S A F E M O T H E R H O O D

Care of mother and baby at the health centre: a practical guide

MATERNAL AND NEWBORN HEALTH /
SAFE MOTHERHOOD UNIT
DIVISION OF REPRODUCTIVE HEALTH (TECHNICAL SUPPORT)
WORLD HEALTH ORGANIZATION
GENEVA

P r a c t i c a l G u i d e

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Report of a Technical Working Group

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ABSTRACT

The purpose of this report is to define the functions, tasks and skills needed for the comprehensive care of mother and baby, covering the preconceptual, prenatal, intranatal and postnatal periods which can be provided at the health centre and in the community. It will also examine the role of the health centre in training, supervision and continuing logistic support for community-based care, whether provided through traditional birth attendants or community health workers. It also looks at its role as a crucial link to the first referral centre.

The document presents a series of recommendations designed to assist health planners and programme managers in efforts to improve access to health and to decentralize maternal and newborn health care. However, the feasibility and appropriateness of the recommendations will vary according to local conditions. They should, therefore, be used as a guide to action following appropriate adaptation.

WHO welcomes comments from users of this document and will use all such input in the preparation of future revisions. This version of the document represents the second revision of the original document. Please send any comments to the Maternal and Newborn Health/Safe Motherhood Unit, Division of Reproductive Health (Technical Support), World Health Organization, 1211 Geneva 27, Switzerland.

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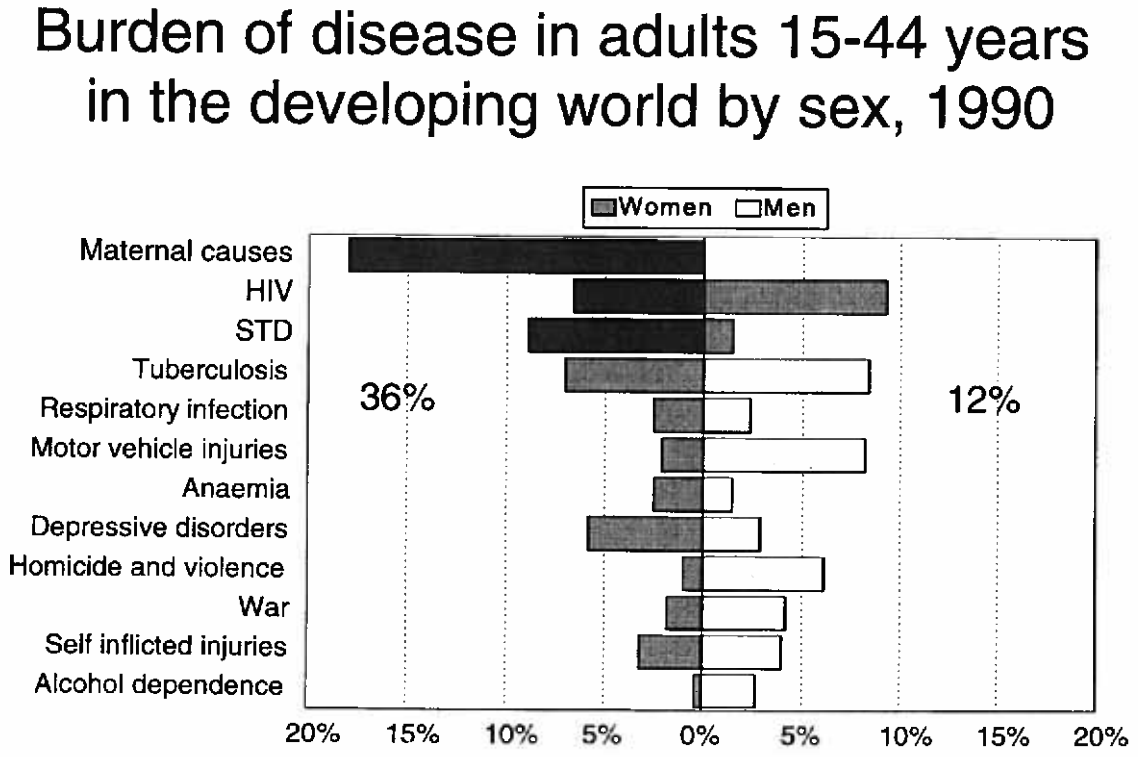
INTRODUCTION

Of all the gaps between developing countries and industrialized countries, one of the greatest is that of the risks to women in pregnancy and childbirth. Pregnant women in Africa and South Asia face a risk of death in pregnancy and childbirth that may be up to 200 times that of a women living in an industrialized country. Because of the higher fertility rates in developing countries, the lifetime risk in Africa may be as high as 1 in 22, compared to 1 in 6,000 in Northern Europe.

Every year more than 150 million women become pregnant in developing countries. Almost 500,000 of them will die of pregnancy-related causes, and 50 million will suffer a significant complication of pregnancy. In addition, there are seven million perinatal deaths which are the result of maternal health problems. Four million are stillbirths and three million are early neonatal deaths. Of these, about half are associated with low birth weight, and many millions more who are born with a low birth weight survive with an increased risk of later infant death. Other causes of neonatal deaths include neonatal tetanus, cord infection and birth injuries.

The World Development Report 1993 (World Bank, 1993) incorporates the findings of a World Health Organization/World Bank study that estimates the impact in loss of healthy life from about 100 diseases and injuries in 1990 (Murray and Lopez, in press). This loss is measured in units of disability-adjusted life years (DALYs), an integrative measure that is able to combine the loss of life from premature death with the loss of healthy life from disability. This demonstrates that for women aged 15 to 44 years in developing countries, 18% of the total burden of disease is caused by pregnancy-related conditions, 15.5% by sexually transmitted diseases (STDs) and human immunodeficiency virus (HIV), and a further 2.5% by anæmia, making a total of 36%. For children under five years, 18.6% of the loss of healthy life is caused by perinatal conditions resulting from complications of pregnancy and childbirth. Based on these findings and cost-effectiveness studies of health interventions, the World Development Report recommends a package of five essential groups of clinical interventions to be the core of health services in developing countries. These are prenatal and delivery care, family planning services, management of the sick child, treatment of tuberculosis, and case-management of sexually transmitted diseases. Three of these five relate specifically to maternal and reproductive health care.

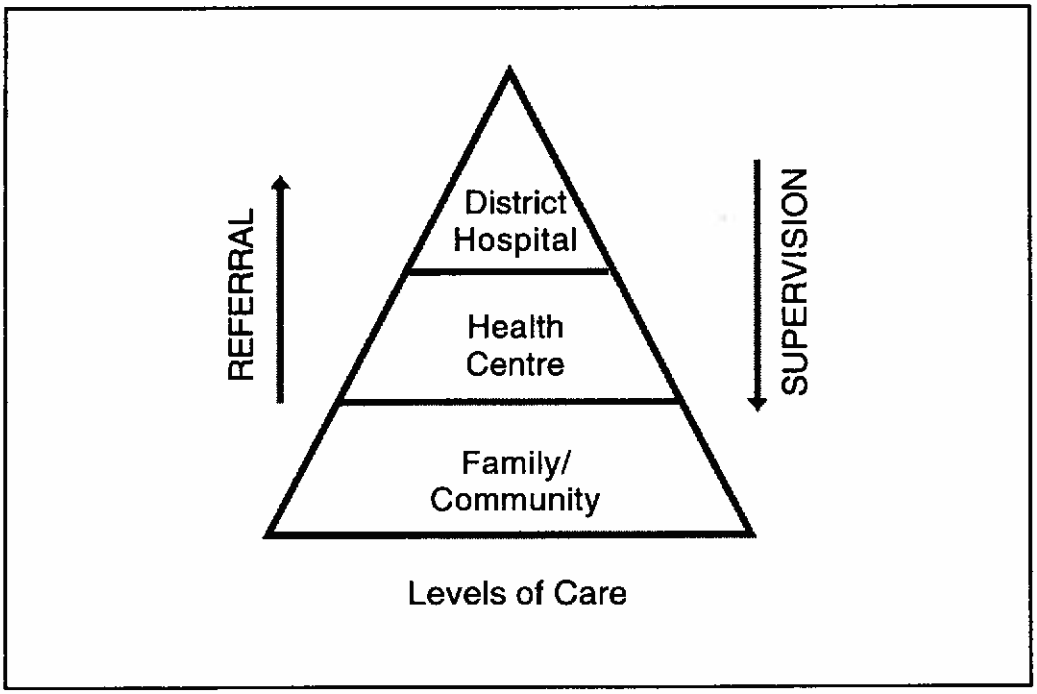


The five main causes of maternal death are haemorrhage, unsafe abortion, obstructed labour, hypertensive disorders and sepsis. While small reductions in the death rates from these causes have been achieved through community-based programmes of family planning and training of birth attendants, substantial and sustained reduction in death rates requires access to adequate facilities to treat obstetric emergencies at a first referral level. The application of the 'risk approach', which uses demographic factors such as age and parity to identify women at high risk of complications has proven unsatisfactory. Even the experience of complications in previous pregnancies has been shown to be an inadequate predictor of risk in the present pregnancy. Complications occur in women without any of these risk factors. Consequently, health and survival in pregnancy and childbirth depend to a great extent upon the early detection of complications and the referral of women to a facility where they can get appropriate care (Rooney, 1992).

In 1986, WHO convened a Technical Working Group to define the essential obstetric care necessary at first referral level for the reduction of maternal mortality and morbidity, and to describe the staff, training, supervision, facilities, equipment and supplies needed (World Health Organization 1991). This definition of essential obstetric care at first referral level has been of invaluable service to health planners of maternity services. However, it has not helped to reverse the polarization that has existed for twenty-five years between the development of hospital maternity services on the one hand and the training of traditional birth attendants on the other, with little or no attention being given to the development of a comprehensive system of maternity care, linking together and maximizing the skills and advantages of health workers at all levels of care.

While the initial intention of the Technical Working Group was to define the secondary care services required at a district hospital, the book makes it clear that many of the life-saving procedures can and should be performed by persons with midwifery skills, trained TBAs, midwives and other non-physician health workers in more peripheral, less sophisticated facilities. The purpose of this present report is, therefore, to define the functions tasks and skills needed for the comprehensive care of mother and baby, covering the preconceptual, prenatal, intranatal and postnatal periods which can be provided at the health centre and in the community. It will also examine the role of the health centre in training, supervision and continuing logistic support for community-based care, whether provided through traditional birth attendants or community health workers. It also looks at its role as a crucial link to the first referral centre.

A schematic model of the ideal health care pyramid, linking the three levels - family and community, health centre, and district hospital - is shown below:



The key to success in making this concept function effectively is the person with midwifery skills who can function at all levels of the health care pyramid and, most critically, serve as the locus of communication between the community and the referral level. This level of skills should, ideally, be located in the health centre. Unfortunately in many countries, lack of investment in resources and skills at this level have eroded the pyramid and resulted in situations where the health centre level is absent or by-passed because it is perceived (correctly) to be inefficient.

This document presents a series of recommendations designed to assist health planners and programme managers in efforts to improve access to health and to decentralize maternal and newborn health care. However, the feasibility and appropriateness of the recommendations will vary according to local conditions. They should, therefore, be used as a guide to action following appropriate adaptation. WHO welcomes comments from users of this document and will use all such input in the preparation of a definitive document within the next 2-3 years. Please send any comments to Maternal and Newborn Health/Safe Motherhood Unit, Division of Reproductive Health (Technical Support), World Health Organization, 1211 Geneva 27, Switzerland.

1 THE ROLE OF THE HEALTH CENTRE IN MATERNAL HEALTH

1.1 Definition of the health centre

Although many district hospitals provide a community care service to the town and surrounding communities, the main purpose of a hospital is to provide secondary curative health services to those people referred to it from other health facilities. The health centre, by contrast, has a community-oriented role. It is responsible for a defined population, and for providing or supervising all the curative, preventive and promotive health activities within that population. As such, it has a very special relationship to community based health care, and is the main liaison with community health and development committees and provides the technical support and supervision to community based workers.

The term 'health centre' is used to describe a variety of facilities which provide organized health services at the district level (World Health Organization, 1992a). Generally, a health centre is concerned primarily with ambulatory patients, and is capable of providing preventive and curative services more advanced than those which can be provided as part of community health action, but less sophisticated than those which require the technical capacity and facilities available only in hospitals. In some countries, however, the term rural health centre may be used to describe a facility, even at a sub-district level, that serves more than 100,000 people, has several doctors on staff and has the potential to function as a first referral hospital.

Whether staffed by a doctor or not, the health centre has a multidisciplinary team capable of providing a range of services including mother and child care, and it is often the most peripheral part of the official health services. For both these reasons, the health centre is the most appropriate institutional base for the delivery of primary health care in the district.

1.2 Classification of health centres

Health centres come in a large variety of sizes, staffing patterns, levels of resources, services offered and in the sizes of population they are expected to cover. The following classification has been offered (World Health Organization, 1992a) and will be used for discussion purposes:

Type I health centres are an important but diverse group. For our purposes, it is important to distinguish those centres that include a worker trained to do midwifery and family planning from those dispensaries and health posts whose main role is the provision of primary curative care, and whose only contribution to reproductive health care is the periodic hosting of a mobile maternal and child health clinic.

A few type I centres may have a small delivery room, but mostly they have no beds at all, and the few deliveries performed by the midwife are done in people's homes. Most of the reproductive health care provided by such centres is prenatal and family planning clinics, with the addition of abortion services in a very few countries. Services, equipment and facilities present in a type I centre will depend on the distance from and the accessibility of the nearest type II centre. Thus activities outlined in tables 2.1 to 2.9 will need to be adapted to the local situation.

