually transmitted diseases in pregnant women

Target:
Increase case-finding to 90% for syphilis and 40% for other STDs among all pregnant women attending antenatal care services by the year 2000.

Strategy
1.Health care providers should be trained to: a) provide information on STDs, including HIV, to all women attending health facilities before, during and after pregnancy in order to reduce high-risk behaviour and STD transmission; b) promote appropriate seeking of health care for STDs; and c) promote and provide condoms.
2.Institute case-finding of syphilis by serological testing for syphilis in all pregnant women, and provision of treatment for those who are sero-reactive and their partners.
3.Institute case-finding of syphilis by serological testing immediately after delivery of all women not previously tested during antenatal care, and of all women with adverse pregnancy outcomes (e.g. abortion, stillbirth or syphilitic infant) and treatment of sero-reactive women and their partners.
4.Institute case-management for STDs among symptomatic women by using syndromic approach (syndromic diagnosis, treatment, education, counselling, condom promotion, partner notification and follow-up if necessary).
5.Train health care providers to refer complicated cases.
6.Any contact between women and the health system (e.g. family

planning, child care) before, during and after pregnancy should be used as an opportunity for primary prevention, STD case-finding and treatment of symptomatic cases.

Table 8:Sexually transmitted diseases

SUSPECTIf STD prevalence is high
ASSESS FOR
Reactive syphilis
STD symptoms/signs
- Syphilis sero-reactive
- Genital sores/inguinal swelling
- Vaginal discharge present and risk assessment
positiveSyphilis sero-nonreactive
No symptoms/signs
CLASSIFY ASSexually transmitted diseaseNo sexually transmitted disease
TREAT AT
  Type I health centre

- Treat for syphilis
- Treat for symptomatic STDs
- Partner notification
- Refer to hospital if necessary
- Health promotion
- Risk reduction
  Type II health centre
As above- Health promotion
- Risk reduction
  Hospital
As above +
- Investigate and treat appropriately- Health promotion
- Risk reduction

Syndromic diagnosis is based on identifying consistent groups of symptoms and easily recognized signs -- syndromes -- and providing treatment which will deal with the majority of organisms responsible for producing each syndrome.
Example of risk assessment: partner symptomatic or >1 partner, new partner in past 3 months and/or lower abdominal pain.

HIV/AIDS IN PREGNANCY
Counselling and testing
Counselling and testing should be provided to pregnant women if any of the following questions is present:
Symptoms suggestive of HIV infection (unexplained weight loss, chronic diarrhoea, intermittent or persistent fever, persistent cough, swollen glands, oral candidiasis, night sweats, fatigue, generalized dermatitis)
  A history of intravenous drug use
  A partner or child with HIV-related symptoms or AIDS
  A history or presence of sexually transmitted diseases
  A history of exchanging sex for money, goods, drugs or other favours
  A history of unprotected sex with multiple partners
  A history of blood transfusion that may have been contaminated with HIV
  A partner who is bisexual or an intravenous drug user
Antenatal care
If a woman learns during pregnancy that she is infected with HIV, the first task of those providing antenatal care is to offer her emotional support.
In addition, adequate counselling should be provided so that she can make informed choices regarding the continuation of pregnancy and adapt her behaviour to prevent transmission to others and avoid subsequent pregnancies.

The necessary referrals should be made for social support.
Pregnant women with HIV/AIDS should receive antenatal care; they should eat nourishing foods, practice good hygiene to reduce risk of infection, avoid all medicines except those prescribed by a health care worker, take exercise but not overexert themselves,and ensure they are properly immunized against tetanus.

Delivery care

If possible, the mother with HIV/AIDS should give birth in a health centre or a hospital. If not, the home should be prepared for delivery so that it poses as little risk as possible to the mother, the baby and those who help with the delivery. Using a clean delivery kit helps to reduce the risks of infection. Precautions should be taken to minimize contact with the mother's blood by the baby and those attending the mother. These precautions may include using barriers such as gloves. Traditional practices associated with delivery and involving risk of exposure to blood should be discouraged. Those who help with delivery should cover any open wounds on their skin. Special care should be taken with used needles, scalpels and other sharp instruments during procedures and disposal.

The risk to the birth attendant

Even where conditions are not optimal the risk of an infected mother transmitting HIV to a person who helps with the birth is very low. Nevertheless, some simple precautions can help minimize the risk to the birth attendant:

- Planning for childbirth in the hospital or in the home should include obtaining gloves aprons, soap and water.
- Broken skin or open wounds should be covered with watertight dressings.
- Hands should be washed with soap and water immediately after contact with blood or other body fluids.
- Suitable gloves should be worn when expecting exposure to blood or body fluids.
- Precautions should be exercised when blood splashes are expected.
- Mouth-to-mouth suction of newborns should be replaced with mechanical or electric suction devices.
- Resuscitation bags should be made available in health care settings in which resuscitation is likely to be needed.
- Linen soiled with blood or other body fluids should be carried in leak-proof bags or folded with the soiled part inside. It should be washed in hot water and detergent.
- Solid waste, such as blood soaked dressings or placentas, should be burned or carefully buried in places where they are not likely to be dug up or contaminate water sources.
- Needle-stick injuries occasionally result in the transmission of HIV. The risk can be reduced by handling used needles as little as possible, using a needle holder when repairing tears and episiotomies, avoiding recapping disposable needles, and placing needles and other sharp objects in puncture-resistant containers located as close as practical to the area in which they are used.

Blood transfusion

If a woman has a severe haemorrhage during pregnancy, delivery or the postpartum period, a blood transfusion may save her life. Complications of pregnancy are a major cause of blood transfusion the world over.

Since HIV infection is transmitted through blood, all blood must be screened before it is accepted for transfusion.

HIV and the newborn

Most children infected with HIV, including those with AIDS, have been infected from their mothers during pregnancy (in utero infection), during birth (intrapartum infection) or shortly afterwards (postpartum infection). It is difficult to tell whether a newborn infant is infected with HIV. Children infected with HIV usually have poor health. They are much more likely than others to have low weight, fever, chronic

diarrhoea and recurrent oral thrush.They have much higher rates of ear infections, pneumonia, tuberculosis and much lower chance of survival.

Breast-feeding

Where HIV infection is prevalent, health care providers should inform themselves about the risks to infants in the transmission of HIV, but at the same time be aware of the risks to infants from not being breast-fed.

Women who do not know if they have HIV infection should always be advised to breast-feed.

Women who know they do not have HIV infection should always be advised to breast-feed.

Women who know that they have HIV infection need to know what is the best feeding method for their babies' survival.

Eclampsia

A WHO population-based prospective study on the incidence of hypertensive disorders of pregnancy found the following rates of eclampsia: 0.17% (China), 0.34% (Viet Nam), 0.40% (Burma), 0.93% (Thailand), 0.2% (Egypt), 1.14% (Lesotho), 0.14% (Botswana).

The drug of choice for the management of eclampsia is magnesium sulphate, which has been shown to be more effective than diazepam or phenytoin in preventing the reoccurrence of seizures. The most appropriate choice of anticonvulsant for the management of pre-eclampsia, to prevent eclampsia, awaits further research. In the meanwhile, clinical decisions should be based on accepted medical practices and standards.

Randomized clinical trials have shown that the antihypertensive agents hydralazine, diazoxide and methyldopa appear to be reasonably effective at reducing blood pressure. As there is no good evidence that one of them is better at doing this than the others, any one of them may be used.

Objective: To reduce maternal death due to eclampsia.

Target:

Provide effective management to 50% of women with severe pre-eclampsia/eclampsia by 1997 and 80% by the year 2000.

Strategy

1. Efforts should be made to raise community awareness of signs and symptoms of hypertensive disorders of pregnancy. This should stress the need for pregnant women to seek care if they experience severe headache, generalized oedema, blurred vision and/or convulsions.
2. All health workers should have a blood pressure instrument and be trained to measure blood pressure in order to detect hypertension early.(12)
3. Health workers should be trained to manage and/or refer women with pregnancy-induced hypertension.
4. The full range of services required to manage severe pre-eclampsia and eclampsia should be available, at least at hospitals, on a daily 24-hour basis.

Table 9:Eclampsia/pre-eclampsia

SUSPECT (If one or more is present)
- severe headache
- generalized oedema
- blurring of vision
- convulsions

ASSESS FOR
Blood Pressure
Proteinuria
Convulsions

diastolic 90 mmHg

YES
YES

diastolic 90 mmHg
YES/NO
NO
CLASSIFY ASEclampsiaPregnancy-induced hypertension, pre-eclampsia
TREAT AT
Type I health centre or community level

Type II health centre

Hospital Type II health centre

- Maintain airway, initiate treatment of convulsions and refer urgently to hospital
- If diastolic B/P is 90-100 mmHg and no proteinuria:
bed rest
check B/P twice weekly
refer if B/P rises and/or oedema or worsening symptoms
- If diastolic B/P is 90-100 mmHg and proteinuria, refer
- If diastolic B/P is >100 mmHg with or without proteinuria refer to hospital
- Maintain airway
- Control convulsions
- If in labour, expedite delivery if possible, or refer
- Continue treatment after delivery
- If not in labour, refer to hospitalAs above
- Manage hypertension
- Manage convulsions
- Deliver- Control hypertension
- Induce labour or deliver as appropriate

A diagnosis of hypertension in a pregnant woman is made when the B/P is 140/90 or greater, or there has been a rise of 30 mmHg systolic or 15 mmHg diastolic over baseline values on at least two occasions, six or more hours apart.
Pre-eclampsia is the development of hypertension and significant proteinuria in pregnancy.

