Home-based maternal records

Guidelines for development, adaptation and evaluation

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Contents

Preface

In the search for ways to reduce high maternal, perinatal and neonatal mortality and morbidity rates, a number of simple, appropriate technologies and approaches have been introduced in maternal and child health care during the past two decades. The home-based maternal record is an example of such a simple technology.

Much positive experience with the child's growth chart[1] has prompted the development of similar records for monitoring the health of women. A number of efforts have been made in various programmes in Africa and Asia to devise a simple card which can be retained by women themselves and which provides a record of health and of health care received throughout reproductive life. In January 1982, at a WHO meeting in Geneva, a prototype record was designed, which could be appropriately adapted for use in different settings. The card can be used in primary health care settings for monitoring and improving the health status of women during pregnancy, labour, delivery and the postpartum period as well as between pregnancies. It can promote self-care, where appropriate, through the active participation of the mother and her family, and indicate the need for referral to an appropriate level of care. In addition to providing a simple means of indicating the presence of risk factors, it is useful as a teaching aid for educating women about health, nutrition and family planning. It can also provide baseline information for national health information systems.

After 30 years of use in most developing countries, the value of the child's growth chart as a means of educating mothers and health personnel is being debated. Unfortunately, only limited attempts were made to evaluate the use, effectiveness and understanding of the growth chart before it was introduced on a wider scale in primary health care. To avoid a recurrence of such problems, a collaborative effort to evaluate the understanding and use of the home-based maternal record was undertaken at 20 centres in 14 countries during 1984–1988 before its general and widespread use was advocated.

Findings indicate that the record proved most useful to community health workers, traditional birth attendants and mothers themselves. It increased the referral rate, the use of antenatal care, attendance at postpartum health checks and childhood immunization rates. It was considered to be a suitable tool for promoting self-reliance and the participation of mothers in their own health care.

The WHO prototype record has been adapted by about 30 different centres. Ministries of health in China, India, the Philippines and Viet

[1] *The growth chart. A tool for use in infant and child health care.* Geneva, World Health Organization, 1986.

Nam have introduced the record in areas with large populations in order to study the feasibility of its use on a countrywide scale. The WHO collaborative study of the use and effectiveness of the record has been extremely encouraging and points to the real need for such technologies at the community and family levels in all countries.

These guidelines, which are based on field experience, cover all aspects of the development, adaptation and evaluation of home-based maternal records. They are intended for decision-makers in health ministries and directorates, obstetricians, programme managers and community health experts who wish to consider the introduction of such records in their health systems. They provide detailed information on the functions and benefits of the records, how they should be adapted, used and introduced in the context of primary health care, and the steps that should be taken in proceeding to large-scale use. Information on the training of community health workers, nurse-midwives and physicians and on evaluation is also included.

Dr Vijay Kumar, Executive Director, Survival of Women and Children (SWACH) Foundation, Chandigarh, India, Dr Kusum P. Shah, Geneva, Switzerland and Dr Neena Raina, Director, SWACH Foundation, Chandigarh, India, have assisted Dr P.M. Shah, Responsible Officer, Child Health and Development, Maternal and Child Health and Family Planning, WHO, Geneva, Switzerland in the development of these guidelines. Their assistance is gratefully acknowledged.

1 Introduction

Maternal, neonatal and perinatal mortality rates are unacceptably high in most developing countries. In addition to the adverse effects on the families involved, these high rates are of serious concern to health workers, planners, political leaders and society as a whole. Most deaths during the vulnerable periods associated with pregnancy and childbirth occur because of a failure to recognize the seriousness of problems and to make use of available services in good time, together with poor health infrastructures. In addition, many deaths occur in "at-risk" cases, in which one or more of the conditions and characteristics considered to be risk factors are present. Fortunately, most risk factors can be dealt with, provided that they are diagnosed and managed in time.

In many developing countries, health-care institutions are inadequate and not easily accessible. However, if there is timely identification and referral of cases at risk by the primary health care services, the limited resources available in institutions can be fully utilized to help those most in need. Another approach is to encourage the active involvement of individuals and their families, the community and health-care providers with the aim of helping people to understand how to look after their own health. Simple and scientifically sound technology, suitably adapted to local conditions, is also needed.

Since the Declaration of Alma-Ata on primary health care in 1978,[1] there have been numerous developments that encourage people to participate in caring for themselves and improving their chances of survival and the quality of their lives. One of these is the home-based maternal record; this takes the form of a card that is kept at home by mothers themselves and on which information about their pregnancies, the birth of their children, and health problems between pregnancies can be recorded.