Type II health centres include most of the larger rural health centres in developing countries. Their staff typically include one or more each of a clinician (doctor, clinical officer or medical assistant), a professional nurse or midwife with some auxiliaries responsible for maternal and child health and family planning activities, and a health inspector or sanitary assistant. These centres also may have a few beds for short stay patients and for midwifery, though the numbers of deliveries may vary considerably and in general be rather small. Operating theatre facilities are generally only sufficient for minor out-patient procedures. There is frequently a small basic laboratory.

The majority of type 1 and type 2 health centres will be government-run, but they may also be run by social security or corporate organizations or a variety of non-profit, non-governmental organizations.

Table 1.1 Classification of health centres

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

1.3 An integrated approach to health care

Integration of health services has three dimensions, vertical, horizontal and across time.

Vertical integration of services for mothers and newborns is the rational linking together of services at community level, health centre level and at the first referral hospital. Effective prenatal care and safe normal deliveries cannot be achieved without the development of services in the community and health centre. Life-saving emergency services require the skills and facilities that are only available in hospitals and health centres. If mothers and newborns are going to benefit from both, there needs to be a referral system linking the two levels, good communication between them and clearly understood protocols indicating when the services of one or the other is required.

A feature of the most effective primary care services in recent years has been the adoption of standard management protocols and essential drug supplies. The same process is being applied to the management of obstetric complications like postpartum hemorrhage, puerperal sepsis, severe anæmia and abortion (World Health Organization, 1990, 1992b, 1993a, 1993b). For too long, however, midwifery services at different levels have operated independently. The present exercise is an opportunity to define more explicitly the expected functions and tasks at those different levels and how they are to articulate together through referral and support systems to create an effective integrated system. The main disadvantage of such an exercise is the creation of expectations that cannot be met or which are disappointed after a while because poor management and/or leadership neglects the support of the process which is required to maintain it.

Integration across time is concerned with continuity of care. It adopts a life-span approach to the health care of women and children rather than the disconnected care of pregnancies, contraceptive episodes or cases of STD. Section 2.1 discusses the importance of the preconception period before the first pregnancy and between subsequent pregnancies for the management of breast-feeding, contraception and the steps that are needed to improve the mother's nutrition in preparation for a subsequent pregnancy. Child health is dependent upon a continuity between preconception nutrition, a healthy pregnancy, a safe delivery and the satisfactory establishment of lactation. This continuity of care can be facilitated by use of home-based mothers' records (World Health Organization, 1994a).

Horizontal integration of different reproductive and child health services at the service delivery point is also required in recognition of the need for a life cycle approach to reproductive health and to the social needs of women. The increasing prevalence of STDs and HIV/AIDS in all parts of the developing world emphasizes the need for the integration of STD services in the screening and

treatment of non-symptomatic as well as symptomatic women at prenatal and family planning clinics. The very high prevalence of anæmia and undernutrition means that more attention needs to be given to postpartum contraception to improve family spacing and to screening for and managing anæmia and undernutrition through community action while the mother is attending the child health clinic with her child rather than just when she is pregnant.

One of the most effective ways of acknowledging the importance of women and their social and economic needs is to adopt a 'supermarket approach' to the provision of care at the health centre. This ensures that rather than insisting that women come on different days of the week for different kinds of MCH/FP services, the services are all available every day, requiring only one visit to the health centre.

While such integration is obviously desirable, the management challenge is how to achieve it within the constraints of the numbers of health workers available, their skills, time and energy levels. A certain division of labour within a facility is often necessary. It should also be recognized that a certain amount of the horizontal integration between different service functions can be achieved by better coordination and vertical integration of health centre and community level workers. This has proved difficult where MCH and family planning activities have been the responsibilities of separate ministries or departments within ministries. However, careful planning of the integration has achieved success in some places.

1.4 Delegation of responsibilities

The adoption of a policy to improve reproductive health and make motherhood safer involves a process of incremental changes to a system which will still for a long time rely upon a less than optimal supply and distribution of skilled human resources and facilities. Because of the concern to improve access to health care, a common policy principle is the delegation of all tasks to the least trained person capable of performing them. There is usually little discussion about the delegation of routine, frequently performed tasks like prenatal care or supervision of normal deliveries. Difficulties arise in two main types of circumstance.

First, there are infrequently required, but life-saving tasks such as the manual removal of placenta to stop a postpartum hemorrhage. If such a task is delegated to nurses, midwives or even TBAs, they will have had little opportunity during their training and subsequent work to practice and use such skills in order to maintain their confidence and a competent level of performance. However, the situation is made easier when different tasks involve similar skills. Thus a health worker who has been trained to insert IUCDs would have little difficulty in mastering the extra skill involved in menstrual regulation or uterine evacuation for an incomplete abortion. Table 1.2 demonstrates how the basic skill of performing and interpreting a pelvic examination can be elaborated to enable a health centre worker to perform a range of related and similar tasks that facilitate maintenance of skills.

Secondly, there are tasks and technologies where the advantages of widespread, even frequent use have to be weighed against the potential risks of misuse and the costs of training and equipping health workers. An example is the active management of the third stage of labour, which inlucdes early cord clamping, oxytocin, and cord traction. This would presumably have a considerable impact on the most frequent cause of maternal death, namely postpartum hemorrhage. However, such a policy would involve either the expense and risks of single use disposable injections or an investment in training and equipment for sterilization and storage of the drugs. There may come a point in the development of a programme and in the professionalization of community birth attendants when one of these options will become appropriate. Similar considerations apply to the use of oxytocics and the vacuum extractor in the first and second stages of labor by doctors or midwives in type II health centres that have a big obstetric load.

Table 1.2 Tasks related to the performance and interpretation of a pelvic examination

Activities	Related tasks
Prenatal Care	• diagnosis of pregnancy • diagnosis and management/referral of cases of abortion, ectopic pregnancy, acute PID and urinary tract infection
Delivery Care	• monitoring of labour with partograph • manual removal of placenta • repair of vulvo-vaginal tears • use of vacuum extractor to assist delivery
Postpartum Care	• recognition and referral of severe sepsis
Family Planning	• insertion and removal of IUCDs, having excluded pregnancy and infection
Abortion Care	• diagnosis of length of gestation • diagnosis of stage of abortion and any complications • MVA of retained products if indicated • MVA for menstrual regulation as indicated
Sexually Transmitted Diseases	• clinical diagnosis of STDs and treat according to protocols

The fact that obstetric complications are often at an advanced stage when they reach a health facility for help means that even in the best equipped and staffed hospitals some women will fail to survive. Judgments regarding quality of care and the abilities of health workers should not, therefore, be based simply on the outcomes of complicated cases. However, the reluctance to delegate tasks to health centre or community level workers is often based upon the recollection of the difficulties or complications involved in some of those problem cases. Policy decisions about the delegation of tasks need rather to be based upon a best judgment of the potential for reducing morbidity and mortality, the level of skills involved, the ability to maintain that level of skill, and the possibility of alternatives.

Finally, the adoption of a reproductive health or safe motherhood policy requires a system-wide commitment. Transfer of the responsibility for an activity or task without providing the 'ability' to perform it is clearly wrong, and yet it is the circumstance under which many health workers operate; they lack either the appropriate skills or materials to carry out key tasks, or the system of referral and support has never been put in place. Section 1.3, on integration, points out the absolute necessity for vertical integration for effective mother and newborn care, the desirability of horizontal integration for programme efficiency and the convenience of mothers, and the need for coordinated adjustments over time to maintain these benefits.

2 ESSENTIAL ELEMENTS OF OBSTETRIC AND NEONATAL CARE

2.1 Before conception

Adolescent pregnancies are accompanied by higher risks of obstructed labour, hypertensive disease of pregnancy, iron deficiency anaemia and low birth weight (World Health Organization, 1989). The risks are greatest below the age of seventeen because the young woman is still growing at that stage. The effects of these complications can be reduced by good prenatal care, but the social circumstances of these women and their pregnancies is often such that attendance at prenatal care is absent, late or infrequent.

Many of these pregnancies do not go to term because of the high incidence of induced abortion, mostly done by unskilled persons, resulting in haemorrhage, sepsis and death. Those that survive suffer a high prevalence of chronic pelvic inflammatory disease (PID) and secondary infertility.

This is also the group that is experiencing the greatest increase in the incidence of sexually transmitted diseases (STDs), including HIV/AIDS. Many of those that do not become infertile because of PID go on to give birth to infants that are stillborn, premature or congenitally infected.

In many parts of the world, adolescent pregnancy has been the norm for many generations because of the early age at marriage. In other parts of the world, the problem of teenage pregnancies, abortions and STDs appears to be getting worse. This is because of the earlier onset of menarche combined with a weakening of traditional cultural restraints as both young men and women spend greater amounts of time away from home, pursuing an education or work in urban centres. Unfortunately, while sexual activity is increasing, it is not accompanied by increases in understanding about sexuality, the basic facts of reproduction or STDs. Very few young people have information about contraception or easy access to supplies, and of those that do have access to contraceptives, few make use of them.

The reluctance of an older generation to provide sexual and family planning education to adolescents for fear that it will only increase their sexual activity is understood. However, promoting safe sexual behaviour does not encourage promiscuity but encourages respect for the body and life, and a better understanding of responsibility to others. The problems of adolescent pregnancies, abortions, STDs and AIDS are now of such a magnitude in many countries that very specific efforts have become necessary to educate young people on reproductive health and encourage them to use barrier contraceptive methods if they insist on sexual activity. The greater risks associated with adolescent pregnancies are such that special efforts will be necessary to recruit them into prenatal care. These will require innovative and different approaches from those used to reach older or married people.

The size of a woman's baby, her preparation for lactation, and the iron and folate status of both mother and child depends upon both the mother's nutritional status at conception as well as her diet during pregnancy. In many parts of the world, dietary intake does not increase significantly during pregnancy. This is often a deliberate choice in order to avoid the risks of a difficult delivery because of a big baby. Anæmia occurs in about 60% of pregnant women in developing countries. In a well-nourished women, about half of the iron needed during pregnancy is supplied from her iron stores. However, if the stores are already depleted, anæmia develops because diet alone cannot meet the additional needs (World Health Organization, 1992c). Iron supplements may help, but where diets are largely vegetarian, whether by choice or necessity, a lack of vitamin C or an excess of cereals, bran and tea will inhibit iron absorption.

In this situation where anæmia and undernutrition are difficult to treat or prevent during pregnancy, the preconception period, whether during adolescence or between pregnancies, can be used to optimize the nutritional status of the woman in preparation for the subsequent pregnancy. This should be a subject for education in schools and community organizations. In addition, adolescent girls can be screened for anæmia at school health clinics, and adult women can be screened for anæmia and being underweight by local standards at MCH clinics six months after delivery of the last child. This allows dietary advice and appropriate treatment to be targeted to those most in need (Table 2.1).

2.2 Family planning

Because people's needs for contraception vary from time to time and at different stages of the life-span, it is important that family planning services be coordinated between the health centre and the community (Table 2.2). Short-term contraceptive needs for birth spacing or when a husband returns from a distant place of work for a time can usually best be met through the non-clinical methods that can be supplied through community-based distributors or trade stores. Confidentiality as well as ease of access is important, so a variety of sources, serving the needs of different groups in the community is desirable.

The longer-term, reversible clinical methods also need to be as accessible as possible. While they can be provided through special purpose mobile field clinics, issues of space, time and confidentiality make it more difficult to combine these family planning services with mobile child health and antenatal clinic activities. The services are often, therefore, offered at the health centre. Depending

upon which method(s) appears to best suit the medical, social and cultural needs of a particular community, it can be taught to the staff at the type I as well as type II health centre.

A priority role for health workers at community and health centre levels is to provide information and advice about contraceptive options, their side-effects and complications, and the importance of barrier methods in the prevention of sexually transmitted diseases. It is important that the health centre staff work with the community distributors to ensure that the referral system for side-effects and clinical methods works efficiently.

Infertility is becoming an increasingly important problem on account of the rising prevalence of reproductive tract infections. Community and health centre workers need to be able to explain the causes of infertility and ensure that both the man as well as the woman are referred for investigation.

2.3 Prenatal care[1]

Pregnancy is a special event, and the family and community should treat a pregnant woman with particular care. Pregnant women need to eat and rest more than they do when they are not pregnant.. Promoting healthy behaviours in women and increasing knowledge about pregnancy complications among women, their families and their communities are always important; they become life-saving, however, in situations where access to health facilities is limited or where women are at higher risk of complications.

Prenatal care should address both the psychosocial and the medical needs of the woman, within the context of the health care delivery system and the culture in which she lives. Periodic health check-ups during the prenatal period are necessary to establish confidence between the woman and her health care provider, to individualize health promotional messages, and to identify and manage any maternal complications or risk factors. Prenatal visits are also used to provide essential services that are recommended for all pregnant women, such as tetanus toxoid immunization and the prevention of anaemia through nutrition education and provision of iron/folic acid tablets.

The Antenatal Technical Working Group (Geneva 1994) recommended a minimum of four prenatal visits for a woman with a normal pregnancy. This was not intended to imply that countries where pregnant women receive more than the minimum number of visits should reduce that number. Rather, the objective was to focus on the content of care and to set a basic, essential standard for quality for all countries. Problems may arise at different times during pregnancy, so the assessment for risk factors and complications must be an ongoing process throughout pregnancy, labour, delivery, and the postpartum period. Some women will require more visits than others. Women who develop problems need to be assessed and treated as soon as possible; they should be encouraged to attend more often if they have any anxieties or questions.