Abortion (13)

Every year almost 67 000 women die worldwide following complications of abortion. Abortion-related deaths account for between 10% and 50% of all maternal deaths, depending on the country. Many deaths could be prevented if women were able to avoid unwanted pregnancy through access to family planning information services. A substantial reduction in maternal deaths can be achieved if complications due to abortion are prevented or recognized early and treated appropriately.
The post-abortion period offers health care providers a unique opportunity to help women resolve problems that contributed to unwanted pregnancy and abortion. Because fertility returns rapidly after abortion, timely selection of an appropriate contraceptive method is critical. Many women may not be aware of this rapid return to fertility. In many instances, the abortion-care setting may be one of the few contacts a women has with the modern health care system. The time when she receives abortion care is, therefore, an important opportunity

for her to receive contraceptive information and services to avoid another unwanted pregnancy. At the very least, all women receiving abortion care need counselling and information to enable them to understand the health consequences of unsafe abortion; the risks of becoming pregnant again very soon; that there are safe methods to prevent or delay pregnancy; and where and how they can obtain family planning care.

Objective:To reduce maternal deaths due to complications of abortion.

Targets:

1. To ensure that 90% of women have access to appropriate treatment for all abortion-related complications.
2. To provide 90% of all women with access to information services to prevent unwanted pregnancies.
3. To ensure that 90% of women have increased access to measures to avoid unsafe abortions.
4. To ensure that all women treated for abortions or abortion complications have access to post-abortion family planning.

Strategy

1.Increase availability and use of contraceptives.
2.National authorities should adopt appropriate policies and suitable services to address the problem of contraceptive failure in a sensitive and humane manner.
3.Health workers should be trained in early recognition of abortion complications, especially sepsis. Evacuation of the uterus, antibiotic therapy and IV fluids should be made available at health centres and surgical treatment should be available at hospitals. The treatment must be rapid, without punitive or judgmental overtones. Treatment must always be followed by contraception information and services.
4.Efforts should be made to provide post-abortion counselling, contraceptive services and information about where these services can be obtained. All health centres and hospitals that provide treatment of abortion complications should be equipped, with appropriately trained staff, to provide family planning methods or advice.
5.If termination of pregnancy is permitted in the health services, then such services should be of high-quality, equitably distributed and accessible to those in need.

Table 10: Abortion

SUSPECTIf vaginal bleeding within first five months of pregnancy	
ASSESS FOR	
Shock	YES / NO
Heavy bleeding (clean pad soaked in 5 minutes	YES / NO
History of expulsion of fleshy tissue	YES
Sepsis (fever and foul discharge)	YES
Abdominal tenderness (painful, hard tense abdomen)	YES
	NO
	NO / YES

NO / YES

NO
NO
CLASSIFY ASSeptic abortionThreatened/incomplete abortion
TREAT AT
Type I health centre

Type II health centre

Hospital
- Give IV fluids if shock or heavy bleeding
- Give oxytocics
- Give antibiotics
- Urgently refer to hospital
- Organize blood donors
- Give tetanus toxoid if required- If all above is NO, i.e. light bleeding only, advise bed rest at home
- If bleeding continues or other signs develop, refer to hospital

As above +
- Evacuate uterus in first trimester if os open or history of expulsion of fleshy tissue
- If no improvement in 1 to 2 days, refer to hospital-

Evacuate uterus in first trimester if os is open
- If os is closed with all above assessments NO, advise bed rest and re-evaluate after two weeks ?

All above +
- Evacuate uterus in 2nd trimester
- Treat shock, give blood transfusion if required
- Laparotomy if signs of uterine perforationAs above

Abortion is termination of pregnancy (expulsion or extraction of embryo/fetus) before 22 weeks of gestation.
Shock: low B/P <90 mmHg systolic, fast pulse >110/minute, fast breathing, cold skin.
At all levels, provide post-abortion counselling and family planning services.
All women with severe bleeding should receive iron therapy.

Haemorrhage -- ante and postpartum

Overall, it is estimated that nearly a quarter of all direct obstetric deaths are due to haemorrhage. Postpartum haemorrhage (PPH) is often an associated factor in deaths officially listed as from other causes. The contribution of PPH to these deaths and to the morbidity which follows heavy blood loss in surviving patients is not easy to quantify but is likely to be significant. It is well established that routine injection of oxytocics following delivery reduces the rate of PPH, as demonstrated in controlled trials.
Antepartum haemorrhage occurs commonly due to placenta previa or abruptio placentae. However, it is much less common than postpartum haemorrhage.

Objective:To reduce maternal deaths due to haemorrhage.

Targets:

1. Active management of the third stage of labour for all institutional deliveries and home deliveries attended by a person with midwifery skills.
2. Effective management of 50% of all cases of haemorrhage by 1997 and 80% by the year 2000.

Strategy

1.Ensure that all health workers are aware that bleeding in the second half of pregnancy is a serious sign and

should be managed with great care. If placenta previa is suspected, refer immediately WITHOUT performing a vaginal examination.
2.Train health workers to provide active management of the third stage of labour.
3.Oxytocics should be available at all health centres and health workers should be trained to administer them by injection as a first aid measure for PPH.
4.Health workers of an appropriate level should be trained in manual and surgical skills to manage ante and postpartum haemorrhage.
5.For women with severe bleeding, IV fluids should be available at all levels of the health care system and blood transfusion services should be available at hospitals on a daily 24-hour basis.(14)
6. The full range of services required to manage postpartum haemorrhage should be available, at least at hospitals, on a daily 24-hour basis.

Table 11:Antepartum haemorrhage

SUSPECTIf vaginal bleeding after five months of pregnancy and before delivery
ASSESS FOR
Shock
Heavy bleeding (clean pad soaked in 5 minutes)

YES / NO
YES
NO
NO
CLASSIFY ASPlacenta previa or abruptio placentaePossible placenta previa or abruptio placentae
TREAT AT
Type I health centre
Type II health centre

Hospital
- Give IV fluids if shock
- No vaginal examination
- Urgently refer to hospital
organize blood donors- No vaginal examination
- Refer to hospital
As aboveAs above
- Treat shock, give blood transfusion if required
- Monitor condition
- Expedite delivery- If in labour, monitor progress and bleeding
- If not in labour, manage according to gestational age
- If near term induce labour consider caesarean section

Antepartum haemorrhage is haemorrhage from the genital tract occurring after 22 weeks of pregnancy but before delivery of the baby.
No vaginal examination should be carried out at the health centre in a case of antepartum haemorrhage.
All women with severe bleeding should receive iron therapy in the postpartum period.

Table 12: Postpartum haemorrhage (15)

SUSPECTIf excessive bleeding after delivery (500 ml or soaking of more than one pad per hour) or bright red bleeding with or without clots after delivery
ASSESS FOR

Shock
Complete placenta delivered within 1 hour

YES/NO
YES
YES/NO
NO
CLASSIFY ASPostpartum haemorrhageRetained placenta
TREAT AT
Type I health centre

Type II health centre

Hospital
- Give IV fluids if shock
- Vigorously massage uterus
- Do bimanual compression of the uterus or compress aorta
- Give oxytocics
- Encourage woman to pass urine, catheterize if necessary
- If severity of bleeding not reduced in 15 minutes, refer to hospital
organize blood donors
- Repair tears- Give IV fluids if shock
- Encourage woman to pass urine, catheterize if necessary
- Attempt controlled cord traction
- If placenta is still retained, perform manual removal of placenta; if removal not possible, refer
organize blood donors
- Repair tears
As above +
- Exploration/curettage if necessary
- Refer if bleeding continuesAs above
As above +
- Treat shock, give blood transfusion if necessary
- Surgical procedures if requiredAs above +
- Give blood transfusion if required
- Surgical procedures if required

Postpartum haemorrhage is the loss of 500 ml or more of blood from the genital tract after delivery of the baby.
All women with severe bleeding should receive iron therapy in the postpartum period.

Prolonged/obstructed labour

Prolonged and/or obstructed labour account for about 8% of direct maternal deaths in developing countries. If a woman with prolonged and/or obstructed labour does not receive timely and effective management, she may die from rupture of the uterus or infection. Furthermore, obstructed labour may lead to severe disabilities such as obstetric fistulae. Fetal deaths are common if prompt treatment for obstructed labour is not undertaken.

Objective:To reduce maternal deaths due to prolonged/ obstructed labour.

Target:
Ensure effective management of 50% of cases of obstructed/prolonged labour by 1997 and 80% by the year 2000.
Strategy

1. Communities should be educated to seek care at a hospital for women having labour pains for more than 12

hours.
2. To detect obstructed labour or prolonged labour, health workers should be trained to assess for presentation/lie and engagement of head.
3. The partograph, an effective tool for the early recognition of obstructed labour, should be introduced at hospitals and health centres where staff with appropriate skills and training are available.
4. At least one hospital in a maximum population of 500 000 (depending on the total population and its distribution) should be upgraded to undertake caesarean delivery.
5. The full range of services required to manage prolonged/obstructed labour should be available, at least at hospitals, on a daily 24-hour basis.

Table 13: Prolonged/obstructed labour

SUSPECTIf labour pains for 12 hours without delivery
ASSESS FOR
  Lie/presentation
  Head engaged
  Fetal heart sounds

- normal
- engaged
- normal
- abnormal
- not engaged
- not heard/very fast or slow

CLASSIFY ASProlonged labourObstructed labour
TREAT AT
  Type I health centre
  Type II health centre

  Hospital
- Empty bladder, catheterize if necessary
- Give antibiotics if rupture of membranes more than 12 hours
- Refer if no progress in 2 hours- Give antibiotics
- Rehydrate
- Refer to hospital

As above +
- Artificial rupture of membranes if required
- Vacuum extraction
- Refer to hospital if no progress- Give antibiotics
- Rehydrate
- Symphysiotomy if required
- Refer to hospital if required

As above +
- Give oxytocics
- Consider caesarean section- Give antibiotics
- Caesarean section
- Other surgical procedures if required

Obstructed labour is a labour in which progress is arrested by mechanical factors; delivery often requires a caesarean section.
Prolonged labour is active labour with regular uterine contractions and progressive cervical dilatation for more than 12 hours.
Refer urgently all women with prolonged labour having severe abdominal pain or weakness to hospital as these may have a ruptured uterus.