1.1 Evolution of home-based records

1.1.1 Home-based growth records

The idea of home-based records sprang from child growth charts, which are well accepted and have proved quite successful as a health aid. Their main contribution has been to increase the level of awareness and knowledge of body weight in relation to age. The incorporation of health education messages and nutritional advice has further increased their usefulness. Numerous other adaptations in different countries have contributed to their widespread success; for example, the inclusion of information on immunization, family planning and psychosocial development milestones has proved useful for monitoring purposes.

[1] *Alma-Ata 1978: Primary health care.* Geneva, World Health Organization, 1978 ("Health for All" Series, No. 1).

1.1.2 *Institution-based maternal records*

Many different hospital-based or institution-based records for mothers are used throughout the world. The common feature of these records is that they are designed to serve the needs of professionals working in institutions. They are often lengthy, complex, difficult to fill in and cumbersome to retrieve, and staff and office equipment are needed for their maintenance and storage, which increases their cost. Institution-based records are used for recording information about women who visit hospitals or other health facilities. They also generate data that can be used for audit purposes and for compiling statistics. However, they are of little value to the mothers themselves who are rarely allowed to share the information they contain.

1.1.3 *Home-based maternal records*

The realization that records should be more useful to the individuals to whom they refer prompted efforts to develop records that mothers could retain. The content, language and size of these records have varied according to local circumstances. In developed countries, with predominantly literate populations and well developed health facilities, the records have taken the form of booklets (Japan, United Kingdom, United States of America). Many other types of record have been produced and used, e.g. in Botswana (*1*), India (*2*), Kenya (*3*), Papua New Guinea (*4*), United Republic of Tanzania (*5*) and Zambia (*6*). While the presentation and content of these records varied, there were also a number of common features: they covered a single pregnancy (except in India); they were used in the outpatient settings of health centres or hospitals; and they were filled in by trained midwives, nurses or health assistants.

The home-based maternal record used in Maharashtra, India, was devised for recording data on four pregnancies and interpregnancy periods (*2*, *7*). It included information on family planning and the mother's weight was plotted on a graph for use in nutrition monitoring. It was used in the community setting and actively involved the mothers and community-based part-time social workers.

The record used in Kenya had a built-in warning system to identify high-risk cases, which made decision-making easier for nurse-midwives (*3*).

In the United Republic of Tanzania, an increased rate of detection of risk was noted in health centres following the introduction of a specially designed record (*5*).

In some countries, less complex illustrated records have been developed and used. For example, in Haryana, India, a pictorial record was devised for use by traditional birth attendants who are illiterate (*8*). The record has helped them to detect selected risk factors for referral, and served as a reminder to them to undertake certain important preventive and promotional aspects of health care.

1.1.4 *Limitations of earlier records*

These early records had a number of limitations:

- Because of their complex design and language, they meant little to non-literate mothers and semi-literate community health workers.

- With one exception (Maharashtra, India), they focused on information relating to one pregnancy only.
- Information on health care and other aspects of the postnatal period, interpregnancy periods and infancy was not included.
- Many of these records were health-centre/clinic-based and hence individuals, families or communities were only minimally involved in self-care promotion.

1.2 The WHO prototype home-based maternal record for collaborative studies—a new initiative

Because of growing interest worldwide, an informal consultation was organized in Geneva in 1982 by WHO. This resulted in the development of a prototype home-based maternal record for use in collaborative studies (Figs 1 and 2). The aims of this WHO prototype were:

- to help in the early detection of risk conditions;
- to promote timely referral of the "at-risk" cases detected to health centres and hospitals;
- to improve the monitoring of health status during pregnancy, childbirth, the postnatal period and interpregnancy periods for up to 8–10 years;
- to increase the participation of the mother, her family and the community in their own health care.

An important feature of the prototype home-based maternal record is the identification of risk factors by means of a visual warning system in the form of shaded or coloured (in one or more colours) boxes on the record. This helps to increase awareness of the risk factors themselves and of the actions to be taken when one or more of them is present. Information on a number of preventive and health-promoting actions is also incorporated in the record, e.g. tetanus toxoid immunization, nutritional advice, breast-feeding and child spacing. Provision is also made for the inclusion of referral advice. (Further information on the content of the record is given in section 1.3.)

After modification (*9*) on the basis of comments by a number of experts, the prototype record was field tested in a WHO collaborative study in 20 centres in 14 countries. During field testing, the record served as a model from which countries could develop their own records, adapted to suit prevailing conditions and national programme priorities and needs.[1]

It is envisaged that the home-based maternal record will serve as a starting point for the wider concept of home-based health records as a whole.