There are four main components to prenatal care in developing countries: risk screening to identify and provide the appropriate management to those women most likely to have poor outcomes of pregnancy and childbirth, the detection and management of associated diseases, the maintenance of maternal nutrition and health, and health education about safe delivery and the early recognition and management of complications (Table 2.3). Although there is some overlap of concern between the four, they are distinct sets of activities with different goals and objectives.

Risk screening is an activity which, in the past, has been invested with a lot more significance than it deserves. Demographic characteristics like age and parity do define groups within the population that have higher risks, but are poor at identifying individual women at high risk. The most useful of these categories would be nulliparas under 17 years old and grand multiparas. The most reliable, specific risk factor is the association of short stature in nulliparas and the risk of cephalopelvic disproportion.

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[1] Updated from: *Antenatal care. Report of a Technical Working Group. Geneva, 31 October - 4 November 1994.* WHO/FRH/MSM/96.8

The assessment of previous obstetric history as a predictor of problems in the current pregnancy and delivery also needs to be as specific as possible. The experience of a perinatal death or caesarean section in the previous delivery is a fairly useful predictor, but a previous retained placenta or postpartum haemorrhage is not a good predictor of more third stage problems (Rooney, 1992).

Some complications of pregnancy come as easily recognized acute complications like abortions or antepartum haemorrhages; others come as subacute or chronic problems like hypertensive disease of pregnancy, anaemia or syphilis, which require more experience and equipment to detect (Guidotti and Jobson, 1992; World Health Organization, 1993a). These distinctions between risk factors which can be identified at any time, more chronic complications that can be screened for at selected stages of pregnancy, and acute complications that need to be recognized at all times make possible the design of a rational, collaborative approach to prenatal care that can maximize the best advantages of TBAs in the community and health centre midwives who may have a very large population to cover.

TBAs, who are in constant touch with the pregnant women in their community have four main activities: education about nutrition; the supply of routine prophylactic iron and folate tablets; the recognition and referral of acute complications; and education about clean and safe delivery and the main complications of delivery. The health centre midwife only needs to see the mother two to four times during pregnancy. Her roles will be to assess and advise on any risk factors, detect and manage those complications requiring more skill, experience or equipment, provide essential care, such as tetanus toxoid immunization and the management of some of the acute complications that are referred to her by the TBAs.

A collaborative approach to prenatal care between the TBA and the midwife can be very effective. Where possible the TBA should be present when the midwife is seeing her clients. This achieves continuity of care and should cut down on the number of consultations with the midwife. Mobile clinics in the communities can achieve a higher coverage rate as well as make it easier for the TBA to participate.

2.4 Delivery care[2]

The first priority for delivery care is that it be safe and clean (World Health Organization, 1992b). Attention must be paid to the personal hygiene of the birthing woman and birth attendants as well as to the cleanliness of the environment and all the materials used during birth. Programmes are already in place to advocate the positive effect of the "three cleans" (hands, perineal area, umbilical area), which must be maintained and expanded. In addition, WHO has established the contents of a clean delivery kit and its correct, effective use (WHO 1995).

Some measures should be taken during all deliveries, to prevent possible infection of the woman and/or birth attendant, particularly in regions with a high prevalence of HIV, hepatitis B and C virus. These measures include the avoidance of direct contact with blood and other body fluids, by the use of gloves during vaginal examination, during delivery of the infant and when handling the placenta. It is important to reduce the potential for infection by keeping invasive techniques, such as episiotomy to the strict minimum and taking additional care with the use and disposal of sharp instruments (ICN 1996).

The majority of maternal deaths and much of the chronic morbidity resulting from childbirth are the result of failure to get timely help for complications of delivery. Because there are so many more 'low risk' than 'high risk' pregnancies, most complications of delivery occur in low risk women. This means that all health workers that supervise deliveries need to have strategies for dealing with complications (Table 2.4). For TBAs, who are responsible for the majority of deliveries in the developing world, that means simple first aid and referral to the nearest facility capable of handling the

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[2] Updated from: *Care in normal birth: a practical guide. Report of a Technical Working Group.* WHO/FRH/MSM/96.24

problem. Depending on the nature of the problem, that could be the nearest health centre, or it could mean the district hospital at much greater distance. Failure to reach help in time may be a consequence of communication difficulties, but it is also the result of delays in deciding to go for help because of the perceived obstacles to travel and a lack of familiarity with or confidence in the staff at the health facility.

During prenatal care a birth plan should be made as an outcome of the assessment which identifies, where, by whom labour will be attended, and plans for emergency referral. This plan should be prepared with the pregnant woman, and made known to her husband/partner. In many countries it is also advisable that the plan is known to the family, because they ultimately make the decisions regarding referral (TWG: CINB/PG 1996). The plan should be available when labour starts as a reevaluation of the risk status, including a physical examination to assess maternal and fetal well being, fetal lie and presentation and the presenting signs of labour should be undertaken. In defining normal birth two factors must be taken into consideration: the risk status of pregnancy and the course of labour and delivery. The predictive value of risk scoring is however, far from being 100% - a pregnant woman who is at low risk when labour starts may eventually have a complicated delivery. On the other hand, many high risk pregnant women ultimately have an uncomplicated course of labour and delivery. The regular use of the partograph (WHO 1994b) monitors the progress of labour. It is a tool that can be used at health centre level to detect any deviation from the normal progress in labour and prevent delays. The time of 12 or 24 hours after which TBAs should refer their clients will depend on local conditions.

In the management of antepartum haemorrhage, the priorities are to treat shock, keep the woman alive and get her to a hospital where a caesarean section can be done as soon as possible. For a woman having eclamptic fits, the priorities are to control the fits, prevent asphyxia and to get the baby delivered as quickly as possible. If the woman is already in established labour, vacuum extractor assistance of the second stage might be appropriate in some type II health centres. Cephalopelvic disproportion may inevitably lead to a caesarean section, but the difference between survival and either death or a vesico-vaginal fistula will be the time taken to get to the operating theatre..

Postpartum haemorrhage can kill so quickly and is the single most important cause of maternal death. There is still a great need for a suitable preparation of an oxytocic for use by TBAs in village situations, either as a routine part of the management of the third stage, or as a means of controlling haemorrhage if it should be excessive. Oxytocics are supposed to be available at all health centres. The skill to do a manual removal of placenta ought also to be available at all health centres (World Health Organization, 1990a).

2.5 Postnatal care

The puerperium is an integral part of the process of child-bearing, and should be used as an opportunity to provide care to the woman and the neonate. Unfortunately it is rarely used as such, despite the fact that many maternal and neonatal deaths occur postpartum.

Puerperal sepsis is the main life-threatening condition of the postnatal period (World Health Organization, 1992b), however, all causes of fever in the puerperium including urinary tract infections need to be diagnosed and treated promptly. In fact this requires no sophisticated clinical skills or equipment, and can be managed very easily at a health centre level. Secondary postpartum haemorrhage can be detected and managed appropriately during postpartum care. Both sepsis and secondary postpartum haemorrhage must be detected early if treatment is to be effective. At least one postpartum visit within one week of delivery should be available to all women. Where women are unable to leave the home for logistical, practical or cultural reasons, the health centre should organize an outreach service in collaboration with the TBAs if appropriate.

Suitable care of the breasts and genitals can go a long way to improving the comfort and well-being of the mother, satisfactory establishment of breast-feeding, and the resumption of normal sexual relations.

Examination of the woman at the end of the customary confinement period is a suitable time for detection and treatment of anæmia, bearing in mind that this is the opportunity to treat for hookworm if it was diagnosed during pregnancy. It is also a good time to discuss and make plans for the resumption of contraception depending upon the choice of method and breast-feeding intentions (Table 2.5).

2.6 Abortion care

Rapid removal of the products of conception is necessary in cases of incomplete abortion, whether they be spontaneous or induced (World Health Organization, 1993b). Once evacuation is complete, recovery is usual in most cases. Vacuum aspiration by someone who is familiar with the procedure is safe. Difficulties may be experienced when there is sepsis or a uterine perforation as a result of an unsafe procedure. In such cases, after appropriate first aid is given, the patient has to be sent to a hospital where surgical repair of the uterus or drainage of pus can be performed (Table 2.6). Abortion care should include post-abortion contraceptive counselling.

The high incidence of severe morbidity and mortality from abortions induced by untrained people is the strongest argument for making safe abortion services available at type I and type II health centres in those countries where the procedure is legal. Menstrual regulation by vacuum aspiration using a syringe and canula is both effective and safe.

2.7 Care of the healthy newborn[3]

The skills required for these sets of tasks are so basic that there is little difference in what is required of a TBA and the staff at a type II health centre. Staff should know how to recognise and prevent hypo/hyperthermia and support early and sustained breast-feeding. Newborn infants should be immunized according to the local immunization policy. Since most infants are either born at home or discharged early from the health facility, families should be taught how to recognise early signs of illness and bring the newborn infant to the attention of the health worker (Table 2.7). With the increase in the prevalence of STDs, it becomes more important for all health care providers to be routinely applying silver nitrate drops or tetracycline ointment to the eyes of newborns.

2.8 Care of the sick newborn[4]

The two main tasks in managing the care of the sick newborn are the routine management of low birth weight and the management of neonatal infections. Early recognition of illness and prompt management of the newborn is essential, since neonatal infections such as, sepsis, meningitis, pneumonia, neonatal tetanus, congenital syphilis, tend to become severe very quickly. They can however be difficult to recognise since the danger signs of severe infection in the newborn period can be non specific.

Treatment of newborn disease at the health centre is limited due to the unpredictable severity of diseases and because oral antibiotics are not effective in the first week of life. Newborns with severe bacterial infection will require an intramuscular injection of antibiotics and immediate referral to hospital since they must receive appropriate diagnostic procedures and treatment. Hypothermia must be prevented, particularly in low birth weight infants since they have little fat stores and, therefore tend to suffer from hypothermia and hypoglycaemia during the first few days of life. It is important that they are kept warm and fed more frequently. Preterm infants can breast feed, the ones that can't should be given expressed breast milk by cup and spoon until breast-feeding is properly established. Glucose

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[3] Updated from *Essential care of the newborn. Report of a Technical Working Group.* Trieste, 25-29 April 1994. WHO/FRH/MSM/96.13

[4] Updated from *Management of the sick newborn. Report of a Technical Working Group.* Ankara, 5-8 June 1995. WHO/FRH/MSM/96.12

is not enough for the nutritional needs of those infants. (*Hypoglycaemia in the Newborn*, WHO, 1997, *Thermal Protection of the Newborn*, WHO 1997). Staff in Type 1 facilities can treat minor skin infections with gentian violet solution or an equivalent. Type 11 health centre staff can initiate treatment for cord and other bacterial infections with intramuscular antibiotics.

2.9 Sexually transmitted diseases including HIV/AIDS

WHO estimates that about 250 million new cases of sexually transmitted diseases (STDs) occur each year. Although infection rates are similar in both men and women, the burden of serious consequences of STDs falls mostly on women and their infants. Gonorrhoea and chlamydia both cause acute and chronic pelvic inflammatory disease, leading to chronic pelvic pain and infertility. Tubal occlusion also causes ectopic pregnancies, a significant cause of maternal death. Early syphilis causes stillbirths or neonatal deaths in 20-25%, and infected infants in about two-thirds of pregnancies. Untreated gonorrhoea results in Ophthalmia Neonatorum and blindness in the infant. In addition, the presence of an STD increases the risk of transmission of HIV by about three times.

Surveys in family planning and antenatal clinics in developing countries indicate similar median prevalences for syphilis, gonorrhoea and chlamydia of 6-8% ranging up to 35-40% (Wasserheit and Holmes, 1992). Trichomonas and bacterial vaginitis infections are often more common. Unfortunately, the infections go unnoticed or ignored in many women because the symptoms are mild or because there is no-one from whom to seek help.

Laboratory diagnosis is obviously important, where possible. However, the greater importance of providing treatment and providing it at the first visit is such that treatment frequently needs to be based upon algorithms using clinical criteria or rapid laboratory methods (World Health Organization, 1991b). With suitable training and experience in genital and vaginal examination using a speculum, endocervical mucopurulent discharge from gonorrhoea or chlamydia can be distinguished from vaginal infections with Candida, Trichomonas or bacterial vaginitis. Since chlamydial infection is coexistent in up to 50% of cases of gonorrhoea, its laboratory diagnosis difficult and expensive, but its treatment cheap, it would appear wise to treat for both infections in all cases of endocervical discharge.

In populations with a high incidence of genital ulcer disease from syphilis and chancroid, treatment for both diseases is recommended at the time of presentation. In populations known to have a prevalence of syphilis of one percent or more, prevention of congenital syphilis is important. Screening for syphilis and treatment needs to be done preferably before 16 weeks gestation to prevent congenital spread and again in the third trimester to pick up any re infections. Given that only 10% of women in developing countries attend their first antenatal clinic before 16 weeks, this will require a special education effort with the community. The rapid plasma reagin (RPR) test is quick and simple to use, and allows treatment to be given at the same visit if indicated.

The clinical skills required for the management of STDs in women are those of pelvic assessment, similar to those involved in the procedures of insertion and removal of IUDs, menstrual regulation, and the management of incomplete abortion. These could be available at all types of health centre. Specific plans will depend upon the local epidemiology of STDs and AIDS.

Both community and health centre staff have an important role in raising the awareness of community members to the nature and significance of STDs including HIV/AIDS, how to avoid them, but also when to suspect them, where to go for treatment, and the necessity for treatment of sexual partners. Health workers also need to be aware of the risks to themselves and the precautions that they should take. TBAs appear to be at minimal additional risk, while nurses and midwives are at risk primarily on account of finger-pricks from syringe and suture needles.