Puerperal sepsis (16)

Puerperal sepsis is an important cause not only of mortality but also of infertility and chronic debilitation. It is estimated that 15% of all direct obstetric deaths are due to sepsis. Unclean delivery practices, prolonged rupture of membranes and/or labour are important factors in the development of subsequent sepsis.

Sexually transmitted diseases are associated with a higher risk of puerperal sepsis.

Objective:To reduce maternal deaths due to puerperal sepsis.

Targets:

1. Ensure that all deliveries are clean and safe.
2. Provide effective management of 50% of cases of infection following delivery by 1997 and 80% by the year 2000.

Strategy

1. All women and birth attendants should be aware of the requirements for a clean delivery: clean hands, clean delivery surface, clean cord cutting and care.
2. Health care providers should be trained to recognize puerperal sepsis and manage it appropriately or refer.
3. Health facilities should be able to provide the necessary treatment for puerperal sepsis, including antibiotics and surgical procedures.

Table 14:Puerperal sepsis

SUSPECTIf fever i.e. oral temperature 38.5C/101.3F or higher on any two of the first 10 days postpartum																
ASSESS FOR																
Fever	YES															
Vaginal discharge pus or foul-smelling	YES															
Abdominal tenderness (painful, hard abdomen)	YES															
Pelvic pain	YES															
Involution of uterus as expected	NO															
Breast infection	NO															
	YES															
	NO															
	NO															
	NO															
	YES															
	YES															
CLASSIFY ASPuerperal sepsisOther infections																
TREAT AT																
Type I health centre																
Type II health centre																
Hospital																
- Give antibiotics																
- Refer if no improvement in 48 hours woman very sick- Treat appropriately																
- Malaria treatment according to national policy in holoendemic areas																

- Refer if no response in three days
- Give IV fluids if shock
- Give antibiotic IV/IM
- Manage infected wound, urinary tract infection or retained placenta fragments
- Reassess and refer to hospital if no improvement in 2 days- Investigate if possible
- Treat appropriately
- Malaria treatment according to national policy in holoendemic areas
- Refer to hospital if no response in 3 days

As above +

- Change or combine antibiotics if necessary
- Treat pelvic abscess, thrombophlebitis- Investigate and treat appropriately

Puerperal sepsis is defined as infection of the genital tract occurring at any time between the onset of the rupture of the membranes or labour and the 42nd day postpartum in which fever and one or more of the following are present:

1. pelvic pain
2. abnormal vaginal discharge, e.g. presence of pus
3. abnormal smell/foul odour of discharge
4. delay in the rate of reduction of size of uterus (<2 cm/day during first 8 days)

Women should be made aware of the early signs and symptoms of infection and be encouraged to seek treatment.

Neonatal tetanus

The total global estimate of deaths from neonatal tetanus is 560 000. WHO's African Regional Office estimates 126 000 deaths due to neonatal tetanus, or approximately 21% of all neonatal tetanus deaths in the developing world (excluding China). In South-East Asia, there are an estimated 220 000 deaths annually, or 37% of worldwide neonatal tetanus deaths. Tetanus is often associated with sepsis and a substantial proportion of 290 000 newborn deaths due to sepsis are caused by unclean delivery and cord care.

Objective:To eliminate neonatal tetanus.

Target:
Universal coverage (90%) of all pregnant women with at least two doses of tetanus toxoid; and near universal clean deliveries by the year 2000.

Strategy

1. Ninety per cent of pregnant women should have tetanus toxoid immunization. All pregnant women attending antenatal care should be assessed and given tetanus toxoid according to immunization status. The recommended 5 dose schedule is shown in the box below. The 5 doses, once completed, will provide lifelong protection.
2. There should be community-based surveillance of neonatal deaths and investigation of tetanus cases and deaths.
3. Information, education and communication strategies should be developed to promote clean delivery and cord care, whether in health facilities or homes, including the use of simple delivery kits with instructions on hand-washing.

TT1: At first contact, or as early as possible during pregnancy

TT2: At least 4 weeks after TT1
TT3: At least 6 months after TT2
TT4: At least 1 year after TT3
TT5: At least 1 year after TT4 or during next pregnancy

Birth asphyxia

In developing countries, 3% of all newborn babies (3.6 million) develop moderate or severe asphyxia. Of these, about 840 000 die and approximately the same number develop severe sequelae (epilepsy, mental retardation) with devastating human, social and economic consequences.

Newborn infants have difficulty in initiating breathing for a variety of reasons such as prolonged and/or obstructed labour, prematurity, infection, as well as as a result of unknown causes. Often it cannot be anticipated that the newborn infant will have trouble in initiating breathing. Hence the necessary equipment and skills are needed for every birth.

Encouraging results can be achieved by ventilating with mask or bag and mask, and cardiac massage when bradycardia persists. These appropriate technologies can be used safely at different levels of health care.

Objective:To reduce neonatal deaths due to or associated with birth asphyxia.

Target:
Effective management of birth asphyxia for all institutional deliveries and home deliveries attended by a trained person by the year 2000.

Strategy

1. Health workers should be trained in the assessment and management of birth asphyxia.
2. Necessary equipment for resuscitation should be available and health care providers trained in its use.

Table 15: Birth asphyxia

SUSPECTIf newborn does not cry or breathe immediately after birth
ASSESS FOR
Breathing
Heart rate

depressed or absent
>80/minute
depressed or absent
<80/minute
CLASSIFY ASMild neonatal asphyxiaSevere neonatal asphyxia
TREAT AT
Type I health centre
Type II health centre

Hospital
- Dry with warm towels
- Provide warm environment
- Clear airways
- Positive pressure ventilation by- Dry with warm towels
- Provide warm environment
- Clear airways
- Positive pressure ventilation by

As above +
- Ventilation with bag and maskAs above +
- Ventilation with bag and mask
- External cardiac massage if necessary

As above +
- Ventilation with oxygen
- Intubation, if necessaryAs above +

- Ventilation with oxygen
- Intubation, if necessary

Birth asphyxia is characterized by absent or depressed breathing at birth.

Proper ventilation of the newborn is the most important aspect of resuscitation.

Neonatal hypothermia

Neonatal cold injuries are common throughout the world. In a hospital in Ethiopia, 67% of low birth weight and high-risk infants admitted to a special care unit from outside the hospital were hypothermic. Similarly in India, the mortality rate of hypothermic infants was found to be twice that of infants without hypothermia. There is sufficient evidence to conclude that immediate post-delivery hypothermia is harmful to the newborn, increasing the risk of morbidity and mortality.

If all newborn infants, including preterm and small infants, are carefully dried and given to the mother in skin-to-skin contact immediately upon delivery, the risk of hypothermia will be greatly reduced. Breast-feeding must also start as soon as possible to provide calories and stimulation which help to keep the infant warm.

Objective:To reduce neonatal deaths associated with neonatal hypothermia.

Target:
Prevention and/or management of hypothermia in all institutional deliveries and home deliveries attended by a trained person by the year 2000.

Strategy

1. Hypothermia should be prevented in all newborns by drying them immediately after birth and providing a warm environment afterwards.
2.Health workers should be trained to recognize hypothermia and to rewarm hypothermic newborns by using appropriate methods and referring severely hypothermic newborns
3. A major communication strategy should be developed for the prevention of hypothermia in the home by drying the baby after birth, providing skin-to-skin contact with the mother and initiating breast-feeding within an hour of birth. All women and birth attendants should be aware of the need to have two clean and dry cloths ready at delivery -- one to dry the baby after birth and one to wrap it in afterwards.

Table 16: Neonatal hypothermia

SUSPECTIf neonate's feet are cold to touch, cry or sucking weak or activity reduced (lethargy)
ASSESS FOR
  Axillary temperature

32-36C
<32C
CLASSIFY ASMild hypothermiaSevere hypothermia
TREAT AT
  Type I health centre

  Type II health centre
  Hospital
- Dry with warm towels

- Provide warm environment by skin-to-skin contact and/or wrap the newborn with warm cloths/clothing
- Frequent breast-feeding- Dry with warm towels
- Provide warm environment by skin-to-skin contact and/or wrap the newborn with warm cloths/clothing
- Frequent breast-feeding
- Refer to hospital
As aboveAs above
- Rewarming using appropriate methods- Rewarming using appropriate methods

Hypothermia occurs when the body temperature (axillary) drops below 36.5C (97.7F). The normal range is 36.5-37.5C (97.7-99.5F).
Immediately dry every newborn with a warm, dry cloth to prevent hypothermia.

Ophthalmia neonatorum

Ophthalmia neonatorum is a frequently identified perinatal infection related to maternal infection by Neisseria gonorrhoeae and Chlamydia trachomatis. Complications -- corneal damage and blindness -- develop without treatment or even delay in treatment. Many infants will also progress into systematic gonorrhoea. Ophthalmia neonatorum in most cases is not a deadly disease but causes severe disability.
A high prevalence of STD in women results in a high incidence of ophthalmia neonatorum in the absence of eye prophylaxis at birth. The prevalence of gonorrhoea in pregnant women in Africa range from 3% to as high as 22%. The few published results from other continents suggest that some countries have similar prevalence rates. The transmission rate from an infected mother to her newborn, in the absence of prophylaxis, is between 30% and 50%. Although effective prophylaxis is available and recommended in most countries, it is frequently neglected. The risk of infection during delivery among newborns exposed to an infected mother is 7% when silver nitrate is given and 3% when tetracycline ointment is used.

Objective:To reduce ophthalmia neonatorum by 80%.

Target:
Application of eye prophylaxis for all newborns delivered in institutions or by a trained attendant at home. Early diagnosis and treatment of 90% of cases of ophthalmia neonatorum by the year 2000.
Strategy

1. Case-finding and management of gonococcal and chlamydial infections in pregnant women should be promoted.
2. Routine eye prophylaxis in the newborn at birth should be used by all health workers, including traditional birth attendants.
3. Health workers at all health facilities should be trained in early recognition and treatment of ophthalmia neonatorum.
4. Traditional birth attendants should be trained in recognition and referral of neonates with eye discharge to health facilities.