1.3 Content of the WHO prototype record

At most of the study centres, the prototype home-based maternal record was printed on both sides of a strong A4-sized card, folded twice to give six

[1] Further information on the WHO collaborative study can be obtained from Maternal and Child Health and Family Planning, World Health Organization, 1211 Geneva 27, Switzerland. (The following report on the study has been published: Shah PM et al. Evaluation of the home-based maternal record: a WHO collaborative study. *Bulletin of the World Health Organization*, 1993, **71**(5): 535–548.)

Figure 1 *The WHO prototype home-based maternal record, Parts 1, 5 and 6*

(5) Remarks from referral centre

Date	Problem identified	Action taken/Advice

(6) Before first pregnancy and during interpregnancy period

				Family planning										
		Breast-feeding	Menstruation	Pills	Injections	IUD	Surgical	Other	No methods	Very thin	Very pale	Malaria	Other problems	Chloroquine tablets
19	Jan-Mar													
	Apr-Jun													
	Jul-Sep													
	Oct-Dec													
19	Jan-Mar													
	Apr-Jun													
	Jul-Sep													
	Oct-Dec													
19	Jan-Mar													
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19	Jan-Mar													
	Apr-Jun													
	Jul-Sep													
	Oct-Dec													
19	Jan-Mar													
	Apr-Jun													
	Jul-Sep													
	Oct-Dec													