Table 2.1 Before conception

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Family life education • educate adolescents and adults on reproduction, sexuality, maternal health, early prenatal care, labour, delivery, postpartum care, infant care, child development, STDs and AIDS through schools and community organizations	**Family life education** • support community education activities through participation, provide materials when required • be sensitive to the needs of special groups such as adolescents	**Family life education** • support community education activities through participation and training, provide materials when required • be sensitive to the needs of special groups such as adolescents
Family planning (See Table 2.2) • promote and provide family planning methods as appropriate to defer first pregnancy and space pregnancies	**Family planning** (See Table 2.2) • promote and provide family planning methods as appropriate to defer first pregnancy and space pregnancies • Provide counselling and services geared to the special needs of adolescents	**Family planning** (See Table 2.2) • promote and provide family planning methods as appropriate to defer first pregnancy and space pregnancies • Provide counselling and services geared to the special needs of adolescents
Nutrition • promote better nutrition for adolescents in preparation for pregnancy and lactation • promote an increased diet to match the needs of lactation and to catch up after the demands of pregnancy and lactation	**Nutrition** • promote better nutrition for adolescents in preparation for pregnancy and lactation • promote an increased diet to match the needs of lactation and to catch up after the demands of pregnancy and lactation	**Nutrition** • promote better nutrition for adolescents in preparation for pregnancy and lactation • promote an increased diet to match the needs of lactation and to catch up after the demands of pregnancy and lactation
Anæmia • prevention of anæmia by better nutrition • clinical detection of anæmia • commence iron and folate treatment • counsel regarding nutrition and compliance with taking medication, as prescribed • refer to health centre for confirmation	**Anæmia** • screen adolescents for anæmia at school clinics • screen women for anæmia at MCH clinic when child is about 6 months old • treat according to protocols • counsel regarding nutrition and compliance with taking medication, as prescribed	**Anæmia** • screen adolescents for anæmia at school clinics • screen women for anæmia at MCH clinic when child is about 6 months old • treat according to protocols • counsel regarding nutrition and compliance with taking medication, as prescribed
Tetanus toxoid immunization • ensure awareness of need for immunizations in the community	**Tetanus toxoid immunization** • give scheduled booster doses of tetanus toxoid at school health, MCH and family planning clinics	**Tetanus toxoid immunization** • give scheduled booster doses of tetanus toxoid at school health, MCH and family planning clinics

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Skills required: • basic communication skills • recognition of anæmia • see 2.2 for family planning	**Skills required:** • basic communication and clinical skills • see 2.2 for family planning	**Skills required:** • basic communication and clinical skills • see 2.2 for family planning
Facilities:	**Facilities:** • examination room • refrigerator for vaccines	**Facilities:** • examination room • basic laboratory • refrigerator for vaccines
Equipment and supplies:	**Equipment and supplies:** • method for screening anaemia • health education materials	**Equipment and supplies:** • method for screening anaemia • health education materials

Table 2.2 Family planning

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Procedures: • promote use of contraceptives and educate on fertility and reproduction • supply: contraceptive pills, condoms, spermicides • refer for: clinical contraceptive methods • counsel on safe sex and the prevention of HIV/STDs • educate on the causes of infertility and the need for both the man and woman to be investigated • refer for investigation of infertility	**Procedures:** • promote use of contraceptives and educate on fertility and reproduction • supply: non-clinical methods intra-uterine contraceptive devices injectable contraceptives • assess and manage side-effects • refer for: subdermal implants and sterilization • train, supervise and supply community-based distributors • ensure that referral system functions • educate and refer for infertility • counsel on safe sex and the prevention of HIV/STDs • Provide counselling and services geared to the special needs of adolescents • Ensure that the referral and follow-up systems function	**Procedures:** • promote use of contraceptives and educate on fertility and reproduction • supply: non-clinical methods intra-uterine contraceptive devices injectable contraceptives subdermal implants • assess and manage side-effects • refer for: sterilization • train, supervise and supply community-based distributors • ensure that referral system functions • educate and refer for infertility • counsel on safe sex and the prevention of HIV/STDs • Provide counselling and services geared to the special needs of adolescents • Ensure that the referral and follow-up systems function
Skills required: • The use of a check-list of indications and contraindications for clinical and non-clinical methods • The use of counselling techniques: - to explain the use of non-clinical methods - to explain the use of clinical methods, their indications, side-effects and where they can be obtained - explain the causes and management of infertility - discuss the prevention and management of STDs / HIV	**Skills required:** • as in community • able to perform and interpret pelvic examination and exclude early pregnancy, pelvic inflammatory disease and sexually transmitted diseases, • IUD insertion • teaching and supervision skills • infection control	**Skills required:** • as in community • able to perform and interpret pelvic examination and exclude early pregnancy, pelvic inflammatory disease and sexually transmitted diseases, • IUD insertion • insertion and removal of implants • teaching and supervision skills

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Facilities: • private counselling space	**Facilities:** • private counselling space and examination room • aseptic conditions	**Facilities:** • private counselling space and examination room • aseptic conditions
Equipment and supplies: • checklists on clinical and non-clinical family planning methods • education materials on family planning, contraception, HIV/STDs and basic reproductive physiology • contraceptive pills, condoms, spermicide with barrier methods	**Equipment and supplies:** • IUD insertion kit • education and training materials on family planning and contraception and basic reproductive physiology • contraceptive pills, condoms, spermicide with barrier methods	**Equipment and supplies:** • IUD insertion kit • contraceptive subdermal implants and inserter • equipment for contraceptive subdermal implant removal • education and training materials on family planning and contraception and basic reproductive physiology • contraceptive pills, condoms, spermicide with barrier methods

Table 2.3 Prenatal care

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
1. Risk screening		
• identify women with a poor obstetric history • identify strikingly short nulliparas since they are at risk of CPD • identify nulliparas <17 years, especially if single • convince women and families of the importance of delivering at an appropriate facility if indicated	• identify women with a poor obstetric history • identify strikingly short nulliparas since they are at risk of CPD • identify nulliparas <17 years, especially if single • identify and manage any deviation from normal progress of pregnancy • establish systems for referral and follow-up • teach women and families how to recognise, and respond to emergency situations • prepare a birth plan with the woman • convince women and families of the importance of delivering at an appropriate facility if indicated	• identify women with a poor obstetric history • use measuring device to identify short nulliparas at risk of CPD • identify nulliparas <17 years, especially if single • identify and manage any deviation from normal progress of pregnancy • establish systems for referral and follow-up • teach women and families how to recognise, and respond to emergency situations • prepare a birth plan with the woman • convince women and families of the importance of delivering at an appropriate facility if indicated
2. Detect and manage complications of pregnancy		
Abortion/Ectopic/PID/UTI: • refer cases of lower abdominal pain and/or vaginal bleeding or discharge to closest health centre or hospital • follow-up • counsel on family planning methods	**Abortion/Ectopic/PID/UTI:** • distinguish these conditions and treat or refer as appropriate (Details as below) Abortion: Table 2.6, PID: Table 2.9 • follow-up • counsel on family planning methods	**Abortion/Ectopic/PID/UTI:** • distinguish these conditions and treat or refer as appropriate (Details as below) Abortion: Table 2.6, PID: Table 2.10 • follow-up • counsel on family planning methods
Ectopic pregnancy: • as above	**Ectopic pregnancy:** • treat shock • organize blood donors • refer with IV infusion	**Ectopic pregnancy:** • treat shock • organize blood donors • refer with IV infusion

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Hypertensive disease of pregnancy: • refer if generalized oedema or headaches	**Hypertensive disease of pregnancy:** • screen for high blood pressure, oedema and proteinuria: a) If diastolic BP is 90-100 with no proteinuria: • check BP twice weekly • refer if BP rises and/or there is oedema or worsening symptoms b) If diastolic BP is 90-100 with proteinuria: • refer to nearest hospital or type II centre for observation c) If diastolic BP is >100 with or without proteinuria: • refer to hospital after sedation	**Hypertensive disease of pregnancy:** • screen for high blood pressure, oedema and proteinuria: a) If diastolic BP is 90-100 with no proteinuria: • check BP twice daily • refer if BP rises and/or there is oedema or worsening symptoms b) If diastolic BP is 90-100 with proteinuria: • admit or refer to nearest hospital for observation c) If diastolic BP is >100 with or without proteinuria: • refer to hospital after sedation
Eclampsia: • maintain airway, prevent injury • refer to nearest health centre or hospital	**Eclampsia:** • maintain airway, prevent injury • give anticonvulsant (e.g. 5g magnesium sulphate into each buttock intramuscularly) • refer to hospital as soon as possible	**Eclampsia:** • maintain airway, prevent injury • give anticonvulsant. Loading dose of 4g intravenously over 5 min, followed by 10g (5g into each buttock intramuscularly), with a further 5g IM every 4h injected in alternate buttocks (provided the respiratory rate was >16/min, urine output >25ml/h, and knee jerks were present). Therapy to continue for 24h • refer to hospital as soon as possible

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Anaemia: • clinical detection of anaemia • commence iron and folate treatment • refer to HC for confirmation • provide nutritional education and counselling on compliance • follow-up	**Anaemia:** • confirm clinical anaemia with screening test • commence iron and folate treatment, treat for malaria • provide nutritional education and counselling on compliance • refer for measurement of haemoglobin if anæmic on screening • refer to hospital if very pale and short of breath • refer to hospital at 34 weeks if haemoglobin less than 7 g/l • follow-up	**Anaemia:** • confirm clinical anaemia with screening test • commence iron and folate treatment, treat for malaria • provide nutritional education and counselling on compliance • measure haemoglobin if anæmic on screening • monitor progress of treatment, repeat after 30 weeks • give parenteral iron according to local protocols, if haemoglobin between 4-7 g% • refer to hospital if very pale and short of breath or if haemoglobin is not raised by 2 g% after 1 month's treatment • refer to hospital at 34 weeks if haemoglobin less than 7 g/l • follow-up
Syphilis screening: • if syphilis prevalent, refer all pregnancies for serology preferably before 16 weeks (see 2.9) • counsel on the prevention and management of STDS	**Syphilis screening:** • if syphilis prevalent, do serology on all pregnant women preferably before 16 weeks, or at any time during pregnancy • for positive cases repeat serology in last trimester • treat positive cases (see 2.9) • counsel on the prevention and management of STDS	**Syphilis screening:** • if syphilis prevalent, do serology on all pregnant women preferably before 16 weeks, or at any time during pregnancy • for positive cases repeat serology in last trimester • treat positive cases (see 2.9) • counsel on the prevention and management of STDS
Antepartum haemorrhage: • refer to hospital urgently	**Antepartum haemorrhage:** • treat shock • organize blood donors • refer to hospital	**Antepartum haemorrhage:** • treat shock • organize blood donors • refer to hospital

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Prolonged rupture of membranes: • refer if ruptured more than 12 hours and not in labour	**Prolonged rupture of membranes:** • if ruptured more than 12 hours and not in labour: - give antibiotics and refer to hospital	**Prolonged rupture of membranes:** • if ruptured more than 12 hours and not in labour: - give antibiotics and refer to hospital
Malpresentations: • If possible, confirm with midwife and/or refer to type I or type II facility • follow-up • If no midwife available, refer to hospital after 36 weeks	**Malpresentations (e.g. breech, transverse):** • refer to hospital after 36 weeks	**Malpresentations:** • refer to hospital after 36 weeks
Cephalopelvic disproportion: Refer at 36 weeks any woman with a strikingly short stature without experience of normal delivery	**Cephalopelvic disproportion:** • Assess by abdominal palpation for cephalopelvic disproportion at 36 weeks • refer for hospital delivery	**Cephalopelvic disproportion:** • Assess by abdominal palpation and vaginal examination at 36 weeks • refer suspected disproportion to hospital
Multiple pregnancy: • identify multiple pregnancy • confirm with midwife if possible • encourage rest during pregnancy & refer to maternity waiting home or hospital from 32 weeks onward • plan a hospital delivery • follow-up	**Multiple pregnancy:** • identify multiple pregnancy • encourage rest during pregnancy & refer to maternity waiting home or hospital from 32 weeks onward • follow-up	**Multiple pregnancy:** • identify multiple pregnancy • encourage rest during pregnancy& refer to maternity waiting home or hospital from 32 weeks onward • follow-up
3. Maintain maternal and fetal health.		
Monitoring nutrition: • nutrition advice to all mothers • targeted attention and food supplementation to undernourished mothers	**Monitoring nutrition:** • monitor uterine height • nutrition advice to all mothers • targeted advice to undernourished mothers	**Monitoring nutrition:** • monitor uterine height • nutrition advice to all mothers • targeted advice to undernourished mothers
Tetanus toxoid vaccination: Ensure that all families/women know the importance of tetanus toxoid immunization Ensure all pregnant women are vaccinated	**Tetanus toxoid vaccination:** Give TT immunization accordingto schedule	**Tetanus toxoid vaccination:** Give TT immunization accordingto schedule