Table 17: Ophthalmia neonatorum

SUSPECTIf purulent discharge in first two weeks
In areas of significant prevalence of gonococcal ophthalmia neonatorum
ASSESS FOR
Swelling and redness and purulent discharge of eyes

- Purulent red, swollen eyelids
- Discharge present

CLASSIFY ASOphthalmia

TREAT AT

Type I health centre

Type II health centre

Hospital

- Treat or refer the newborn for gonorrhoea
- Treat or refer mother and partner(s) for gonorrhoea and chlamydia
- Refer to hospital if no response within 3 days
- Treat the newborn for gonorrhoea
- Treat mother and partner(s) for gonorrhoea and chlamydia
- Refer to hospital if no response within 3 days
- Treat the newborn for gonorrhoea
- Treat mother and partner(s) for gonorrhoea and chlamydia
- In case of treatment failure in newborn, treat for chlamydia

Ophthalmia neonatorum is defined as a purulent discharge from the eyes occurring within 14 days of delivery.
Carefully clean eyes of all newborns immediately after delivery and apply either 1% silver nitrate solution or 1% tetracycline eye ointment within one hour of delivery.

MOTHER-BABY PACKAGE

Most maternal deaths have the same causes
Most pregnancy complications can be prevented or treated
Safe motherhood benefits babies too
Safe motherhood is attainable

WHY?

Goals and objectives
Family planning
Basic maternity care
Prevention, early detection and management of complications

WHAT?

Define national policy and guidelines
Assess needs
Prepare national plan of action
Estimate costs
Identify sources of financial support
Develop detailed implementation plan
Implement planned activities
Monitor and evaluate

HOW?

HOW to operationalize the Mother-Baby Package

The challenge which now confronts decision-makers, health care planners and managers, and health care providers is to ensure that every pregnant woman has access to high-quality essential care. In seeking how best to achieve this, interventions will have to be based on existing primary health care systems. In order to ensure that as many pregnant women as possible have access to the essentials of care, a balance will have to be achieved between what is absolutely critical for all women and what would be ideal if circumstances permitted.

The Mother-Baby Package is an integral part of the wider Safe Motherhood Initiative which has, since its inception in 1987, achieved notable success in alerting the world to the dimensions and nature of maternal mortality. There is increasing recognition of the importance of safe motherhood for improving the health of newborns and thus reducing continuing high levels of infant mortality and morbidity. Assuring improved maternal and newborn health is seen as a fundamental prerequisite for family health and for social and economic development. The returns on investment in the health of women and children are generally acknowledged. Moreover, investing in maternal health care is one of the most cost-effective health interventions in terms of benefit to the whole community.

The Mother-Baby Package is not a new vertical programme. Rather, it represents a way of revitalizing maternal and newborn care services and ensuring that basic core set of interventions -- but only those interventions that have been proved to be effective and feasible -- is accessible to all pregnant women and to their newborns.

The Mother-Baby Package has been defined for global action. Country-specific goals, strategies and activities have to be defined in order to initiate nationwide programmes over a specified time-scale. It is not possible at a global level to recommend country-specific guidelines for operationalizing the Package. Each country will have to adapt the contents of the Package in the light of its own specific conditions and to implement it in accordance with its own structures.

The goals, objectives and targets of the Package defined earlier in this document should be defined and achieved by all

countries at progressively more peripheral levels (national, subnational and district). The goals and targets should include all the critical elements of the Package.

Several countries have already started the process of planning and implementing national safe motherhood programmes. Based on their experiences, and on the expertise of the various partners in the Safe Motherhood Initiative who have been working with countries, the essential steps required for developing and implementing national action plans are summarised below. This section is designed as a general guide only. More comprehensive and detailed guidelines on planning, managerial and logistic components of Mother-Baby Package implementation will be made available by WHO.

In order to implement the interventions described in the Package, countries need to undertake a series of activities, many of which will be the prime responsibility of the health care system. Others, however, will have to be developed in collaboration with other sectors, notably in the areas of finance and planning, education, transport and communication. The process outlined below focuses largely on the activities that are the responsibility of the health sector. The steps described do not necessarily follow in a sequential manner. Several can be undertaken concurrently. Broadly speaking, the activities comprise definition of national policy and guidelines; situation analysis and assessment of needs; preparation of national action plans; estimation of costs of implementation; identification of sources of support at national and international levels; preparation of detailed implementation plans; implementation of interventions; and monitoring and evaluation.

Define national policy and guidelines

In order to ensure the long-term sustainability of the activities and to foster the collaborative efforts that will be needed, an essential first step is the development of a sense of national commitment to the goals, targets and activities outlined in the Mother-Baby Package. This requires the creation of awareness of the magnitude and importance of the problem and the provision of such information to decision-makers in health and other sectors, NGOs, women's groups etc. This advocacy effort is necessary for the development of a sense of national commitment to tackle the problem.

Implementing the range of actions required by the Mother-Baby Package will not be feasible or sustainable in the absence of a high-level national commitment. This requires bringing together key actors and institutions to take a role in national programme development and implementation. At this stage, the involvement of political leaders at the highest level can serve as a catalyst to the development of a national policy framework and action plan.

Very early in the process, it is important to ensure collaboration and communication within the health care system. The Mother-Baby Package can serve to stimulate dialogue between health managers and health care providers. Such dialogue should seek to identify policy issues which need to be resolved. Examples include the judicial and regulatory framework within which different health care providers function and which stipulate who can do what and at which level of the health care system.

Many countries have ensured a continuing national commitment to the process by establishing a Task Force which brings together representatives of national ministries, e.g. health, finance, planning, women's affairs, community development, education, along with professional associations, universities and teaching hospitals, women's groups and NGOs. A Task Force can help to sustain the momentum through subsequent stages of national plan development and implementation and can

coordinate inputs and activities of the various actors in the process.

Assess needs

In order to make operational the activities and interventions described in the Mother-Baby Package, policies must be defined and objectives and targets set, bearing in mind the situation in the country or region concerned. In most countries, these goals will form the basis of a safe motherhood "action plan" that will be followed by a more detailed implementation plan. A critical step in the development of national action plans is an assessment of the current status of health policies, services and infrastructure. Such an assessment will enable health authorities to identify weaknesses or "gaps" in maternal and neonatal health provision and thus to identify areas requiring strengthening.

The specific objectives of the Safe Motherhood Needs Assessment are to provide national or district level managers with tools to:

- describe the antenatal, delivery, and postpartum care provided to women and newborn babies at all levels of the health care system;
- identify "gaps" in the provision of this care: specifically, assess the ability of staff to perform the functions identified in the Mother-Baby Package, as well as the availability of appropriate drugs, supplies, equipment, facilities, equipment and transport.

At this stage, the Mother-Baby Package should serve as a framework against which to compare current services with those defined as essential for mothers and newborns.

WHO has developed a structured approach -- the Safe Motherhood Needs Assessment -- to assist health authorities to identify rapidly these needs. It can be modified for individual country settings. It includes the use of model questionnaires, pre-programmed computerized data entry and analysis routines, and guidelines for interpretation and analysis of the information collected, along with step-by-step instructions. The precise time-frame for implementation of a Safe Motherhood Needs Assessment will vary from country to country although it has been designed to be implemented within a six-month period.

Prepare national plan of action

Once the gaps have been identified, the elements of a national action plan should be drawn up. This involves the selection of goals, objectives and targets and the definition of appropriate indicators to monitor programme implementation. Strategies should be identified for attaining the targets, and the most cost-effective approaches selected for immediate implementation. Every national action plan should include activities for strengthening health infrastructures, supplies and equipment, for development and management of human resources, for information, education and communication, social mobilization, and for overall evaluation and monitoring of progress towards the goals defined in the national programme of action.

All interested parties should endorse the action plan. National workshops can be used to foster this process.

Estimate costs

Collection and analysis of data on the cost of implementing the activities can help programme planners and managers to develop a national or district package that is operationally feasible and sustainable. Cost information can be used to determine the affordability of the interventions, and can be useful in comparing the cost of the interventions with other clusters of interventions. In addition to estimating the total funds required, cost analysis also helps to consider the deployment of health personnel in delivering the interventions and the efficiency of putting supplies, equipment, drugs, and

other inputs to work.

Costs are typically classified by inputs, and specifically into capital and recurrent cost categories. In the Mother-Baby Package, capital costs include large equipment such as operating theatre equipment, sterilizers, and vacuum extractors; buildings such as health centres and dispensaries; training activities for health personnel that occur only once or rarely; and the costs of social mobilization. Recurrent costs include supplies such as drugs, vaccines, syringes and small equipment; periodic training costs such as short in-service training courses; personnel costs; operation and maintenance of buildings and vehicles; and the operational costs of social mobilization.

A spreadsheet model, which is being developed, will assist in estimating the cost of implementing the interventions. The model offers two options: a "low income" setting where existing infrastructure is weak, and a "middle income" scenario where infrastructure is already in place, and in which the emphasis is to improve its functional effectiveness.

The model includes a set of assumptions, representing a hypothetical rural district population. However, a more rigorous analysis that better reflects the specific local situation will require consideration and, if necessary, modification of some of the critical inputs. All of the inputs are easily modified

Identify sources of financial support

Since the start of the Safe Motherhood Initiative, many national, international and bilateral agencies have developed programmes to support safe motherhood activities in countries where the need is greatest. Such support will continue to be needed in many developing countries in the foreseeable future. Although such external support is welcome, the challenge is to promote proper coordination at national level and to ensure that the activities put into effect are sustainable by countries in the long term.