(1) Mother's health record

Name ______________________

Address ______________________

____

Date of first visit ______________________

Age:	18–35	below 17	above 35
Height:	more than 145 cm		less than 145 cm

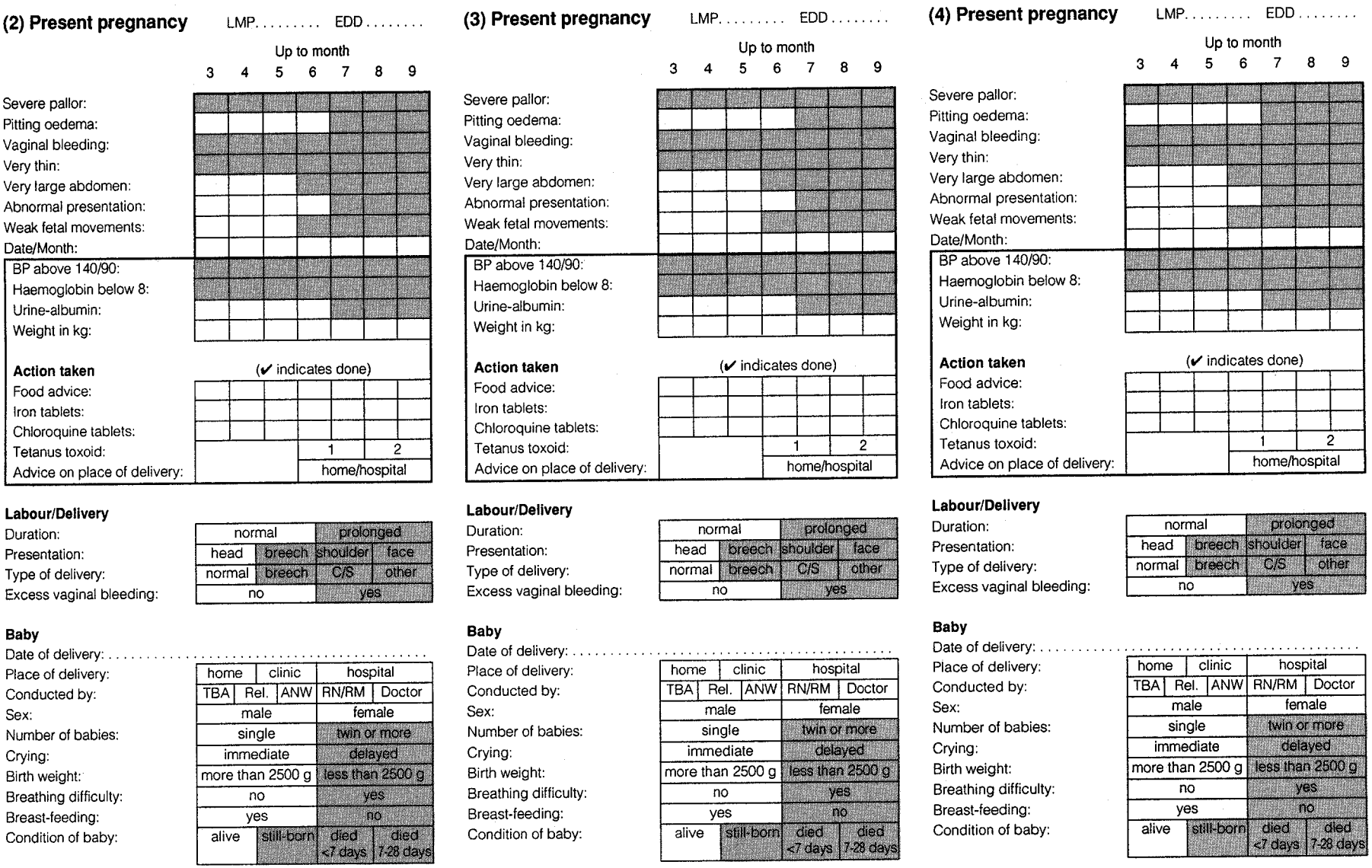
Previous history

Number of deliveries:	1	2	3	4	0	5 or more
Abortions:	no					yes
Oedema:	no					yes
Fits:	no					yes
Stillbirths:	no					yes
Abnormal deliveries:	no					yes
Excess vaginal bleeding after delivery:	no					yes
Labour lasting more than 24 hours:	no					yes
Low birth weight (less than 2500 g):	no					yes
Death of child during first week:	no					yes

Other health problems:

WHO 93341

Figure 2 *The WHO prototype home-based maternal record, Parts 2, 3 and 4*



panels (9). It was carried in a large plastic bag that allowed it to be easily pushed in and pulled out. The record was designed to include information on pregnancy, childbirth, and the postpartum and interpregnancy periods. Provision is made for recording the risk factors identified, the actions taken at home, in the clinic or in the hospital, and information on family planning status and on the health of the baby during the first month of life.

Information on how the record should be filled in is given in Annex 1.

1.3.1 *Past history and risks during previous pregnancy*

Part 1 of the record is used for basic information on the woman—name, address, date of first visit, age, height, number of deliveries—and information on previous pregnancies and births—history of abortion, oedema, fits, stillbirths, labour and delivery problems, low-birth-weight babies and other health problems that constitute a risk.

1.3.2 *Present pregnancy*

Parts 2, 3 and 4 include information on risk factors and care during pregnancies. The record can be used for three consecutive pregnancies (Part 2 for the first pregnancy under consideration, Part 3 for the second, Part 4 for the third). At the top of each part, space is provided for recording information on the date or month of the last menstrual period (LMP), the expected date of delivery (EDD), and the presence of the following risk factors: severe pallor, oedema, vaginal bleeding, very thin woman, very large abdomen, abnormal presentation and weak fetal movements. Each risk factor has seven boxes so that information can be recorded each month of the pregnancy from the third month onwards.

The next section is for recording blood pressure, haemoglobin level and the result of urine albumin examination.

Below this, space is provided in which to enter details of the action taken with regard to nutritional advice, the administration of iron and chloroquine tablets and tetanus toxoid, and advice regarding the place of delivery.

Then follows a section for essential data on labour and delivery, in which the duration of labour, presentation, type of delivery and excess vaginal bleeding after delivery can be recorded.

At the bottom of each panel is a section for recording the date and place of delivery, the type of health worker who assisted the delivery, the sex of the baby, the number of babies in multiple births, cry at birth, birth weight, breathing difficulty, success of breast-feeding and the health status of the baby up to one month of age.

1.3.3 *Remarks to and from referral centre*

Part 5 is used for entering the findings of community health workers, nurses or physicians. Each time a woman is referred for a risk condition, the date of referral, problems identified and action taken should be recorded. A record should also be made of the advice given, so that

continuity of care can be maintained. This section provides a useful link between the mother, the community health worker and the referral centre.

1.3.4 *Information on the period before the first pregnancy and the interpregnancy periods*

Part 6 is used for recording events over a period of 8–10 years during the time when the woman is not pregnant. The community health worker or the mother can use this panel to record essential information on menstruation, breast-feeding and family planning methods adopted during the reference period. This should be done every 3 months at least, but—ideally—monthly (each column can be divided into three parts for this purpose). The presence of risk factors such as pallor, extreme thinness, malaria and other health problems can also be recorded, by making a tick in the appropriate shaded boxes. A tick means that a condition is present which may endanger health and which requires immediate action in the form of advice, therapy or referral.