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Prophylactic medication: • supply iron and folic acid tablets • supply antimalarials according to policy and protocols • counselling on compliance • advise on the management of side-effects of medications • Ensure that all women receive tetanus toxoid immunization	**Prophylactic vaccines & medications:** • give tetanus toxoid immunizations • supply iron and folic acid tablets • supply antimalarials according to policy and protocols • give iodized oil according to policy and protocols • counselling on compliance • advise on the management of side-effects of medications	**Prophylactic vaccines & medications:** • give tetanus toxoid • supply iron and folic acid tablets • supply antimalarials according to policy and protocols • give iodized oil according to policy and protocols • counselling on compliance • advise on the management of side-effects of medications
4. Health education • health benefits of regular prenatal care • development of a birth plan • preparation for a clean delivery • recognition of the main complications of pregnancy and delivery and what to do	**4. Health education** • health benefits of regular prenatal care • development of a birth plan • preparation for a clean delivery • recognition of the main complications of pregnancy and delivery and what to do • explain importance of actions to be taken for high risk cases	**4. Health education** • health benefits of regular prenatal care • development of a birth plan • preparation for a clean delivery • recognition of the main complications of pregnancy and delivery and what to do • explain importance of actions to be taken for high risk cases
Skills required: • basic communication skills • recognition of risk factors and complications	**Skills required: as community plus:** • able to treat shock • able to give IV and IM administration of medication • able to give IV fluid replacement • able to give immunizations • able to screen for anaemia and syphilis	**Skills required: same as type I, plus:** • able to give parenteral iron
Facilities and additional procedures: • records • system for referral and follow-up	**Facilities and additional procedures:** • records • system for referral and follow-up • examination room • refrigerator for vaccines	**Facilities and additional procedures:** • records • system for referral and follow-up • examination room • basic laboratory • refrigerator for vaccines

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Equipment and supplies:	**Equipment and supplies:** • method for screening anaemia, proteinuria and syphilis • sphygmomanometer/stethoscope • fetal stethoscope • IV fluids • antibiotics • tetanus toxoid • iron/folate tablets, antimalarials • clinical protocols or flow charts for managing common complications of pregnancy	**Equipment and supplies:** • method for screening anaemia including haemoglobinometer, proteinuria and syphilis • sphygmomanometer/stethoscope • fetal stethoscope • IV fluids • antibiotics • tetanus toxoid • iron/folate tablets, iron dextran, antimalarials • clinical protocols or flow charts for managing common complications of pregnancy

Table 2.4 Delivery care

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Routine delivery care: • review birth plan and undertake risk assessment • perform a clean delivery • trained birth attendant present • community based emergency referral system • basic resuscitation of newborn • thermal control of newborn • put baby to breast	**Routine delivery care:** • perform a clean delivery • monitor pulse, temperature, BP and fetal heart • monitor with partograph • emergency referral system • active management of third stage • basic resuscitation of newborn • thermal control of newborn • put baby to breast	**Routine delivery care:** • perform a clean delivery • monitor pulse, temperature, BP and fetal heart • monitor with partograph • active management of third stage • basic resuscitation of newborn • thermal control of newborn • put baby to breast
Antepartum haemorrhage: • refer immediately to hospital	**Antepartum haemorrhage:** • treat/prevent shock • refer immediately to hospital • no PV examination	**Antepartum haemorrhage:** • treat/prevent shock • refer immediately to hospital • no PV examination
Eclampsia: • maintain airway, prevent injury • refer to nearest health centre or hospital	**Eclampsia:** • maintain airway, prevent injury • give anticonvulsant, (e.g. 5g magnesium sulphate into each buttock intramuscularly) • refer to hospital as soon as possible.	**Eclampsia:** • maintain airway, prevent injury • give anticonvulsant. Loading dose of 4g intravenously over 5 min, followed by 10g (5g into each buttock intramuscularly), with a further 5g IM every 4h injected in alternate buttocks (provided the respiratory rate was >16/min, urine output>25ml/h, and knee jerks were present). Therapy to continue for 24h • refer to hospital as soon as possible.

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Prolonged labour: • encourage to empty bladder frequently, empty bowel • prevent dehydration • refer to HC if in labour >12 hours	**Prolonged labour:** • empty bladder frequently, empty bowel • monitor labour with partograph and refer if abnormal otherwise refer if in labour >12 hours (depends on local policy/anticipated travel time from centre) or if there is malpresentation, disproportion or fetal distress • if there is prolonged rupture of membranes or signs of infection, start antibiotics before referral	**Prolonged labour:** • empty bladder frequently, empty bowel • monitor labour with partograph and refer if abnormal, otherwise refer if in labour >12/24 hours (depends on local policy/anticipated travel time from centre) or if there is malpresentation, disproportion or fetal distress. • start antibiotics before referral if there is prolonged rupture of membranes or signs of infection • assist second stage with vacuum extractor or forceps if indicated
Uterine rupture: • refer all cases of severe abdominal pain or weakness in labour, with or without vaginal bleeding	**Uterine rupture:** • treat shock • refer all cases of severe abdominal pain or shock, with or without vaginal bleeding	**Uterine rupture:** • treat shock • refer all cases of severe abdominal pain or shock, with or without vaginal bleeding
Postpartum haemorrhage: • stimulate uterine contractions • use oxytocics if available and trained • have mother pass urine and attempt controlled cord traction if placenta not delivered in 30 minutes • external bimanual compression • refer if placenta not delivered after one hour or bleeding does not stop • refer tears that require suturing • encourage to drink fluids	**Postpartum haemorrhage:** • use oxytocics • manual removal of placenta if retained • internal bimanual compression • prevent/treat shock • repair tears/episiotomies • refer high vaginal and cervical tears • refer to hospital if placenta not removed or if bleeding not stopped or reduced in 30 minutes • give antibiotics and refer to hospital if placenta is retained >24 hours	**Postpartum haemorrhage:** • use oxytocics • manual removal of placenta if retained - curettage if retained bits of placenta • internal bimanual compression • prevent/treat shock • suture high vaginal and cervical perineal tears • refer to hospital if placenta not removed or if bleeding not stopped or reduced in 30 mins • give antibiotics and refer to hospital if placenta is retained >24 hours

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Skills required: • supervises normal delivery • able to do external bimanual compression • able to use oxytocics in the 3rd stage of labour • able to use records, referral system and follow-up	**Skills required:** • able to manage labour • able to do active management of 3rd stage of labour (early cord clamping, routine oxytocin, controlled cord traction) • able to do urinary catheterization • able to administer drugs IV and IM • able to repair tears/episiotomies • able to do a pelvic examination and set up an intravenous infusion • able to use partograph • able to do manual removal of placenta • able to do internal bimanual compression • able to prevent and treat shock • able to use records, referral system and follow-up	**Skills required: same as for type I, plus:** • able to assess progress of labour and degree of cephalopelvic disproportion by abdominal palpation and vaginal examination • trained to use vacuum extractor or forceps • trained to suture high vaginal and cervical tears • able to perform curettage for retained bits of placenta
Facilities: • clean place for delivery	**Facilities:** • aseptic and antiseptic conditions • refrigerator for storage of oxytocics[5]	**Facilities:** • aseptic and antiseptic conditions • anaesthesia • refrigerator for storage of oxytocics

[5] Oxytocic drugs, particularly ergometrine and methylergometrine, are sensitive to heat and light and should be stored in cool, dark conditions. Ergometrine and methylergometrine should be rejected if they are not clear and colourless. Oxytocin is the drug of choice for the active management of the third stage of labour and is more stable than ergometrine compounds. Injectable ergometrine, metherergometrine and oxytocin should be stored under refrigeration as much as possible. For most products short periods or unrefrigerated transport are acceptable (not exceeding one month at 30°C or 2 weeks at 40°C).

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Special equipment and supplies: • clean delivery kit • oxytocics[2]	**Special equipment and supplies:** • blood substitutes and intravenous fluids • analgesics • antibiotics • oxytocics[2] • anticonvulsants/magnesium sulphate/calcium gluconate • partograph • suturing kit • good source of light for repair of tears • protocols for managing obstetric complications	**Equipment and supplies: same as for type I, plus:** • vacuum extractor kit or forceps • oxygen • protocols for managing obstetric complications • able to perform curettage for retained bits of placenta

Table 2.5 Postnatal care

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Breast care: • routine care and prevention of engorgement • recognition and referral of abscess • encourage breast feeding on demand	**Breast care:** • routine care and prevention of engorgement • management of inverted or cracked nipples • treat breast infection • recognition and referral of abscess	**Breast care:** • routine care and prevention of engorgement • management of inverted or cracked nipples • treat breast infection and do incision and drainage of an abscess
Care of genitals: • promote regular cleaning and replacement of sanitary cloth • refer if a tear is infected or not healing • refer any case of incontinence	**Care of genitals:** • promote regular cleaning and replacement of sanitary cloth • manage infected tears and episiotomies • refer any case of incontinence	**Care of genitals:** • promote regular cleaning and replacement of sanitary cloth • manage infected tears and episiotomies • refer any case of incontinence and prolapse
Puerperal sepsis: • recognize, refer and follow-up	**Puerperal sepsis**: • treat mild case with antibiotics[6] and analgesics • increase oral fluids • refer if very sick or any signs of peritonitis, septic shock, pelvic abscess, tetanus or failure to improve in 48 hours and follow-up • give ampicillin 1g IM stat and set up IV fluids before referral	**Puerperal sepsis:** • treat severe case with antibiotics[7] and analgesics • rule out/manage retained bits of placenta • treat shock, septicaemia, anaemia • give IV fluids • refer if any signs of peritonitis, pelvic abscess, tetanus or failure to improve in 48 hours and follow-up
Fever in the puerperium: • refer all cases of fever in the puerperium, follow-up	**Fever in the puerperium:** • identify cause of fever • treat for malaria, pneumonia, urinary tract infection, or any of the above conditions if present • refer if no improvement after 3 days and follow-up	**Fever in the puerperium:** • identify cause of fever • treat for malaria, pneumonia, urinary tract infection or any of the above conditions if present • refer if no improvement after 3 days and follow-up

[6] ampicillin 1 g orally followed by 500 mg orally every 6 hours plus metronidazole (500 mg orally every 6 hours) for 10-14 days

[7] 2 million units penicillin IV/IM every 6 hours or ampicillin 500 mg IV/IM every 6 hours plus gentamicin 80 mg IM/MV every 8 hours plus metronidazole 500 mg every 6 hours orally

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Secondary postpartum haemorrhage: • refer to nearest centre and follow-up	**Secondary postpartum haemorrhage:** • treat any shock • give oxytocics[2], antibiotics, IV fluids, refer to hospital and follow-up	**Secondary postpartum haemorrhage:** • treat any shock • give oxytocics[2], antibiotics, IV fluids, refer to hospital and follow-up
Anaemia: • clinical detection and treatment according to protocol (see section on anaemia in Prenatal section) • follow-up	**Anaemia:** • screen with available method and treat according to protocol (see section on anaemia in Prenatal section) • follow-up	**Anaemia:** • detect and treat according to protocol (see section on anaemia in Prenatal section) • follow-up
Family planning: • discuss and supply or refer for contraceptive method as appropriate (see Table 2.2) • follow-up	**Family planning:** • discuss and supply or refer for contraceptive method as appropriate (see Table 2.2) • follow-up	**Family planning:** • discuss and supply or refer for contraceptive method as appropriate (see Table 2.2) • follow-up
Skills required: • recognize and refer complications • see 2.2 for family planning • follow-up	**Skills required:** • able to recognize and treat common infections • recognize and refer complications • see 2.2 for family planning • follow-up	**Skills required:** • treat common infections • able to perform incision and drainage of an abscess • able to perform curettage for retained bits of placenta • recognize and refer complications • see 2.2 for family planning • follow-up
Facilities: • private counselling space • systems for referral and follow-up	**Facilities:** • private counselling space • examination/treatment room • records and systems for referral/follow-up	**Facilities:** • private counselling space • outpatient operating theatre • records and systems for referral/follow-up
Equipment and supplies: • see Table 2.2	**Equipment and supplies:** • antibiotics, antimalarials, iron folate • oxytocics[2] • IV fluids • anaemia detection methods • see Table 2.2 for family planning	**Equipment and supplies: same as type I, plus:** • incision and drainage kit • uterine evacuation kit

Table 2.6 Abortion care

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
1. Complicated spontaneous or induced abortion		
• education about the dangers of unsafe abortions • promotion and provision of family planning • recognition of abortion and its complications and refer • follow-up	• education about unsafe abortions • promotion of family planning • recognition of abortion and its complications • assess stage of abortion a) Threatened abortion: • observe up to 48 hours: if improving, send home and review in 2 weeks unless bleeding gets worse b) Incomplete or complete abortion: • digital removal of visible products of conception during examination • treat shock • give antibiotics[8] if signs of infection or suspicion of unsafe induction • refer second trimester abortions and cases of abdominal sepsis or trauma • vacuum aspiration of retained products • refer if signs of uterine perforation • check for and treat anaemia • give tetanus toxoid if not up to date If unable to evacuate uterus: • give oxytocics[2] • treat shock or infection if present • organize blood donors • refer c) refer cases of missed abortion • follow-up all referrals • counselling on post-abortion contraception	• education about unsafe abortions • promotion of family planning • recognition of abortion and its complications • assess stage of abortion a) Threatened abortion: • observe up to 48 hours: if improving, send home and review in 2 weeks unless bleeding gets worse b) Incomplete or complete abortion: • digital removal of visible products of conception during examination • treat shock • give antibiotics[5] if signs of infection or suspicion of unsafe induction • refer second trimester abortions and cases of abdominal sepsis or trauma • vacuum aspiration of retained products • refer if signs of uterine perforation • check for and treat anaemia • give tetanus toxoid if not up to date If unable to evacuate uterus: • give oxytocics[2] • treat shock or infection if present • organize blood donors • admit, and refer if not improving in 3 days c) refer cases of missed abortion • follow-up all referrals • counselling on post-abortion contraception

[8] See treatment of puerperal sepsis in Table 2.5 on Postnatal care.