In developing national action plans, countries can use the Mother-Baby Package to promote greater coordination between the different internal and external actors in safe motherhood. Initial consultation with donors and technical support agencies interested in maternal health not only promotes collaboration but also strengthens national planning and avoids duplication and waste of resources. One of the first steps in the process of identifying sources of financial support should be the convening of a meeting of national and international interested parties. This step should be taken by some individual or agency according to the agency's mandate and policies and financed by specific sources of funds.

Where the physical infrastructure is very weak, financial support for creating or improving facilities will be needed as a prerequisite for implementation.

Governments should allocate adequate resources to the national action plan within the context of the overall funds available. In many instances, a disproportionately low amount is allocated for maternal and newborn care.

Initiatives that encourage community cost-sharing and community management of facilities should be initiated. A review of experiences in Africa, including those in the Bamako Initiative, indicates that programmes in which resources are mobilized (at least partially) at the local level have a greater likelihood of increased health service utilization and better management.

The voluntary and private sectors also provide a significant proportion of obstetric and newborn services and need to be part of the decision-making process.

Develop detailed implementation plan

The national action plan describes the overall strategic

approach to implementing needed activities. However, the specific activities themselves have to be put into practice at the level of the district and should be described in a detailed implementation plan. It may not be possible to implement the planned activities simultaneously in all districts. Therefore a phased approach should be used, with targets for nationwide coverage.

Within each country, district health planners should undertake needs assessments, identify gaps locally and develop detailed implementation plans accordingly. The detailed implementation plans should include time-lines and show linkages, indicating precisely when each activity will be implemented and by whom. It should also include district level monitoring and evaluation mechanisms linked to the overall monitoring at national level.

In developing district level implementation plans, health planners and managers should examine mechanisms for ensuring connections between different levels of the health care system so that a functional referral and supervision system is set up between communities, health posts and dispensaries, health centres and district hospitals. This is of particular importance in decentralized and federal systems where there may be different supervisory and financing structures for hospitals and peripheral health facilities. This may necessitate establishing coordination mechanisms between ministries of health and local government.

Implement planned activities

Strengthen health services

The Mother-Baby Package presents a series of recommendations designed to assist health planners and programme managers in efforts to improve access to health care and to decentralize maternal and newborn health care. It is based on the premise that health services should be provided at the lowest level of the system with the capacity to do so effectively. This presumes a district-based approach with functional interlinkages between hospitals, health centres and communities.

The activities needed should be organized at four distinct levels:

- home/community level
- type I health centre level
- type II health centre level
- district level/hospital level.

The Mother-Baby Package does not recommend that all women deliver in a hospital. Nor does it normally mean building new facilities. Many hospitals are unable to treat common obstetric complications because of a lack of some supplies and/or a lack of specific skills in essential obstetric care. What is needed is regular upgrading of skills and strengthening of the supply system and the assurance that emergency services are available on a daily 24-hour basis. Much can also be accomplished at health centres. The district level needs assessment should be used to identify which facilities have the potential for upgrading to be able to offer additional services such as obstetric first aid for complications.

Upgrading of peripheral facilities should be accompanied by training and retraining of health care providers. The person with midwifery skills should be the key health care provider for implementing interventions. Unless midwives are prepared and authorized to perform life-saving procedures (as listed in health centre functions), many women will die unnecessarily. Therefore it is essential to train and authorize midwives to deal with obstetric complications.

Time is crucial for the survival of a woman with obstetric complications. Mothers can die within hours of the start of severe bleeding. If maternal deaths are to be averted, a sequence of activities needs to be accomplished within a short

time, including recognition of the complication by the family, deciding to seek care, reaching the appropriate health facility and receiving adequate care. Consequently, for effective implementation of the interventions, it is absolutely essential that:

- the community is aware of danger signs and symptoms;
- facilities providing essential obstetric care are equitably distributed geographically in order to reduce travel time;
- facilities are able to provide essential obstetric care on a daily 24-hour basis;
- the community is involved in overcoming financial and transport barriers to access.

Efforts should be made to ensure the dissemination of information to women and family members on issues such as the importance of health promoting behaviours, planning for delivery and for referral should the need arise, clean delivery, signs and symptoms of complications during pregnancy and delivery and in newborns.

Develop and manage human resources

The specific skills to be developed to improve maternal health care will depend on national and local needs and may include senior and mid-level management skills, supervisory skills, and clinical skills.

Managers and direct care providers should be appropriately trained, deployed and supported. In particular, the clinical skills and supervisory capabilities of the staff at district hospitals and health centres are crucial to the successful implementation of activities.

On the basis of the needs identified in the area of human resource development, existing curricula, teaching-learning materials and teachers/trainers should be updated in relation to both pre-service and in-service training programmes to reflect the knowledge and skills required for activity implementation. The development of the skills necessary to provide essential obstetric care should be seen as a priority.

Personnel should be trained as close as possible to their place of work. In addition, in situations where health care providers learn new skills (e.g. midwifery life-saving skills), it is essential to introduce legislation to support the application of these skills.

Training or retraining of maternal health care providers should be done in the context of the development of human resources for the health system as a whole.

The steps to be taken, then, are as follows:

- assess the need for training and retraining of maternal health care managers and providers in the overall context of human resources development
- review and revise existing curricula for pre-service and in-service training programmes to meet the identified needs
- identify and procure the required training materials
- train or retrain teachers/trainers
- train or retrain maternal health care providers
- ensure that the required legislation is in place to support the application of new skills
- monitor and evaluate training programmes.

Since the upgrading of midwives' skills is a priority, a set of midwifery training modules is being made available for this purpose. In addition to an introduction to the issues surrounding safe motherhood and essential community-based skills, the modules provide teaching materials on four of the conditions which threaten mothers' lives -- eclampsia, obstructed labour, haemorrhage and sepsis. The modules, which are designed as teaching resources for midwifery tutors/teachers, are intended to be used in continuing education or in-service training programmes for registered/enrolled midwifery personnel; however, the content of the modules could also be included in basic and/or post-basic midwifery training programmes.

Assure equipment, supplies and drugs

Provision of an adequate supply of drugs and consumable supplies is critical to the successful implementation of activities. Inadequate logistical systems can lead to chronic and widespread shortages of critical drugs and supplies. An effective logistical system is therefore essential. The main components of such a system are: selection, quantification, procurement, distribution.

Lists of equipment, supplies and drugs required for the interventions described in the Mother-Baby Package are shown in Annex 1. Thus, the selection for national or sub-national activities entails reconciliation of these lists with the corresponding national essential equipment, supplies and drugs lists, or with national treatment guidelines.

The quantification of needs is a complex but critical exercise. Proper and systematic quantification of equipment, supplies and drugs needs is important because of the heavy dependence of many countries on imports, the need to plan orders well in advance, and the vital importance of making the best use of limited budgets and scarce foreign exchange.

The procurement of the equipment, supplies and drugs needed involves selecting suppliers, placing and monitoring orders, checking delivery quantities and quality, and paying suppliers. This is typically done by the essential drugs programme or central medical stores.

The distribution of equipment, supplies and drugs includes reception, storage, stock control, transport and delivery and record-keeping for monitoring and control.

Due to the administrative complexity and cost of carrying out these logistical activities, existing mechanisms such as essential drugs programmes should always be used and, when necessary, strengthened to meet the needs of the planned interventions. If any gaps in the provision of drugs or supplies are identified in the needs assessment, they should be discussed with the relevant officials and a joint strategy for filling the gaps should be developed.

Assure quality of care

A central issue in maternal health is the quality of care. For many years, the international health community and national health planners have directed efforts towards ensuring that coverage of care -- antenatal, delivery and postnatal -- increases, but less attention has been paid to the content of the coverage. As a result, it is not uncommon for data indicative of widespread coverage to coexist with high levels of maternal and neonatal mortality and morbidity.

Quality of care has an impact on whether and where women seek care. Quality of care is critical to women's decisions to use formal health services; women are willing to travel further to reach a clinic that provides better quality care.

Improving the quality of care is critical to improving women's health, increasing access to and use of maternal health services, and to using limited resources effectively. Quality of care is often considered unaffordable for programmes with limited financial resources. However, ensuring quality care is more likely to result in a more efficient use of resources because the interventions will have greater health benefits.

The underlying philosophy for improving the quality of care recognizes the need to ensure that health care providers have the knowledge, skills, resources -- in terms of supplies and equipment -- and attitudes that are responsive to the client's individual, social, cultural and medical needs.

Standards of care

In order to monitor and evaluate quality of care, it is necessary to establish standards and develop criteria. Standards are explicit statements which stipulate the desired and/or achievable level of performance against which actual performance is compared. Criteria are variables selected as

indicators to determine whether the established standards have been met.

Standards and criteria can be classified in relation to structure (prerequisites for patient care that include human and material resources and organizational variables), process (the actual practice or delivery of care), and outcome (the effect or end result of care).

It is important, when monitoring and evaluating the care provided, to attempt to use a structure-process-outcome framework.

Methods and tools

There are numerous methods used to evaluate the quality of service delivery. Examples include the collection and analysis of data through record reviews, direct observation, provider and client interviews, and focus group discussions. These methods can be used individually or collectively as part of locally developed or prepackaged tools for the evaluation of the quality of care.

The elements of quality of care

Promotion and protection of health: People need to know about pregnancy and childbirth and to understand the danger signs.

Accessibility and availability of services: Women should be able to benefit from quality of care, understand the full range of services available to them and receive care at the lowest appropriate level of the system close to where they live.

Acceptability of services: Women need privacy, they may prefer to consult a female health worker, and they should be assured of confidentiality.

Technical competence of health care providers: Technical competence depends on regular training and retraining and on clear guidelines for clinical treatment.

Essential supplies and equipment: Norms and standards should be established for the necessary supplies and equipment at each level of care and their availability should be ensured.

Quality of client-provider interaction: Providers must treat clients with respect, be responsive to their needs and avoid judgmental attitudes.

Information and counselling for the client: Clients should have the opportunity to talk to health care providers and should be offered guidance on any health problems identified.

Involvement of clients in decision-making: Providers should see clients as partners in health care and should involve them in decision-making as active participants in their own health care.