2 Functions and benefits of home-based maternal records

2.1 Early identification of risk

Every pregnant woman is at some risk of an adverse outcome for her or for her baby; it is only the *degree* of risk that varies. Risk factors are attributes statistically associated with the risk of a given adverse outcome, i.e. the outcome is more likely in the presence of the risk factor than in its absence. These risk factor attributes may be related to the characteristics of the individual woman, her environment or her treatment, and the adverse outcomes include maternal and child mortality, morbidity and functional impairment. A risk factor for a given outcome may be a true causal determinant of that outcome or it may merely be a signal (predictive "marker") that the outcome is more likely.[1]

Risk factors are specific to the outcome to which they relate. Although some degree of overlap may occur, attributes associated with a higher risk of one outcome may not be associated with a higher risk of other outcomes and may even confer some protection against them. Unfortunately, attributes such as very young or very advanced maternal age, primiparity, high multiparity, short stature, low pregnancy weight-for-height, poor gestational weight gain, close spacing of pregnancies, history of adverse outcome in previous pregnancies, severe anaemia, and cigarette smoking are often discussed as if they represent "universal" risk factors, in the sense of being associated with all, or at least most, adverse outcomes of pregnancy. However, research findings to date do not generally support this notion. For example, the risk of a primiparous woman delivering a small-for-dates baby is higher than her risk of delivering a preterm baby. Women whose weight gain is high may be at lower risk of delivering a growth-retarded infant but at higher risk of prolonged labour and cephalopelvic disproportion. Similarly, a woman who smokes appears to be somewhat protected from developing pre-eclampsia but her fetus is at significantly increased risk of both growth retardation and preterm birth.

Apart from the outcomes to which given risk factors relate, other important considerations include the technical training and skill required to detect risk factors, the efficacy of referral and treatment of those women identified to be at risk, and the cost and other resource implications of the risk factor testing/referral/treatment programme. These issues are discussed in section 3.2 in the context of the choice of risk factors for inclusion in the home-based maternal record.

The WHO home-based maternal record is designed to provide a simple way of screening for the presence of risk factors. It serves to alert primary

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[1] For further discussion of the use of the risk approach, see Backett EM et al., *The risk approach in health care with special reference to maternal and child health, including family planning*. Geneva, World Health Organization, 1984 (Public Health Paper, No. 76).

health care workers, such as traditional birth attendants and community health workers, so that high-risk cases can be referred early and the appropriate measures taken quickly to prevent further complications. With help from health workers and voluntary groups, mothers and family members can learn to use home-based maternal records themselves to detect the presence of risk factors.

Surveillance for the identification of risk factors helps to establish contact with women and newborn infants during their most susceptible period. It also provides an excellent opportunity for health education, for promoting self-care, and for planning and instituting appropriate measures to control major public health problems.

Improved risk detection and standardization of referral patterns have been achieved through the use of home-based maternal records in several programmes, including those in Kenya (*3*) and the United Republic of Tanzania (*10*). In addition, it was found that information collected on age, parity and obstetric history, together with measurements of height and weight, was sufficient to identify the majority of risk factors during a single antenatal visit (*2–5*, *7*, *10*).

2.2 Self-diagnosis and self-care

Among literate women, home-based maternal records are better understood and used if filled in by the record-holders themselves. In the United Kingdom, a control trial to assess the use of home-based records showed that women liked keeping their own records, felt significantly more in control of their antenatal care and found that the records made it easier to talk to the midwives and doctors caring for them (*11*). In a rural area in Assam, India, about one-fifth of the literate women were able, after some instruction, to fill in their own records and monitor risk conditions during pregnancy. In developing countries, where the literacy rate among women is very low, literate family members other than the record-holders, e.g. schoolchildren, neighbours or someone from a women's group, can, again after some instruction, fill in the records, explain the risk signs to mothers and thus help in the process of self-diagnosis and self-care.

After the necessary explanations and demonstrations, illiterate mothers participating in the WHO collaborative study were able to recognize risk conditions such as oedema, abnormal fetal movements, pallor, over-sized abdomen, and persistent headache and bleeding during pregnancy. In India, the Philippines and Senegal, illiterate mothers who had had a home-based maternal record since their previous delivery could recall the risk factors they had experienced in that pregnancy and describe the action they had taken themselves. The records also helped the families and members of community groups, such as women's associations, to identify risk factors.

Home-based maternal records prompt women, their husbands and other relatives to take preventive measures against risk conditions and to make the necessary arrangements for the transportation and funds needed to visit referral centres or institutions. They also serve to remind them to complete the course of tetanus toxoid, to follow the recommendations on diet and the advice on breast-feeding, and to comply with follow-up advice on managing risk conditions.