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
2. Menstrual regulation (Where legal)		
• educate about the dangers of unsafe abortions • refer women wanting abortions as soon as possible • contraceptive counselling / supplies	• educate about the dangers of unsafe abortions • perform vacuum aspiration of uterus if in the first 12 weeks or refer • contraceptive counselling / supplies	• educate about the dangers of unsafe abortions • perform vacuum aspiration of uterus if in the first 12 weeks or refer • contraceptive counselling / supplies
Skills required: • basic communication skills	**Skills required:** • able to perform and interpret pelvic examination and assess stage of pregnancy and severity of any pelvic sepsis, • able to do vacuum aspiration of uterus	**Skills required:** • able to perform and interpret pelvic examination and assess stage of pregnancy and severity of any pelvic sepsis, • able to do vacuum aspiration of uterus
Facilities	**Facilities** • aseptic conditions • treatment room	**Facilities** • aseptic conditions • treatment room
Equipment and supplies:	**Equipment and supplies:** • pelvic examination kit • vacuum aspiration kit • antibiotics, oxytocics[2], IV fluids, tetanus toxoid	**Equipment and supplies:** • pelvic examination kit • vacuum aspiration kit • antibiotics, oxytocics[2], IV fluids tetanus toxoid

Table 2.7 Care of the healthy newborn

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Resuscitation: • clear mucous from mouth and nose • if baby not crying: dry/stimulate • mouth-to-mouth breathing, if necessary	**Resuscitation:** • if baby is not crying after drying, clear mucous from mouth and nose • assisted ventilation with bag and mask, if necessary	**Resuscitation:** • if baby is not crying after drying, clear mucous from mouth and nose • assisted ventilation with bag and mask, if necessary
Cord care: • tie and cut cord with a clean blade • keep clean and dry until falls off • refer quickly if umbilical stump red or draining pus	**Cord care:** • tie and cut cord • keep clean and dry until falls off • treat any infection promptly	**Cord care:** • tie and cut cord • keep clean and dry until falls off • treat any infection promptly
Thermal protection: • dry with warm cloth • skin-to-skin contact and/or wrapping into dry cloth • initiate breast-feeding • clothing, bedding appropriate for climate	**Thermal protection:** • dry with warm cloth • skin-to-skin contact and/or wrapping into dry cloth • initiate breast-feeding • clothing, bedding appropriate for climate	**Thermal protection:** • dry with warm cloth • skin-to-skin contact and/or wrapping into dry cloth • initiate breast-feeding • clothing, bedding appropriate for climate
Eye care: • clean eyes • routine silver nitrate drops or tetracycline eye ointment in both eyes within first hour	**Eye care:** • clean eyes • routine silver nitrate drops or tetracycline eye ointment in both eyes within first hour	**Eye care:** • clean eyes • routine silver nitrate drops or tetracycline eye ointment in both eyes within first hour
Breast-feeding: Encourage early and exclusive breast-feeding by: • putting on breast within 1 hour of birth • frequent feeding on demand day and night • no prelacteal feeds	**Breast-feeding:** Encourage early and exclusive breast-feeding by: • putting on breast within 1 hour of birth • frequent feeding on demand day and night • no prelacteal feeds	**Breast-feeding:** Encourage early and exclusive breast-feeding by: • putting on breast within 1 hour of birth • frequent feeding on demand day and night • no prelacteal feeds
Examination: • weigh the baby within 24 hours of birth • use check list to examine the baby for problems or abnormalities, and refer to nearest centre for confirmation	**Examination:** • weigh the baby within 24 hours of birth • use check list to examine the baby for problems or abnormalities, and act according to the local protocols	**Examination:** • weigh the baby within 24 hours of birth • use check list to examine the baby for problems or abnormalities, and act according to the local protocols

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Immunizations: • arrange for baby to start on his immunizations as soon as possible in accordance with local immunization policy	**Immunizations:** • start the baby on his immunizations as soon as possible in accordance with local immunization policy	**Immunizations:** • start the baby on his immunizations as soon as possible in accordance with local immunization policy
Skills required: • safe normal delivery skills • basic resuscitation skills • care of newborn at birth • eye care and using eye ointment • thermal protection • breast-feeding • counselling on immunizations	**Skills required:** • safe normal delivery skills • basic resuscitation skills • care of newborn at birth • eye care and using eye ointment • thermal protection • breast-feeding • trained for immunization program	**Skills required:** • safe normal delivery skills • basic resuscitation skills • care of newborn at birth • eye care and using eye ointment • thermal protection • breast-feeding • trained for immunization program
Facilities: • clean conditions	**Facilities:** • aseptic conditions	**Facilities:** • aseptic conditions
Equipment or supplies: • weighing scales • 2 clean cloths • clean ties and blade • silver nitrate drops or antibiotic ointment	**Equipment and supplies: same as community plus:** • infant scale • mucous suction device • vaccines • bag and mask for resuscitation • low-reading thermometer	**Equipment and supplies: same as type I, plus:** • ventilation bag and mask

Table 2.8 Care of the sick newborn

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Low birth weight babies: • breast-feed frequently or give expressed milk by cup and spoon • thermal protection (see table 2.7) • avoid bathing in first 24 hours to prevent becoming cold • refer if difficulties in breathing or other danger signs occur, follow-up	**Low birth weight babies:** • thermal protection (see table 2.7) • avoid bathing in first 24 hours to prevent becoming cold • feed frequently • if unable to suck, give expressed breast milk by cup and spoon • refer if difficulties in breathing or other danger signs occur, follow-up	**Low birth weight babies:** • thermal protection (see table 2.7) • avoid bathing in first 24 hours to prevent becoming cold • feed frequently • if unable to suck, give expressed breast milk by cup and spoon or by nasogastric tube • refer if difficulties in breathing or other danger signs occur, follow-up
Difficulty breathing: • refer any baby with difficulty in breathing • follow-up	**Difficulty breathing:** • refer any baby with difficulty in breathing • follow-up	**Difficulty breathing:** • give antibiotics • give oxygen if available and necessary and refer • follow-up
Infection in the newborn: • treat 'thrush' in the mouth or mild skin infection with gentian violet solution or equivalent • refer any baby who is not sucking, is vomiting, febrile, severely jaundiced, drowsy or convulsing, has pus draining from umbilicus, or has disseminated pustules	**Infection in the newborn:** • treat 'thrush' in the mouth or mild skin infection with gentian violet solution or equivalent • for cord infection: give first dose of IM antibiotics and refer • refer any baby who is not sucking, is vomiting, febrile, severely jaundiced, drowsy or convulsing after giving an initial dose of IM antibiotics	**Infection in the newborn:** • treat 'thrush' in the mouth or mild skin infection with gentian violet solution • for cord infection give first dose of antibiotics IM and refer • refer any baby who is not sucking, is vomiting, febrile, severely jaundiced, drowsy or convulsing after giving an initial dose of IM antibiotics
Conjunctivitis: • clean eyes • give tetracycline eye ointment and refer cases of conjunctivitis starting within two weeks of birth	**Conjunctivitis:** • give appropriate antibiotic IM (single dose) • clean eyes • refer if no improvement after 48 hours	**Conjunctivitis:** • give appropriate antibiotic IM (single dose) • clean eyes • refer if no improvement after 48 hours

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Skills required: • recognize and refer a sick newborn • expressing breast milk and cup and spoon feeding • thermal protection • using tetracycline eye ointment • teaching parents to manage the sick newborn	**Skills required:** • administration of IM antibiotics • physical assessment of the newborn and interpretation of findings • able to provide the basic nursing care required of the sick newborn	**Skills required: same as type I, plus**: • insertion of nasogastric tube
Facilities: • clean conditions	**Facilities:** • clean conditions	**Facilities:** • aseptic conditions
Special equipment and supplies: • tetracycline eye ointment • gentian violet solution or equivalent	**Special equipment and supplies: same as community plus:** • antibiotics	**Special equipment and supplies: same as type I, plus:** • nasogastric tubes

Table 2.9 Sexually transmitted diseases including HIV/AIDS

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Vaginal discharge: • educate about genital hygiene and the prevention, recognition and treatment of STDs including HIV/AIDS • refer suspected cases and their sexual partners	**Vaginal discharge:** • educate about genital hygiene and the prevention, recognition and treatment of STDs including HIV/AIDS • clinical diagnosis and treatment of common causes of vaginal discharge using clinical protocols • ask patient to bring sexual partner for treatment	**Vaginal discharge:** • educate about genital hygiene and the prevention, recognition and treatment of STDs including HIV/AIDS • clinical diagnosis and treatment of common causes of vaginal discharge using clinical protocols • ask patient to bring sexual partner for treatment
Pelvic inflammatory disease: • refer all cases of lower abdominal pain	**Pelvic inflammatory disease:** • commence antibiotics • refer if signs of peritonitis or if no improvement in 48 hours	**Pelvic inflammatory disease:** • commence antibiotics • refer if signs of peritonitis or if no improvement in 48 hours
Genital ulcer disease: • educate about genital hygiene and the prevention, recognition and treatment of STDs including HIV/AIDS • refer suspected cases and their sexual partners	**Genital ulcer disease:** • educate about genital hygiene and the prevention, recognition and treatment of STDs including HIV/AIDS • clinical diagnosis and combined treatment of common causes of genital ulcer disease using clinical protocols • serology for syphilis if patient is pregnant • ask patient to bring sexual partners for treatment	**Genital ulcer disease:** • educate about genital hygiene and the prevention, recognition and treatment of STDs including HIV/AIDS • clinical diagnosis and combined treatment of common causes of genital ulcer disease using clinical protocols • serology for syphilis if patient is pregnant • ask patient to bring sexual partners for treatment

COMMUNITY	TYPE I HEALTH CENTRE	TYPE II HEALTH CENTRE
Syphilis screening in pregnancy: • if syphilis prevalent, refer all pregnancies for serology preferably before 16 weeks • education regarding prevention and management of STDs	**Syphilis screening in pregnancy:** • if syphilis prevalent, do serology on all pregnant women preferably before 16 weeks and repeat in last trimester. Treat positive cases. • counsel and treat partners • ensure all babies of positive women are treated at birth.	**Syphilis screening in pregnancy:** • if syphilis prevalent, do serology on all pregnant women preferably before 16 weeks and repeat in last trimester. Treat positive cases. • counsel and treat partners • ensure all babies of positive women are treated at birth.
HIV/AIDS: • promote community awareness of HIV/AIDS and its transmission • promote the use of condoms • birth attendantss to use gloves and soap with water in their work if prevalence is high	**HIV/AIDS:** • promote community awareness of HIV/AIDS and its transmission • promote the use of condoms • counsel those known to be positive on pregnancy, abortion and breast-feeding • staff to use gloves and soap with water in their work if prevalence is high	**HIV/AIDS:** • promote community awareness of HIV/ AIDS and its transmission • promote the use of condoms • counsel those known to be positive on pregnancy, abortion and breast-feeding • staff to use gloves and soap with water in their work if prevalence is high
Skills required: • able to communicate effectively about STDs including HIV/AIDS • able to recognize sexually transmitted diseases and pelvic inflammatory disease • able to counsel and support patients with STDs and HIV/AIDS	**Skills required:** • able to communicate effectively about STDs including HIV/AIDS • able to perform and interpret pelvic examination • follow standard management protocol • able to counsel and support patients with STDs and HIV/AIDS	**Skills required:** • able to communicate effectively about STDs including HIV/AIDS • able to perform and interpret pelvic examination • follow standard management protocol • able to counsel and support patients with STDs and HIV/AIDS
Facilities:	**Facilities:** • aseptic conditions • access to laboratory for syphilis serology	**Facilities:** • aseptic conditions • access to laboratory for syphilis serology
Equipment and supplies: • gloves, soap	**Equipment and supplies:** • pelvic examination kit • syphilis serology kits • gloves, soap • medication	**Equipment and supplies:** • pelvic examination kit • syphilis serology kits • gloves, soap • medication

3 DEVELOPING AND MAINTAINING A FUNCTIONING REFERRAL SYSTEM

3.1 Referral protocols

When something goes wrong, it is normal to look for someone to blame. People do make mistakes, but more often than not, it was actually the system that failed. Referral protocols, specifying *when* and *to where*, should be an essential part of the standard management protocols developed for all health workers involved with maternal care. These do not totally remove the element of judgment in clinical management, but they do go a long way to reducing the rancour and recrimination that goes on because of disagreements between hospital and health centre staff about the management of patients and how late or unnecessary a particular referral might have been. This applies equally to the selection of high risk patients during pregnancy and to the referral of complications of pregnancy and labour.

Chapter 2 makes recommendations for a system of reproductive health care. However, each country, state or region needs to work out in detail how it is going to implement the program and then ensure that everyone involved knows what is and is not expected of them and what to expect of everyone else. This will entail negotiations, which may be quite difficult if different ministries or organizations are involved, or where there is a mix of public and private institutions and providers.

3.2 Functional links with referral centres

Communications are important, and referral protocols should also include details of the information or records that should be sent with the patient to the referral centre and on her return. Active supervision and continuing education through feedback on cases and formal in-service training sessions help to build the links between the centres. Consultations between health centre and hospital by means of visits or radio also facilitate the development of professional trust and confidence.

Most important, however, is the establishment of a programme in the district with agreed goals and objectives, standard protocols, performance targets and annual or semi-annual review sessions. The link with the referral centre then becomes much more comprehensive than the health centre simply passing on its complicated cases.

3.3 Obstetric first aid

The most important responsibility of a health worker before actually referring a patient is to maintain vital functions and minimize further damage. Haemorrhage, whether external from an antepartum or postpartum haemorrhage or internal from a ruptured ectopic or uterus is the most serious acute obstetric emergency, and probably the single most important cause of maternal death. For this reason it is important to make sure that facilities for giving intravenous infusions of saline or plasma expanders are available as close to the community as possible. TBAs will not have that facility, but should be encouraged to give oral rehydration solution to women not in shock.

Eclamptic fits are the other common acute emergency. Management of the convulsion so that the patient does not hurt herself and administration of magnesium sulphate are both important skills that should also be available at all health centres. Preventing hypoxia by placing the woman on her side, suctioning mouth and nostrils and giving oxygen, if available, is also important.