Comprehensiveness of care and linkages to other reproductive health services: Maternal health care is a unique opportunity to provide women with comprehensive reproductive health care and to address other issues, such as nutrition and sexually transmitted diseases.

Continuity of care and follow-up: Maternal health care should be part of a continuum of care comprising antenatal, delivery and postpartum care. Clients must, however, be seen as people with health needs that continue throughout their lives.

Support to health care providers: Health care providers at all levels need the backup and economic and social support of the State and the communities in which they work.

An example that combines two of these methods -- record reviews and interviews -- is the maternal and perinatal audit. The audit can be used to investigate deaths and other adverse

outcomes of pregnancy. Although the audit deals primarily with outcomes, it can be instrumental in identifying problems related to structure (e.g. accessibility of health care facilities) and process (e.g. correctness of clinical practices).

Organize information, education and communication (IEC)

A communication strategy is a crucial element of a national plan, as is its successful implementation by countries. Such a communication strategy must be developed at different levels: at the national level, to provide a general framework for planners; within specific sectors which are key to reaching the safe motherhood goals; and at local level, to support specific interventions and activities.

The aim of the communication component of the national plan should be to achieve observable and measurable behaviour and attitude changes among specific audiences. This communication component must be based on the needs of the various audiences targeted. Needs must be identified through careful assessment, and focus group discussions in communities. The primary target is of course women of childbearing age and their families. They are the priority "consumers", and the communication strategy must be based on their knowledge, perceptions, attitudes, and the constraints they face.

Any constraints or cultural barriers should be identified in the context of each country. This can be done through focus group discussions in communities. In order to devise relevant and prioritized messages, it is imperative to look into the current behaviour patterns of various groups, including health workers.

Important elements of communication include informing the community about early recognition of obstetric emergencies and the need for community efforts to arrange and finance transport to the health centre or hospital. Signs and symptoms of complications should be an integral part of communication messages. These messages should enhance the woman's ability to use existing transport and to make appropriate decisions.

In order to be successful, communication requires well-planned and multisectoral interventions which combine information, educational and motivational processes. Communication messages should be delivered through the channels that are most effective for reaching each priority audience.

The communication materials should be consistent with the training materials, so that there is an integrated training-communication package. Both the mass media and interpersonal communication are needed.

Other key audiences are all those working in the health system with whom the mother-to-be comes into contact: community health workers, nurses and midwives, but also doctors and district health officers. Equally crucial are all those in the community who have a determining influence on mothers' behaviour: their husbands and families, elders, religious leaders and others.

Communication messages should also be directed at key decision-makers in relevant development sectors such as the Ministries of Health, Education, Social Welfare, Information and the Media, as well as women's organizations, NGOs and religious organizations. These target audiences can subsequently become the conduits for the social mobilization and community involvement efforts needed to reach the safe motherhood goals.

Communication by itself is rarely enough to change health behaviour. It should be supplemented by an education programme and synchronized with the health services.

Promote social mobilization

Activities for mothers and newborns have to be part of a social response to the suffering caused by unnecessary death. The critical issue is to outline the roles and

responsibilities of people in different walks of life. Some groups are of particular importance. For instance:

- Women's organizations can play a critical role in mobilizing public, government and social opinion in this area. The demand for adequate care and quality of services can be generated by these organizations.
- NGOs have played a very significant role in mobilizing resources for safe motherhood and reproductive health programmes.
- Local governments have an increasing role in view of the worldwide trend towards decentralization and devolution of authority.

There are few recommendations that can be made at the global level for social mobilization, but it is imperative to underline the importance of focusing attention on this important area.

The recipients of these services should be encouraged to suggest ways in which the service package can be improved. One specific way to do this is to involve women who have recently given birth in the planning and/or management of services at the health facility.

Monitor and evaluate

Monitoring should be an ongoing process of collecting and analysing information about implementation of the programme; it should involve regular assessment of whether and how activities are being carried out as planned so that problems can be discussed and dealt with. Monitoring should serve to follow the progresses of planned activities, identify problems, give feedback to staff and solve problems before they can cause delays. Data collected should be processed and analysed in a timely fashion. Results of the analysis should be disseminated to people who are in position to act and react.

Implementation should be evaluated at regular intervals to assess the effectiveness and impact of either particular parts of the plan or the plan as a whole. Data from different monitoring and evaluation methods should be collected, the results compiled and the combined information used to get a better picture of progress.

Monitoring and evaluation are not clearly separable, except that monitoring tends to focus on ongoing implementation and evaluation is focused on effectiveness and impact.

It is neither feasible nor desirable to evaluate all the major activities and tasks necessary to carry out interventions at all levels. Managers should select the most important items for monitoring and evaluation based on current priorities. Whenever possible, existing systems for data collection, analysis, and response, should be utilized and strengthened. The following minimal list of indicators is suggested for monitoring from national to subdistrict levels. These focus on three sets of indicators -- maternal health, family planning and newborn health -- and provide structure, process and impact indicators.

Table 18: Selected monitoring indicators

ANNEX 1

ESSENTIAL DRUGS LIST FOR MOTHER-BABY PACKAGE

UNIPAC number

Anaesthetics - General and pre-operative medication
Halothane (inhalation)
Nitrous oxide (inhalation)
Oxygen (inhalation)
Ketamine (injection)
Thiopental (injection)
Atropine (injection)
Suxamethonium chloride (injection)

Anaesthetic - Local
Lidocaine 2% and 5% (injection)

Analgesics
Acetylsalicylic acid (tablet)
Paracetamol (tablet)
Morphine (injection)
Pethidine (injection)

Antianaemia drugs
Ferrous salt + folic acid (tablet)
Iron dextran (injection)

Antibacterials/anti-infectives
Amoxicillin (tablet)
Ampicillin (injection)
Procaine benzylpenicillin (injection)
Benzylpenicillin (injection)
Benzathine benzylpenicillin (injection)
Ceftriaxone (injection)
Chloramphenicol (capsule)
Chloramphenicol (injection)
Clotrimazole (pessary)
Miconazole (pessary)
Doxycycline (capsule)
Gentamicin (injection)
Kanamycin (injection)
Metronidazole (tablet)
Metronidazole (injection)
Silver nitrate (eye drops)
Sulfamethoxazole + trimethoprim (tablet)
Tetracycline (eye ointment)

Antimalarials
Chloroquine (tablet)
Chloroquine (injection)
Quinine (tablet)
Quinine (injection)
Sulfadoxine + pyrimethamine (tablet)
Proguanil (tablet)

Anthelminthics
Mebendazole
Pyrantel

Anticonvulsants
Diazepam (injection)
Magnesium sulfate (injection)

Antihypertensive and other related drugs
Hydralazine (injection)
Methyldopa (tablet)
Propranolol (tablet)

Diuretics
Furosemide (injection)

Oxytocics
Ergometrine (tablet)
Ergometrine (injection)

	Oxytocin (injection)	
	Intravenous electrolyte solutions	
	Compound solution of sodium lactate (injectable solution)	
	Sodium chloride 0.9% isotonic (injectable solution)	
	Glucose 5% isotonic (injectable solution)	
	Glucose with sodium chloride (injectable solution)	
	Plasma substitutes	
	Dextran 70 (injectable solution)	
	Anticoagulant and antidote	
	Heparin sodium (injection)	15 523 00
	Protamine sulfate (injection)	
	Antiallergic	
	Epinephrine (injection)	15 323 05
	Antidiabetic agent	
	Insulin (injection)	15 696 00
	Contraceptives	
	Low dose combined pill (ethinylestradiol + levonorgestrel)	15 140 10
	Progestogen only pill (levonorgestrel)	
	Medroxy-progesterone acetate (depot injection)	
	Copper-containing intrauterine device	
	Subdermal implants	
	Condoms	15 552 80
	Diaphragms	
	Vaccines	
	Tetanus vaccine (injection)	15 060 05
	Poliomyelitis vaccine (oral solution)	15 559 65
	BCG vaccine (injection)	
	Immunologicals	
	Anti-D immunoglobulin (injection)	
	Antitetanus immunoglobuline (injection)	15 500 10
	Antiseptics	
	Chlorhexidine (solution)	
	Polyvidone iodine (solution)	
	Disinfectants	
	Calcium hypochlorite (solution)	

15 050 48
15 050 98
15 606 78
15 200 11
15 590 05

15 310 15
15 310 30

15 444 00
15 519 60

15 556 50

15 640 55
15 371 00
15 100 00

15 320 00

15 606 10
15 606 00
15 680 45

15 553 55

15 436 25

15 524 06
15 524 10
15 601 10

15 505 25

15 456 00
15 452 00

15 608 00
15 643 20
15 521 00

15 432 00

(-shipped directly from supplier)

15 315 05
15 531 05

ANNEX 2
EQUIPMENT LIST FOR MOTHER-BABY PACKAGE AT EACH LEVEL
(Number in brackets refers to suggested quantity; basic equipment and numbers of packs required should be determined by the number of births and related complications anticipated)

UNIPAC number

1. Basic Equipment for all Levels
Sphygmomanometer (aneroid) and
Stethoscope (binaural)
Baby weighing scale
Fetal stethoscope
Instrument sterilizer and
Forceps sterilizer and
Jar for forceps
Spring type dressing forceps (stainless steel)
Kidney basins (stainless steel)
Sponge bowls (stainless steel)
Clinical oral thermometer (dual Celsius/Fahrenheit scale)
Surgeon's hand brush
Heat source
Syringes and needles
Cannula 18 gauge
Suture needles and
suture material
Urinary catheters
Adult ventilator bag and mask
Mouth gag
Surgical gloves
Scissors

2. Delivery (for all levels)
Artery forceps (1)
Blunt-ended scissors (2)
Cord ties (2)
Gloves (2 pair)

3. Perineal/Vaginal/Cervical Repair (for all levels)
Sponge forceps (1)

Needle holder (1)
Stitch scissors (1)
Dissecting forceps, toothed (1)
Vaginal speculum, large (bivalve) (1)
Vaginal speculum (bivalve) (1)