2.3 Preventive and promotional health care

Home-based maternal records provide printed information to help in health promotion and prevention of risk. For example, they can be used by community health workers and traditional birth attendants in conjunction with health and nutrition education to provide reminders about diet during pregnancy and the postpartum period, intake of locally scheduled doses of iron and folic acid tablets, malaria prophylaxis and management, and vitamin A intake.

In 54 villages of the Ambala district in India, where 2024 pregnant women used home-based records, 85.7% were completely immunized against tetanus (*12*). The pictures on the record prompted traditional birth attendants to provide care and education regarding the need for additional food and iron–folic acid tablets in pregnancy.

The section of the record concerned with interpregnancy periods can play an important role in educating mothers about contraception and proper spacing of children, and in promoting breast-feeding. When menstrual history is monitored regularly, pregnancies are identified very early and the necessary care can be initiated. A literate woman can herself enter information in the column about her menstrual cycle and family planning methods every month for three consecutive months by subdividing the column into three parts. In several countries where home-based maternal records were introduced, increased numbers of contacts were made by health workers for the provision of services. Frequent contacts improve communication, so that there are more opportunities for discussions about family planning.

The record can also incorporate information on monitoring for cervical cancer (the Pap smear), rhesus blood group incompatibility (blood group assessment), screening tests for sexually transmitted diseases and acquired immunodeficiency syndrome (AIDS), and on rubella and hepatitis immunizations. The selection of these measures for inclusion on the record will depend on the local prevalence of the various problems and on the priorities and targets set by the appropriate authorities (see section 3.2).

Information on newborn infants concerning, for example, birth weight and immunization against tuberculosis, diphtheria, pertussis, tetanus and poliomyelitis, can also be incorporated. This prompts improved immunization coverage and identifies low-birth-weight babies who may need special care at home or referral to hospital. Child growth monitoring, a valuable preventive and promotional health activity, can be carried out using a child growth chart, which can be effectively linked with home-based maternal records. A child's growth chart should be filled in after the delivery, and some of the information, including birth weight, can be taken from the maternal record.

2.4 Continuity of care

It is just as important for women to preserve their health *between* pregnancies as *during* pregnancy and childbirth: poor nutritional status, anaemia, infections, heavy physical work and other stresses and strains in the interpregnancy period can adversely affect subsequent pregnancy, labour and postpartum events, possibly leading to low birth weight or the

death of the mother or baby. Until recently, in both developed and developing countries, records for women were restricted to the antenatal period only. Women had no health records of their own to provide them with the necessary information for monitoring their health.

Home-based maternal records can make an important contribution to continuity of care throughout a woman's reproductive life. The WHO record can be used for monitoring during both pregnancy and interpregnancy periods for up to 8–10 years, and this can be extended, if appropriate, by adding further pregnancy panels and increasing the space allowed for interpregnancy periods. Monitoring of menstrual history helps in early identification of pregnancy and in guiding family planning.

In all the centres participating in the WHO collaborative study, attendance at health centres was much higher among both pregnant and non-pregnant women with home-based maternal records than among those without, and growth charts were prepared for a greater proportion of the newborn babies. Community health workers and nurse-midwives were better accepted by the mothers and the community; this ensured continuation of health surveillance and comprehensive care of all the women with home-based records and of their newborn babies.

The women found it very useful to have records of, and reminders about, their own health care and that of their babies. This also led to a better understanding of the interrelationship of their health status before and during pregnancy, and of the effectiveness of monitoring in prompting necessary timely action. For example, the records underlined the connection between severe anaemia and malnutrition and the size and weight of the newborn infant. Some of the women who were at risk but did not comply with advice to visit referral centres later came to recognize the link between risk and adverse outcomes. It is to be hoped that this experience will help them to become more alert and take more care in future pregnancies.

2.5 Referrals and appropriate utilization of health services

Early detection of risk using home-based maternal records helps to channel those women most in need to referral facilities, while those not at risk are managed in the community, thus promoting better utilization of health services. The WHO collaborative study showed that the use of home-based maternal records promoted referrals of "at-risk" women and newborn babies. Women found the record a useful "passport" to referral centres in ensuring prompt service; they said that, with the card, "someone now knows and takes better care of us at the health centre". Community leaders found the records useful in identifying those at risk who might require assistance, which is particularly helpful where arrangements for transport can be made through community support. Community health workers, nurse-midwives and physicians found the information in the records useful in detecting risks and as a reminder of the special care to be provided. In addition, both mothers and health providers found that health checks could be carried out more quickly, since filling in the record involves little writing.