Less urgent but just as important is the control of infection in cases of sepsis or in cases of prolonged rupture of membranes that need to be referred. Commencement of antibiotic treatment should be routine in such situations.

3.4 Maternity waiting homes

One advantage of a refined risk assessment procedure of prenatal care in situations where travel to the referral hospital is prolonged or difficult is the ability to identify a limited number of women who can

be fairly confidently referred to the hospital or health centre shortly before term in anticipation of their needing specialized help. The other thing that is necessary for that to work is the presence of a facility where the woman can stay without using up a hospital bed. Maternity waiting homes built in the proximity of the hospital or health centre meet this need very satisfactorily. Such an approach is not culturally acceptable in all situations, but in others the idea has been expanded to a minimal nursing facility which caters to the needs both of expectant mothers as well as other patients like those with diabetes or cardiac disease who are getting stabilized on drug regimens. Such a facility may actually be run by the local women's group rather than the hospital authorities.

3.5 Transport and communication

Most complications and emergencies cannot be anticipated in advance. Delays only reduce the chances of survival, so transport becomes necessary as and when the complications arise. Obstetric emergencies are, of course, not the only medical emergencies in a community. In fact they are likely to be less frequent than trauma and child health emergencies. Where government is unable to provide an ambulance for health centres, a community-based system of organizing transport may sometimes be possible. It will depend upon community resources being available as well a confidence that if they do make the effort, the hospital staff will take them seriously and deal with them with respect. Once more this has to be part of a planned programme worked out between the district health authorities and the communities.

3.6 Reception of referred cases in referral centres

One of the main problems with the establishment of a good system of maternal care in a district is that it has the potential for creating quite a bit more work for staff at the referral centres. Training and working with TBAs at a community/health centre level may not cost much money, but increasing the staff and facility capacity at the district hospital may be quite expensive. Much bilateral and multilateral aid is directed towards developing community services, but there is considerable reluctance by many donors to spend money on hospitals. Effective reproductive health systems require simultaneous and systematic development of all the district health staff and facilities. Without that, the result may be an understandable and not inconsiderable resentment by hospital staff when the extra demands are made upon them.

Bypassing of rural facilities is a common problem which leads to overcrowding of health centres and, especially, hospitals. Improvement of standards at the rural facilities is the first priority, but a system of differential charges which penalizes those who go to referral centres without a referral letter or clear indication may also help to dissuade some of those who unnecessarily use up the resources of more expensive facilities.

4 INSTITUTIONAL SUPPORT MECHANISMS

4.1 Training

Job and task analysis

Implementation of recommendations like those in chapter 2 will involve changes in the roles of most health workers. For TBAs and nurse midwives, it probably involves a substantial expansion of roles. For this reason, it is very important to establish priorities for action for each situation. Any change that is proposed will meet opposition from some party involved, so it is important to identify the different stakeholders involved in maternal and perinatal care and ensure their participation in the decision processes. These will include professional associations, government planners, trainers, women's associations, non-governmental organizations and donors (Aitken, Kargbo and Gba-Kamara, 1985).

For the design of effective basic or in-service training programmes, there is no real short-cut past a thorough job and task analysis. This must start with a programme analysis along the lines of chapter 2 of this report, in which the role of each health worker/facility is determined within the context of the programme as a whole. This should allow the listing of all the functions and tasks to be performed by a particular category of health worker. A task analysis of the more complex or critical tasks will then make sure that the essential components of each task have been covered in the training process.

Standard management protocols and essential drugs and equipment

Programme and job analysis is the first step towards the development of standard management protocols and essential drug and equipment lists. Such standards need to be modified periodically to keep up with changes in disease epidemiology and the structure of the health services, but there is no doubt that they constitute the key to effective programmes, basic and in-service training and supervision.

Training or reference texts?

The different tasks that make up a job have to be performed at different frequencies. Also, for some tasks, it is critical how they are performed; for others, it may be less so. Most training programmes have little difficulty in providing sufficient practice at the common tasks. Those skills can be learned during training and constant practice during the job maintains the skill. For less frequently performed, but possibly important tasks like doing a manual removal of placenta or a vacuum extraction to assist a difficult second stage, there needs to be a strategy to assure competence when it is required. An obvious one is the provision of a reference text. This is fine so long as health workers can and do read these sorts of texts to remind themselves how to perform a task. This itself is a skill that needs to be learned through demonstration and practice during the training period. Reference texts for this purpose need to be designed specifically in a cookbook format so that instructions can be found and followed easily when required.

Appropriate settings and tutors

It always seems obvious to say that training should be done in as close an approximation to the work situation as possible, but it is unfortunate that, particularly for people who will have to do a lot of their work in the community, their tutors are often those who have no experience of working in that situation and are, therefore, not comfortable about even trying to arrange learning experiences in the community. A similar problem exists for supervisors, who are often ignorant of the reality under which those they supervise have to work. Those in training to become trainers and supervisors - doctors, obstetric specialists or professional midwives - all need to have a portion of their training in exercises specifically designed to familiarize them with the realities of working in communities or type I health centres.

In-service training and skills upgrading

Skills upgrading for older health workers should be experienced as job enrichment. Sadly, it is more often resented as the imposition of additional burdens and expectations on an already stressful job situation because working or living conditions are not satisfactory or because the support, supply and referral systems are not equal to the demands of existing job responsibilities. Observation studies of primary care workers in recent years have often demonstrated the presence of poor technique and shortcuts in their clinical methods in spite of having attended repeated in-service training sessions on common diseases.

There are two points that emerge from this. First, the value of using continuing education opportunities to repetitiously go over the management of common conditions has to be questioned. It could be argued from 4.1.3 that these are the occasions to review the management of less commonly observed but important conditions. Second, it is no less important for continuing education sessions to be practical, active learning experiences than basic training. This is especially true for learning new skills, but just as relevant when trying to improve or correct techniques that are already being applied.

4.2 Teamwork and supervision

An effective maternal and child health program can only be achieved through teamwork. As has already been pointed out, many activities including the identification of complications can only be carried out by a TBA working at community level; but others, especially life-saving procedures need to be carried out at the health centre or hospital, to which the women need to be referred. Teamwork means that everyone involved needs to understand the system, their own role in it, and appreciate and acknowledge the importance of everyone else. This needs to be realized particularly through the referral system and a community support system.

Supervision is a complementary activity to team-building, and the supervisor should be the team leader. This should start with the district health officer and the physician in charge of obstetric and reproductive health care in the district. Those at health centre level should be supporting and supervising their local team of community level workers. Supervision involves monitoring the quantity of people's work - their coverage of the population for whom they are responsible, and the quality of care. Setting standards of quality and targets for coverage should be a joint effort between supervisor and supervises, and should include standards and targets for the supervisor. The system depends upon a viable reporting system as well as periodic visits and joint activities.

4.3 Logistics, maintenance and essential drugs and supplies

The tables in Chapter 2 indicate the essential equipment, drugs and supplies required for the different activities and tasks. These are summarized for each type of health centre in the appendices. They are referred to as essential because they are important for the management of life-threatening conditions. In situations of scarcity of skilled human and other resources, some of these will tend to be concentrated in more sophisticated or referral centres, but for greatest impact the health workers and equipment need to be available as close to the periphery of the system as possible.
None of the pieces of equipment require highly trained persons to maintain them. Nevertheless, management needs to set aside sufficient time and resources to ensure that equipment in all the centres is adequately maintained. Quantities of drugs and supplies will vary according to the workload of different types of centre. Standard drug kits for health centres can vary their contents accordingly, but all drugs should be supplied regularly and stored properly.

4.4 Management, communication and interpersonal skills

Because safe motherhood and reproductive health is a programme which involves an integrated approach and so much teamwork for its success, it really does need 'managing'. Because a system is required, it needs to be set up and maintained, and everyone needs to know how the system works and

their own roles in it. Goals and objectives need to be set, and everyone involved needs to know them and how he or she contributes to them.

Applying the system in a particular community requires that there be a community diagnosis and allocations of catchment areas for each of the health centres in the district. On that basis, particular targets can be set for each centre and specific plans for implementation. As information about achievements become available, reviews will lead to problem identification and group problem-solving exercises. Doing this planning work together is an important part of the teamwork and supervision aspects of human resource management.

Some of the most important obstacles to effective safe motherhood programmes are the social, professional and educational barriers between highly trained, upper class, male doctors in health centres or hospitals and less-well educated or uneducated, poor, lower class/caste female auxiliary nurses and community level workers. Good management and leadership involves special efforts to overcome the class and gender biases that may exist in society in order to create an effective partnership with mutual respect.

The situation is often worse for the pregnant woman and her family from socially disadvantaged groups. Safe motherhood involves many decisions being made by a number of different people, particularly the family of the pregnant woman. Good decisions for them involve weighing considerations of what is happening to the mother together with other non-medical ones. Making sure that families understand the medical issues and their importance requires good communication skills as well as a good basic understanding of the circumstances of people's lives.

Lack of respect and denial of care often occur, and demonstrate a serious lack of understanding or consideration for people who have remarkably little control over the circumstances of their lives. Much of this may be class, race or gender based. Whichever it may be, it is a reprehensible direct cause of unnecessary death and suffering. It is also an indirect cause of death and suffering, because the delays involved in referrals to hospitals are often based upon fear of the humiliating reception that is to be expected from the hospital staff. On the other hand, we are all aware of the popularity of hospitals and health centres that are known for the respect and care that is shown to their patients.

4.5 Data collection and research

The health centre must become the focus for data management and basic research on safe motherhood. Maternal health care providers must be taught basic research skills and encouraged to use data collection and analysis as a means of continuous monitoring and evaluation of maternal care services delivery (see section 6). WHO is developing a series of indicators for monitoring maternal mortality. Data collection for such monitoring must start at the district level, in health centres as well as hospitals. For further information, see *Indicators to Monitor Maternal Health Goals, Report of a Technical Working Group*, Geneva, 8-12 November 1993 WHO/FHE/MSM/94.14. Available from the Division of Reproductive Health (Technical Support), World Health Organization, Geneva, Switzerland.

5 COMMUNITY SUPPORT SYSTEMS

5.1 TBA training and retraining

Traditional birth attendants are the key people at community level who have the potential for improving maternal and newborn health. However, it should be recognized that their importance and the extent of their influence vary considerably from culture to culture. Where communities are very small, there may be no TBAs because no woman has the opportunity of gaining enough experience to become recognized in that way. In cultures where there are TBAs, their work is often restricted to one extended family or clan, so they would deliver up to about twenty babies a year. Only a few TBAs have a wider practice and make it their main means of earning a living. They may deliver up to 120 per year. Nevertheless, in many countries, even where there are TBAs, many women still deliver by themselves or just with the help of a close female relative or friend. This is particularly true for women who are the poorest and least educated and, therefore, at highest risk for poor birth outcome.

The role and, therefore, the influence of the TBA also differs from culture to culture. In some, the TBA may be a woman of considerable influence in the community. In much of South Asia the opposite is the case. There, the TBA's main role is to receive the baby and deal with the substances associated with the process of childbirth which are considered polluting in some societies. She is, therefore, usually a member of the lowest caste of society. She has little or no role in the prenatal period, and may carry very little authority when it comes to deciding on the management of complications of pregnancy or labour. Those decisions will be made by the family with or without the help of a spiritual healer. The training of a TBA may improve her status a bit, but much of the true strength of a programme to train TBAs is in the extent to which the new knowledge and ideas that she has are shared and accepted by other members of the community.

Some TBA training programmes expand the role of the TBA to include family planning and health education on a variety of aspects of reproductive and child health. The core of the training programmes is to improve the activities that they were already doing: giving advice in pregnancy, doing a clean, safe delivery and dealing with the problems that may arise. The training is, therefore, usually brief, lasting less than a month, though it may be spread out over a longer period.

5.2 Integrating the TBA into the health care system

An effective and healthy system is a rational one that uses the strengths of its parts appropriately and does not impose unnecessary strains on any of its components. A maternal or reproductive health care system must function in the same way. Community level workers must be selected with the help of the community because they are recognized as the most appropriate women for the job. They must then take on a workload that is manageable and fulfil a role that is acceptable to the community and compatible with their domestic responsibilities and the rest of the reproductive health care system.

TBAs have been shown to be effective in 1) performing initial screening of pregnant women for risk factors, 2) referring high risk patients to appropriate sources of care, 3) following a normal pregnancy through labour, delivery and the postpartum period, and 4) providing family planning information and services.

Most TBAs can effectively look after no more than 150 households, so that in a village of 1000 people, there would be one or two TBAs depending on the number of extended families or clans. In order to add a community based distribution of contraceptives (CBDC) role, additional women may need to be selected. It is quite likely that they will be younger women than the TBAs and still users of contraceptives, since the women in the community most in need of advice and supplies of short term contraception will be other younger women.

The most effective way to link up the TBA and other community workers with the health care system is to involve the staff, especially the midwife from the local health centre in the processes of

explaining the programme to the community, selecting the TBAs for training, and then assisting in the training itself and providing supervision. The training may with advantage be run by someone with more experience and expertise in training TBAs and CBDCs, but the participation of the local midwife helps to build a bond of friendship and respect which has the potential of developing into a viable collaborative working relationship. That relationship needs to be maintained, and the integrated approaches to prenatal care and family planning form the joint purposes in which all can have their complementary roles.

5.3 Information, education, communication

The success of a new programme in a community is generally in proportion to the extent to which its goals and methods are accepted by the community. For this reason, special efforts need to be made to explain the programme and gain community support before implementation. Once established and successful in some communities, the leaders from those communities can be very successful advocates to other communities.