4. Neonatal Resuscitation (for all levels)
Mucus extractor (1)
Infant face mask (2 different sizes)
Neonatal Resuscitation (for hospital only)
Ventilatory bag (1)
Suction catheter Ch 12 (2)
Suction catheter Ch 10 (2)
Infant laryngoscope with spare bulb and batteries (1)
Endotracheal tubes 3.5 (1)
Suction apparatus:
foot-operated or
electrically operated

5. Vacuum Extraction or Forceps Delivery (for type II health
centre and hospital)
Vacuum extractor
Obstetric forceps

6. Obstetric Laparotomy/Caesarean Section (for hospital)
Stainless steel instrument tray with cover (1)
Towel clips (6)
Sponge forceps, 22.5 cm (6)
Straight artery forceps, 16 cm (4)
Uterine haemostasis forceps, 20 cm (8)
Hysterectomy forceps, straight, 22.5 cm (4)
Mosquito forceps, 12.5 cm (6)
Tissue forceps, 19 cm (6)
Needle holder, straight, 17.5 cm (1)
Surgical knife handle
No. 3 (1)
No. 4 (1)
Surgical knife blades (2)
Surgical knife blades (2)
Triangular point suture needles, 7.3 cm, size 6 (2)
Round-bodied needles No. 12, size 6 (2)
Abdominal retractors, double-ended (Richardson) (2)
Curved operating scissors, blunt pointed (Mayo), 17 cm (1)
Straight operating scissors, blunt pointed (Mayo), 17 cm (1)
Suction apparatus
foot-operated or
electrically operated
Suction nozzle (1)
Suction tubing
Intestinal clamps, curved (Dry), 22.5 cm (2)
Intestinal clamps, straight, 22.5 cm (2)
Dressing (non-toothed tissue) forceps
15 cm (2)
25 cm (1)

7. Craniotomy (for hospital)
Decapitation hook (1)
Cranial perforator (Simpson) (1)
Scalp forceps (Willet) (4)

8. Basic Equipment for Uterine Evacuation (for type II health
centre and hospital)
Vaginal speculum (bivalve) (1)
Sponge (ring) forceps or uterine packing forceps (1)
Single tooth tenaculum forceps (1)

Long dressing forceps (1)
Uterine dilators, sizes 13-27 (French) (1 set)
Sharp and blunt uterine curettes, size 0 or 00 (1)
Malleable metal sound (1)
Manual vacuum aspiration
Basic uterine evacuation instruments PLUS:
Vacuum syringes (single or double valve)
Silicone lubricant
Adapters
Flexible cannulae, size 4 to 12 mm
Vacuum aspiration with electric pump
Basic uterine evacuation instruments PLUS:
Vacuum pump with extra glass bottles
Connecting tubing
Cannulae (any of the following):
flexible: 5 - 12 mm
curved rigid: 7 - 14 mm
straight rigid: 7 - 12 mm
9. Mini-laparotomy (to be used with basic
laparotomy/caesarean
section pack) (for hospital)
Tissue forceps (Babcock), 19.5 cm (2)
Tenaculum forceps (1)
Uterine elevator (1)
Tubal hook (1)
Abdominal retractor (Richardson-Eastman) (2)

10. Insertion and Removal of IUD (for all levels)
Bivalve speculum
small
medium
large
Sponge forceps (1)
Long straight artery forceps (1)
Uterine sound (1)
Vulsellum forceps (1)
Scissors dissecting bluntpointed (1)

11. Insertions and Removals of Contraceptive Subdermal
Implants (for type II health centre and hospital)
Trocar with plunger, no. 10
Dissecting forceps
Tweezers

12. Vasectomy (for hospital)
Forceps, haemostatic
straight, 14 cm (4)
curved, 12.5 cm (2)
Tissue forceps (Allis), 15 cm (2)
Surgical knife handle, No. 3 (1)

13. Anaesthesia (for hospital)
Anaesthetic face masks
Oropharyngeal airways
Laryngoscopes
Endotracheal tubes:
with cuffs (8 mm and 10 mm)
Intubating forceps (Magill):
in an emergency, ovum forceps can be used instead
Endotracheal tube connectors:
15 mm plastic (can be connected directly to the
breathing valve)
(3 for each tube size)
Spinal needles (range of sizes, 18-gauge to 25-gauge)

Suction apparatus:
foot-operated or
electrically operated

Anaesthesia apparatus (draw-over system)
Oxygen cylinder, with manometer and flowmeter (low flow)
Tubes and connectors

14. Provision of Donor Blood for Transfusion (for hospital)
Cross-matching
8.5 g/l Sodium chloride solution
20% Bovine albumin
Centrifuge
37C Water bath (or incubator)
Pipettes Volumetric
1 ml/
2 ml/
3 ml/
5 ml/
10 ml/
20 ml
Test tubes - small size
Test tubes - medium size
Collection of blood
Sphygmomanometer cuff
Airway needle for collecting blood
Ball (for donor to squeeze)
Artery forceps
Scissors
Pilot bottles (containing 1 ml ACD solution)
Slides (microscope)
Compound microscope
Microscope illuminator

15. Laboratory
Preparation and staining of thin blood films
Microscope (binocular)
Immersion oil
Clean glass slides and cover slides
Glass rods
Sink or staining tank
Measuring cylinder (50 ml)
Wash bottle containing buffered water
Interval timer clock
Rack for drying slides
Leishman stain, methanol
Thick blood films for malaria parasites
Field stains A and B
Glass containers
Microscope slides
Blood lancets
Total and differential leucocyte count
Counting chamber (Neubauer)
Pipette (0.05 ml)
Pipette (graduated, 1.0 ml)
Türk diluting solution
Tally counter, differential if possible
Estimation of haemoglobin
Haemoglobinometer
Erythrocyte volume fraction (haematocrit)
Microhaemotocrit centrifuge (manual or electric)
Scale for reading results
Heparinised capillary tubes (75 mm x 1.5 mm)
Spirit lamp
Ethanol
Detection of glucose in urine
Indicator papers and tablets or, if not available,
Benedict solution
Pipette

Pyrex test-tubes

Test-tube holder	
Beaker	
50 ml	
150 ml	
Spirit lamp	
Detection of ketones in urine	
Indicator papers and tablets or, if not available,	
Test-tubes	
Rack	
Measuring cylinder (10 ml)	
Dropping pipette	
Sodium nitroprusside	
Glacial acetic acid	
Ammonia	
Detection of protein in urine	
Indicator papers and tablets or, if not available,	
Test-tubes	
Pipette (5 ml)	
Sulfosalicyclic acid (300 g/l aqueous solution)	
	06 830 00
	06 860 00
	01 455 00
	06 860 00
	01 600 00
	07 352 00
	07 210 00
	02 100 00
	02 250 00
	04 810 50
	05 140 00
	01 700 00
	07 824 05
	07 092 10
	07 593 00
	05 635 00
	03 220 00
	03 290 00
	07 245 00
	07 745 00
	03 290 00
	07 350 00
	07 436 00
	07 375 00
	07 790 00
	07 775 00
	03 190 00
	08 450 00
	08 450 00
	07 467 00
	07 606 40
	07 606 05

07 915 00
07 325 00

02 700 00
07 119 00
07 350 00
07 275 00
07 415 00
07 285 00
07 305 00
07 365 00
07 436 00

07 450 00
07 455 00
07 460 00
07 464 00
07 593 00
07 593 55
07 677 00
07 706 00
07 712 00

07 606 70
07 606 05

07 210 00
07 222 00

07 597 00

07 780 00
07 350 00
07 400 00
07 222 00
07 182 00
07 147 00
07 752 00

99 500 10

07 365 00
07 400 00

07 676 00

07 770 00
07 775 00
07 780 00
07 350 00
07 275 00
07 752 00
07 424 00
07 706 00

07 375 00

07 245 00
07 300 00
07 380 00
07 450 00

07 470 00
07 009 00
07 467 00

07 337 00

07 480 00
07 482 00
07 485 00

07 606 40
07 606 05
01 002 00

03 820 00
03 245 00

09 256 00

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09 678 00/
09 679 05/
09 679 10/
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09 793 00
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07 245 00
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09 571 04
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09 690 00
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09 212 00
09 834 00
09 685 15

09 690 00
05 320 00

09 482 00
09 653 00
09 661 00

09 326 00

09 500 00

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09 264 95
09 551 05

10 125 00
09 679 10
09 679 15
09 790 00
03 310 00

09 150 00
09 174 40

09 790 00
09 685 20
09 350 00

10 830 00

05 840 05
09 790 00
09 665 00
10 900 00

ANNEX 3
DEFINITIONS(18)

Abortion:
Abortion is termination of pregnancy (expulsion or extraction of embryo/fetus) before 22 weeks of gestation or below 500 g weight of fetus.

Abruptio placentae:
Premature detachment of the placenta, often attended by shock, oliguria and fibrinogenopenia.

Anaemia in pregnancy:
Anaemia in pregnancy is defined as a haemoglobin concentration of less than 110 g/l.
Degree of anaemia -- classified as moderate (70-109 g/l), severe (40-69 g/l) and very severe (<40 g/l).
Corresponding haematocrit (PCV) values are 24-37%, 13-23% and <13% respectively.

Antepartum haemorrhage:
Bleeding from the genital tract occurring after the 20th week of pregnancy but before delivery of the baby.

Birth asphyxia:
Birth asphyxia is characterized by absent or depressed breathing at birth.

Caesarean delivery:
Abdominal delivery of the baby by laparotomy and section of uterus.

Clean delivery:
A clean delivery is one that is attended by health staff in a medical institution or by a trained birth attendant at home observing principles of cleanliness (clean hands, clean surface, clean cutting of the cord).