However, not all women at risk attended the referral centres. Compliance was sometimes limited because of local cultural attitudes, poor transportation facilities, worry about hospital expenses or refusal by the mother to leave other children at home unattended. It was a common complaint from all the study centres that physicians at the referral level did not cooperate as much or show as much enthusiasm as nurse-midwives and community health workers in attending to "at-risk" women. Many of them did not enter their opinions and advice about the women on the referral section of the record. This was related to poor guidance and training of physicians about the record, and their lack of understanding of the role of referral support in health care.

Another problem was experienced in Pakistan, where some traditional birth attendants were reluctant to refer women for delivery to hospital, thinking that it would mean a loss of income. This highlights two important issues: making traditional birth attendants realize that the good of the patient should always come first, and making the family and community realize that, helped by the maternal record, the attendant has provided all the necessary care up to the time of referral and has then assisted in referring the woman at the right time. Traditional birth attendants should be adequately rewarded for providing this help.

2.6 Family planning

As indicated in section 2.3, one of the important functions of home-based maternal records is to provide information on the menstrual status and parity of women. This helps community health workers and nurse-midwives to educate and motivate couples on the use of suitable family planning methods, and can also be useful in detecting and providing guidance to couples with primary or secondary sterility.

In the WHO collaborative study, during which the record was field tested for only a short period of time, the impact of the record on family planning varied. However, in all the centres it was found possible to use the record as an aid in educating and advising on family planning.

In India, midwives were happy that the record helped them to gain entry into a larger number of households. Although two-thirds of the community health workers in villages in the Kasa area were men, they were able to fill in the menstrual records by asking their mothers or sisters to gather the information from women who were otherwise reluctant or too shy to provide it. It therefore proved possible to determine the reproductive status of most of the women every month (Fig. 3). As a result, it was easier to motivate couples to use contraception (*7*).

2.7 Collection of health information

Reporting systems in current use do not always provide reliable data and there is often a lack of information at the most basic—but most important—level of health care. In developing countries, more than half the women give birth at home. Many cannot reach or contact a health worker and therefore have no records. The forms used in community-based health information systems on women and newborn babies should be simple and easy to fill in and contain relevant data on factors likely to influence the health of pregnant women and the outcome of pregnancy. The format should be such that information can be easily abstracted for reporting

Figure 3 *Record of menstrual cycle and attitude towards family planning used in India by part-time social workers*

OBSERVATIONS: INTER-PREGNANCY PERIOD

Menstrual cycle and attitude towards family planning

Age in years	Months												Weight	Haemo.	Antitetanus vaccine	
	January	February	March	April	May	June	July	August	September	October	November	December			1	2
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
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✓ Period regular	▽ Necessity of family planning	▼ Sterilization
× Period missed	▽ Family planning pills	□ Breastfeeding
○ Abortion	▽ Condom	▽ Loop

purposes and is available both in the home and the health centre. Home-based maternal records can form an important part of such systems.

Within 6 months of the introduction of home-based maternal records in 70 villages in projects in the Kasa and Palghar areas of India, it was possible at monthly intervals to gather information on about 6860 women (*7*). In each village, the names of "at-risk" women, their specific risk conditions and the type of action taken were recorded every month by community health workers in the local language on specially prepared sheets (see Annex 2). On the other side of the sheet, similar information was recorded on children under 5 years of age. This was of considerable value in planning for, and monitoring, women and children identified as at risk.

In the WHO collaborative study, reliable data on pregnancy, pregnancy outcomes and morbidity in women and newborn infants and on use of health services was obtained at most of the centres. In the Philippines, checks at the health centre and hospital confirmed the reliability of 81.2% of the entries made in home-based maternal records by the community (*barangay*) health workers. At two other collaborative centres where specific data were available, the reasons for referral given in the records and the service register were in agreement; 90% agreement was found for the action taken by community health workers. Good professional agreement was also found between the findings of traditional birth attendants and those of midwives in countries where pictorial records were used.

The creation and maintenance of duplicate records may seem attractive, but it is expensive, unnecessary and increases the work-load. Home-based maternal records linked with child growth charts can serve as the starting point for the collection of useful health information on mothers and children by community health workers, which can then be summarized and consolidated in log-books or registers in health centres. The different types of health information that can be collected in this way are shown in the box below, and an example of a suitable register is provided in Annex 3.

Health information generated by home-based maternal records

Vital events—births; maternal, perinatal, and neonatal deaths; age at death; pregnancy rates, etc.