The involvement of women's groups is very important, not just for the general support of the programme, but also for support of the particular aspects of the programme, and as a forum for experiences to be shared, problems to be solved and successes to be celebrated. If TBAs are to change their practices, then it is important that other women in the community understand what is being done and why.

5.4 Community support mechanisms for the health of mothers and newborns

Any successful community based programme needs the support of the critical members of that community. They will not always be the official leaders, and particularly over the issues of reproductive and maternal health, the support of significant women in the community will be essential. However, in many cultures it is the men who have control over resources and who make the decisions about transport and blood donors in emergency situations. Peer group values and norms are important, and the men of a community should have the opportunity to be informed and form their own attitudes towards the care of their women and children.

Much of the reluctance to use health services is due to people feeling that they have no control over anything that happens there. A sense of ownership through representation on a health centre committee, the contribution of materials or labour in the improvement of the facility, and simple recognition and respect by health centre staff when people visit the centre can make an enormous difference. Community members who have been selected by the community for training of some sort need to remain answerable to the community or risk losing support. This is part of the reason why education of the community about the goals and content of a programme is so important. Support for family planning will follow acceptance by the community of its advantages. The provision of a vehicle for early referral of a woman in obstructed labour is no problem for a community that understands what is happening. To talk of community support mechanisms for the health of mothers and children is to talk of the need for support of community education efforts by the health services. Communities will do what they can within their resources once the importance is understood.

6 EVALUATION AND MONITORING

6.1 Estimating catchment area and coverage

Monitoring and evaluation of maternal and reproductive health programmes requires the definition of catchment areas for the different health institutions and workers in the district system. There are two main ways of looking at a catchment area. There is the *estimated* catchment area of a health centre obtained by dividing up the total district population around the different health centres in the district and there is the *effective* catchment area. That can be understood as the population within certain villages around the centre, known to actually make use of the health centre on a regular basis, or the population of certain villages that have been selected for the development of the programme.

Estimating coverage or utilization rates for the programme activities requires the estimation of the numbers of pregnancies or births in the community as a denominator. Most countries have census data with estimates of growth rates from which current village totals can be estimated. From those totals and a crude birth rate can be estimated the numbers of pregnancies and births to be expected in a year. Although only estimates, these can be used as denominators for estimation of the coverage and utilization of family planning, prenatal care or delivery by trained persons in those communities.

Coverage is like the effective catchment area. It is a measure of the proportion of the population that have access to services; for example, the proportion of the community with trained TBAs in their communities or who have regular access to a fixed or mobile prenatal clinic. *Utilization* is a measure of the proportion of women who are actually using services. It can be estimated as a proportion of either the estimated or the effective catchment areas, the two figures providing different management information. For both of these measures it is important to define which denominator is being used.

6.2 Monitoring quality of care for mothers and newborns

Monitoring quality of care is different from estimating the numbers who are using care. Quality involves the successful accomplishment of a critical aspect of an activity of care. Unfortunately, it is difficult to assess this from the reporting system, and case reviews, observation at the time of a supervisory visit or by a special survey are necessary.

Examples of quality indicators that can be monitored in this way include:

- case reviews of maternal deaths
- case reviews of perinatal deaths
- availability of essential drugs (IV fluids, ergometrine) in the delivery room,
- availability of functioning equipment (Vacuum extractor or speculum)
- percentage of risk factors or complications detected at prenatal visit
- percentage of women with complications that received correct treatment (e.g. for anaemia or hypertensive disease of pregnancy).

6.3 Performance indicators

Maternal deaths even in high maternal mortality populations are still rare enough to be useful as a performance indicator. Perinatal deaths, measuring the effects of the same processes, are better because they are about fourteen times more common. Even so, a large proportion of perinatal deaths go unreported, even by trained TBAs so that also is problematic.

Process indicators become the most useful measures of what the programme is intended to accomplish. Coverage and utilization of prenatal care, supervised deliveries and contraception are important basic measures of programme activity. Typical measures of maternal care are shown in Table 6. Selection of indicators for a particular programme will depend upon both the importance or usefulness of the indicator and the feasibility and reliability of its measurement.

Table 6 Indicators for monitoring maternal care.

MEASURE	IMPORTANCE/FEASIBILITY
1. Prenatal care:	
• percent seen by a TBA	x x
• percent seen by health centre staff	x x x
• percent seen by 16 weeks (for syphilis test)	x
• percent completed tetanus toxoid	x x x
2. Prenatal complications:	
• percent anæmic at 32 weeks	x x
• percent anæmic at delivery	x x
• percent hypertensive disease of pregnancy	x x
• percent positive for syphilis serology	x x
3. Referrals:	
• percent complicated cases appropriately referred	x
• percent referrals for high risk or complications who reach hospital	x x
4. Delivery care:	
• percent delivered by TBA	x x x
• percent delivered at health centre	x x x
• percent delivered at hospital	x x x
• percent caesarean sections (hospital)	x x
• percent delivering alone	x x x
5. Contraception utilization rate	x x x
6. Health centre workload:	
• numbers attending prenatal clinic	x x
• numbers attending family planning clinic	x x
7. Management indicators:	
• percent planned meetings held	x x x
• percent supervisory visits done	x x x
• percent planned mobile clinics done	x x x
• number of weeks supplies unavailable at health centre or community	x x x

6.4 Record keeping

Record keeping, though useful for many reasons, can become an end in itself since it is the main means of evaluation of performance. Performance can then itself suffer through lack of time and attention. Record keeping, therefore, needs to be kept to its essential minimum. For literate TBAs the keeping of records of deliveries in a notebook has a lot of precedence. For those not literate, a younger relative is often able to complete the record.

6.5 Home-based maternal records

Home-based maternal records have proven their advantages in many ways (World Health Organization, 1990b). They get lost less frequently and move with the mother when she does, so that they are again available for the next interaction with the health system, whether it be another pregnancy, a family planning inquiry or treatment for an STD or anaemia. Because the record covers three pregnancies or seven years, a more complete and integrated view of that woman's reproductive and general health is maintained. Cards that are also action-oriented have the additional value of providing guidance to anyone who reads the card as to what advice should be given to the woman for her delivery.

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ANNEX 1

Technical Working Group on Care of Mother and Baby at the Health Centre
Geneva, 5-9 July, 1993

Participants

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Secretariat (WHO, Geneva, Switzerland)

Headquarters

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Division of Control of Tropical Diseases (CTD)
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Division of Development of Human Resources for Health (HRH) *

Division of Strengthening of Health Services (SHS)
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Division of Food and Nutrition (FNU)
Dr D. Benbouzid, FNU/NUT

Division of Health Education (HED)
Mr H.S. Dhillon, HED

* Unable to attend

ANNEX 2

Essential Drugs for Care of Mother and Baby at the Health Centre

	Type I	Type II
Anaesthetics + oxygen		
Lidocaine	√	√
Diazepam (injection)	√	√
Oxygen		√
Analgesics		
Acetylsalicylic acid	√	√
Paracetamol	√	√
Pethidine/Morphine		√
Anthelminthics		
Albendazole	√	√
Mebendazole	√	√
Antiallergics		
Epinephrine	√	√
Antianaemia drugs		
Ferrous sulphate	√	√
Folic acid	√	√
Iron dextran		√
Anticonvulsives		
Diazepam	√	√
Anti-infective drugs/antibiotics		
Ampicillin or Amoxicillin	√	√
Benzylpenicillin		√
Cephtriaxone (or substitute for gonococcal disease)	√	√
Procaine benzyl penicillin or benzathine benzylpenicillin	√	√
Chloramphenicol	√	√
Gentamicin	√	√
Metronidazole	√	√
Sulphamethoxazole + trimethoprim	√	√
Tetracycline or Doxycycline	√	√
Tetracycline eye ointment or silver nitrate drops	√	√
Antimalarials		
Chloroquine	√	√
Proguanil	√	√
Sulfadoxine + pyrimethamine	√	√
Quinine	√	√

	Type I	Type II
Blood products		
Dried human plasma		√
Contraceptives		
Ethinylestradiol+levonorgestrel	√	√
Ethinylestradiol+norethisterone	√	√
Depot medroxy progesterone acetate	√	√
Norethisterone	√	√
Norethisterone enantate	√	√
Disinfectants and antiseptics		
Chlorhexidine	√	√
Gentian violet solution	√	√
Iodine	√	√
Surgical spirit	√	√
Intravenous solutions		
Water for injection	√	√
Compound solution of sodium lactate (Ringer's) or sodium chloride	√	√
Glucose 5%, 50%	√	√
Plasma expander	√	√
Iodine preparation		
Iodized oil for injection	√	√
Oxytocics		
Ergometrine	√	√
Oxytocin	√	√
Vaccines		
Tetanus toxoid	√	√

ANNEX 3

Delivery and Family Planning Equipment

A. Normal delivery equipment

	Quantity
Spencer Wells forceps	2
Scissors for episiotomy	1
Scissors for cutting cord	1
Cord ties	2
Plain gauze and cotton wool swabs	
Clean vulva pad	1
Towels	2
Receiver for placenta	
Bowl for lotion	
Sterile gloves	
Sterile drapes	
Infant scale	

B. Suturing kit (for episiotomies or tears)

	Quantity
Episiotomy scissors	1
Small artery forceps	4
Dissecting forceps, toothed	1
Dissecting forceps, non-toothed	1
Needle holder	1
Sponge forceps	2
Syringe, 5 ml with needle	1
Local anaesthetic agent, e.g. lidocaine 1%	
Sutures and ligatures, 0 chromic catgut, ties and with needles	
Antiseptic solution	
Gauze swabs	
Sterile pad	
Suction catheters	
Kidney dish	1
Gallipot	1
Sterile gloves	
Sterile drapes	1
Light source	1

C. Equipment for neonatal resuscitation and newborn care

	Quantity
Mouth suction device	1 or more
Infant face mask	2 different sizes
Ventilatory bag	1
Heat source	1
Thermometer, low-reading	1

D. Instruments for vacuum extraction

	Quantity
Vacuum extractor	1
Sponge forceps	4
Artery forceps (Spencer Wells)	
large	2
small	2
Needle holder	1
Stitch scissors	1
Episiotomy scissors	1
Dissecting forceps, toothed	1
Dissecting forceps, non-toothed	1
Urethral catheters (Foley) gauges 12-21	1 of each
Towel clips	4
*Vaginal speculum, large (Sims)	1
Vaginal speculum (Hamilton Bailey)	1
*Kidney dish	1
*Gallipot	1

E. Manual vacuum aspirator pack

	Quantity
Sponge forceps	4
Vaginal speculum, large (Sims)	1
Self-retaining vaginal retractor (Auvard)	1
Vulsellum forceps (Teale)	2
Uterine sound (Simpson)	1
Uterine dilators, double-ended (Hegar), set of 6	1
Uterine curettes	
blunt	2
sharp	2
Artery forceps, small (Spencer Wells)	1
Dissecting forceps	1
Ovum forceps (de Lee)	1
Vacuum aspirator	1

F. Kit for insertion of intrauterine contraceptive device

	Quantity
Metal sterilization tray, with cover	1
Bivalve speculum	
small	1
medium	1
large	1
Sponge forceps	1
Long straight artery forceps	1
Uterine sound	1
Torch with batteries, or other suitable light source	1
Scissors	1
Antiseptic solution, aqueous iodine 1 in 2500	
Benzalkonium chloride 1 in 75	
IUD	

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* Optional

IUD inserter	1
Sterile gloves	
Vulsellum forceps	1
Dressing forceps	1
Metal bowl	1
Vulval pads	

Safe Motherhood Resource list

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Social and cultural issues in human resources development for maternal health and safe motherhood: Report of a working group meeting, Stockholm, 30-31 May 1991. WHO/MCH/MSM/91.4.

Unless otherwise stated, all the above materials are available free of charge from:
World Health Organization,
1211 Geneva 27, Switzerland.
Tel 41 22 791 21 11,
Fax 41 22 791 0746; Telex 27821

Studying maternal mortality in developing countries: Rates and causes: A guidebook. WHO/FHE/87.7. Available in English, French and Spanish.

Home-based maternal records: Guidelines for development, adaptation, and evaluation. WHO 1994 ISBN 92 4 154464 3 Sw fr 20; in developing countries Sw fr 14. Available in English and French.

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Women's health and the midwife: A global perspective – Report of a WHO/UNICEF/ International Confederation of Midwives (ICM) workshop prior to ICM congress in The Hague, The Netherlands in August 1987. WHO/MCH/87.5.

Complications arising during pregnancy and childbirth cause the deaths of half a millon women every year, the vast majority in the developing world. Over 4 million newborn babies die each year, most of them as a result of poorly managed pregnancies and deliveries. Millions more women and babies suffer debilitating and life-long consequences of ill-health.

The World Health Organization seeks to alleviate the burden of suffering borne by women, children and families, through its Maternal Health and Safe Motherhood Programme which seeks to reduce levels of maternal and neonatal mortality and ill-health significantly by the year 2000.

The Organization's activities fall into four main areas:

- technical cooperation with countries in planning, implementing, managing and evaluating national safe motherhood and newborn care programmes;
- epidemiological research into levels and causes of maternal and neonatal mortality and operational research on cost-effective ways of reducing deaths and disabilities;
- strengthening human resources for the provision of essential obstetric care, including development of standard treatment and management protocols, programme planning guidelines and training materials;
- production of advocacy materials and collection, analysis and dissemination of information to provide scientifically sound data on the nature and dimensions of maternal and newborn mortality and morbidity and how change can be brought about.

If you would like to know more about the WHO Maternal and Newborn Health/Safe Motherhood Unit, write to:

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