Eclampsia:
Convulsions, sometimes followed by coma, occurring in a pregnant or puerperal woman and associated with pre-eclampsia.

Essential obstetric care:
The minimal health care interventions needed to manage or prevent complications of pregnancy and delivery. It comprises surgical obstetrics (caesarean delivery, treatment of sepsis, repair of high vaginal and cervical tears, laparotomy, removal of ectopic pregnancy, evacuation of the uterus, intravenous oxytocin, amniotomy, craniotomy, symphysiotomy); anaesthesia; medical treatment (of sepsis, shock, eclampsia, anaemia); blood replacement; manual procedures (removal of placenta, labour monitoring, repair of episiotomies and perineal tears, vacuum extraction, partography); management of women at high risk (intensified prenatal care); and a range of contraceptive methods including female sterilization, vasectomy, subdermal implants, IUD, oral contraceptives etc, and neonatal special care.

Hospital:
In the context of the Mother-Baby Package, a hospital is a health facility performing all of the essential obstetric functions listed. It is synonymous with first referral level -- the district or subdistrict hospital.

Hypertensive disorders of pregnancy:
A diagnosis of hypertension in a pregnant women is made when the blood pressure is 140/90 mmHg or greater, or there has been an increase of 30 mmHg systolic or a 15 mmHg diastolic rise over baseline values on at least two occasions, six or

more hours apart. A differentiation should be made between pregnancy-induced hypertension (which occurs without a previous history of hypertension) and that associated with pre-existing hypertension.

Low birth weight:
Birth weight less than 2500 g.

Maternal mortality:
A maternal death is the death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration and the site of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal mortality rate:
The maternal mortality rate is the number of maternal deaths per 100 000 women of reproductive age.

Maternal mortality ratio:
The maternal mortality ratio is the number of maternal deaths per 100 000 live births.
Midwife (Joint ICM/FIGO/WHO definition, 1992):
"A midwife ... has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery. She must be able to give the necessary supervision, care and advice to women during pregnancy, labour and the postpartum period, to conduct deliveries on her own responsibility and to care for the newborn and the infant. This care includes preventive measures, the detection of abnormal conditions in mother and child, the procurement of medical assistance and the execution of emergency measures in the absence of medical help. She has an important task in health counselling and education, not only for the women but also within the family and community. The work should involve antenatal education and preparation for parenthood and extends to certain areas of gynaecology, family planning and child care. She may practise in hospitals, clinics, health units, domiciliary conditions or in any other service."

Neonatal death:
A death of a liveborn infant during the period which commences at birth and ends 28 completed days after birth. It may be subdivided into early neonatal deaths, occurring during the first seven days of life, and late neonatal deaths, occurring after the seventh day but before 28 completed days of life.

Neonatal death rate:
Number of deaths among live births during the first 28 completed days of life per 1000 live births.

Newborn hypothermia:
Hypothermia occurs when the body temperature (axillary) drops below 36.5C (97.7F).

Obstructed labour:
A labour in which progress is arrested by mechanical factors and delivery often requires caesarean section.

Perinatal mortality:
The number of deaths of fetuses weighing at least 500 g (or when birth weight is unavailable, after 22 completed weeks of gestation or with a crown-heel length of 25 cm or more) plus the number of early neonatal deaths, per 1000 total births.

Placenta previa:
A placenta which develops in the lower uterine segment and may partially or completely cover the internal os. Painless

haemorrhage in the last trimester is the most common symptom.

Postpartum haemorrhage:
Defined as the loss of 500 ml or more of blood from the genital tract after delivery of the baby. In anaemic mothers, a lower level of blood loss should be the cut-off point for starting therapeutic action.

Pre-eclampsia:
A condition in pregnancy manifested by hypertension, oedema and/or proteinuria.

Premature rupture of membranes (at term or pre-term):
Rupture of the membranes before the onset of labour.

Pre-term:
Less than 37 completed weeks of gestation.

Prolonged labour:
Active labour with regular uterine contractions for more than 12 hours.

Prolonged rupture of the membranes (regardless of labour status):
Rupture of the membranes for more than 12 hours.

Puerperal sepsis:
Infection of the genital tract occurring at any time between the onset of rupture of membranes or labour and the 42nd day postpartum in which, apart from fever, one or more of the following are present:
- pelvic pain
- abnormal vaginal discharge (e.g. presence of pus)
- abnormal smell/foul odour of discharge
- delay in the rate of reduction of size of uterus (<2 cm/day during first 8 days).

Rooming-in:
The arrangement (in a maternity unit) that allows the mother to be with her newborn at all times, without interruption.

Safe/atraumatic delivery:
A safe delivery is one where the birth attendant monitors progress to avoid prolonged labour and to detect obstructed labour which can lead to haemorrhage, infection and shock in the mother and birth asphyxia and brain damage in the infant.

Skin-to-skin contact:
This means utilizing the mother as a heat source for the baby. The method consists of placing the baby (naked except for a diaper) on the mother's chest and covering them. It facilitates early breast-feeding.

Stillbirth:
The death of a fetus weighing at least 500 g (or when birth weight is unavailable, after 22 completed weeks of gestation or with a crown-heel length of 25 cm or more), before the complete expulsion or extraction from its mother.

Unsafe abortion:
Unsafe abortion is defined as a procedure for terminating an unwanted pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards, or both. An abortion can be considered as unsafe when it is performed under circumstances in which there are risks of morbidity and mortality over and above those inherent in the procedure when performed under optimal conditions -- that is, under conditions of asepsis and with appropriate technical skills and equipment.

Evaluation form
The World Health Organization welcomes comments on the Mother-Baby Package, especially from those working to alleviate the burden of maternal deaths and disabilities in developing countries. We would be very grateful if you could find the time to complete this form and either fill it in online or print it out and post to us at:

Department of Reproductive Health and Research
World Health Organization
20 Avenue Appia
CH-1211 Geneva 27
Switzerland

[FrontPage Save Results Component]

1. What is your overall evaluation of the Mother-Baby Package?

Very Good
Good
Poor

2. Will the Mother-Baby Package be useful to you in your work?
Very useful
Moderately useful
Not useful

3. Is the Mother-Baby Package relevant in your country situation?
Very relevant
Moderately relevant
Not relevant

4. How do you plan to use the Mother-Baby Package?

5. Which parts of the Mother-Baby Package did you find most useful or informative?
The WHY? section
The WHAT? section
The HOW? section
All three

6. Which parts of the Mother-Baby Package will you like to see further expanded?
The WHY? section
The WHAT? section
The HOW? section
All three

7. The Mother-Baby Package is designed as a guide to strategy and programme planning. Other guidelines are available or in preparation. Which kinds of guidelines would you find most useful?
Clinical guidelines (clinical management of obstetric complications)
Managerial guidelines (supplies, logistics)
Costing guidelines
Training and supervision guidelines
Information, education and communication guidelines

8. What do you think are the major strengths of the Mother-Baby Package?

9. Are there ways in which the Mother-Baby Package could be changed to make it more useful to you? If yes, how?
Yes
No

10. Please tell us something about yourself. Which of the categories below best describes what you do?
Policy-maker/planner
Health administrator
Obstetrician/gynaecologist
General doctor
Midwife
Nurse
Other health care provider
Employee
Researcher
Teacher or trainer
Other (specify)

11. Where do you work?
Health centre or dispensary
Hospital (more than 15 beds)
Hospital (less than 15 beds)
Ministry of Health
International organization
Nongovernmental organization
Other (specify)

Thank you for taking the time to fill in this form. We appreciate your feedback.
Please press 'Submit' when completed.

FOOTNOTES
1. This table represents 1993 estimates of 1990 data. Applying the 1996 maternal mortality model to the 1990 data gives a higher total of 585 000 maternal deaths
2. Care of Mother and Baby at the Health Centre: a practical guide. Geneva, World Health Organization, 1994, WHO/FHE/MSM/94.2.
3. See definition in Annex 4.
4. This table represents 1993 estimates of 1990 data. Applying the 1996 maternal mortality model to the 1990 data gives a higher total of 585 000 maternal deaths
5. Adapted from Maine, D. Safe Motherhood Programmes: Options and Issues, Columbia University, NY.
6. Source: WHO Maternal Health and Safe Motherhood Programme estimates.
7. Estimates based on clinical experience.
8. Report of the technical working group on antenatal care. 31 October - 4 November 1994. Geneva, World Health Organization.
9. Preventing prolonged labour: a practical guide - The Partograph. Part I: Principles and Strategy (WHO/FHE/MSM/93.8); Part II: User's Manual (WHO/FHE/MSM/93.9); Part III: Facilitator's Guide (WHO/FHE/MSM/93.10); Part IV: Guidelines for operations research (WHO/FHE/MSM/93.11). World Health Organization, 1993.
10. Prevention and management of severe anaemia in pregnancy: report of a technical working group. 20-22 May 1991. Geneva, World Health Organization, 1994, WHO/FHE/MSM/93.3.
11. STD Case management training module. Geneva, World Health Organization, (WHO/GPA/TCO/PMT/95.18A)

Management of sexually transmitted diseases. Geneva, World Health Organization, (WHO/GPA/TEM/94.1)
12. Detecting pre-eclampsia: a practical guide. Using and maintaining blood pressure equipment. Geneva, World Health Organization, (WHO/MCH/MSM/92.3)
13. Clinical management of abortion complications: a practical guide. Geneva, World Health Organization, (WHO/FHE/MSM/94.1)
14. Safe blood and blood products. Distance learning material. Geneva, World Health Organization, Global Programme on AIDS.
15. The prevention and management of postpartum haemorrhage. Report of a technical working group. 3-6 July 1989. Geneva, World Health Organization, WHO/MCH/MSM/92.3.
16. The prevention and management of puerperal infections. Report of a technical working group. 20-22 May 1992. Geneva, World Health Organization, (WHO/FHE/MSM/95.4)
17. 15-49 years
18. These definitions are not to be considered as official WHO definitions but are provided as a guide to be used with this document.