"At-risk" cases—proportion in the population, prevalence of "at-risk" conditions, referral, outcome.

Health coverage—surgical deliveries, anaemia prophylaxis, tetanus toxoid and vitamin A coverage.

Specific programmes—low birth weight, nutritional status, family planning (eligible couples, spacing methods, infertility).

Linking information from home-based maternal records with existing health information systems can serve a number of purposes—programme planning, management, monitoring, surveillance, and evaluation and assessment of health status. The incorporation of information into a national system requires careful specification of the objectives and a system of suitable design and structure. Care should be taken to ensure that any new system does not overburden the users of records.

2.8 Community involvement

The potential for family and community members to improve the health and nutritional status of women and newborn babies through self-monitoring and self-care has remained largely unrecognized. Once the community understands how to recognize the risks of morbidity and mortality, it can cooperate in managing and controlling risk conditions.

It can also tackle social and economic risks by such means as providing transport for a woman's referral visit, arranging to send an attendant with the woman, and reducing health care costs through self-care.

In the WHO collaborative study it was found that the community played a vital role in intervening in risk conditions identified through the use of the home-based maternal record. Through this community involvement, acceptance of the record was considerably enhanced. In Yemen, for example, the Yemeni Women's Union was actively involved in identifying, supervising and following up mothers at home. They encouraged visits to maternal and child health and family planning centres and arranged transport for follow-up visits. The Union mobilized the mass media, including television and radio, to educate mothers and families in self-care. Because of the local cultural background, women in Yemen are reluctant to share information regarding pregnancy, childbirth and postnatal care with men, and the Union felt strongly that only women could care for and supervise other women during the child-bearing period. Experience in Yemen thus confirms the importance of cultural factors.

In Indonesia, women's groups organize regular health sessions at which women and children are weighed, their health is checked, risks are identified and home-based records (for both mothers and children) are filled in. Mothers and children are immunized and, if ill, treated at the centre, and followed up at home; these details are also included in the records.

Local communities adjacent to other WHO collaborative study centres were also found to be quite receptive to the records. Community members found them useful for identifying those at risk and in need of referral.

2.9 Potential benefits of home-based records

Because home-based records are simple and can be kept at home, they have a number of potential benefits as an aid to health care for mothers and family members, as well as for health-care providers (at both primary and referral levels) and programme managers. However, mothers and other family members will need help from health workers or voluntary groups, particularly if they are illiterate, to gain maximum benefit from the records.

Using the records, primary health workers can emphasize risk detection, referring the women at risk and providing effective management in the community for the remainder. This enhances their credibility as providers of maternal and child health care. Identification of "at-risk" cases fosters the appropriate utilization of health-care facilities and helps workers at the referral level to target their action on those most in need. The records also provide reliable and essential information on women's health, family planning, pregnancies, deliveries and newborn infants.

The potential benefits of home-based records to different groups are summarized in the boxes on pages 16–17; several of these benefits have already been demonstrated in the WHO collaborative evaluation.

Potential benefits of home-based maternal records to women and family members

- Encouraging continuity of care during pregnancy, labour and the post-partum and interpregnancy periods
- Promoting self-detection of risks and initiation of timely action
- Increasing awareness of health problems and availability of health-care facilities
- Prompting timely visits to referral centres
- Serving as "passports" to care at health centres
- Fostering confidence in primary health workers and referral centres
- Encouraging family and community participation in health care
- Providing a readily accessible record within the family
- Encouraging family planning, breast-feeding, immunizations, and improved nutritional status
- Saving time and money—those not at risk will not need referral

Potential benefits of home-based maternal records to traditional birth attendants and community health workers

- Improving the detection of high-risk cases
- Enhancing credibility and increasing confidence in the care provided
- Helping to build and maintain a good relationship with women and their families
- Improving the coverage with tetanus toxoid vaccine and, in malaria endemic areas, the detection, treatment and prophylaxis of malaria
- Promoting family planning and breast-feeding
- Promoting growth monitoring through links with child growth records
- Recording information on migration of women and on specific local problems such as goitre, vitamin A deficiency, cancer of the cervix and AIDS

Potential benefits of home-based maternal records to nurse-midwives and physicians

- Helping in the prompt referral of "at-risk" women for action to reduce complications and maternal and fetal/infant deaths
- Preventing overcrowding at referral centres—women not at risk are managed effectively in the community
- Providing information on previous pregnancies, immunizations and family planning
- Improving monitoring of the progress and outcome of labour
- Providing important health data
- Improving relationships with women
- Helping to strengthen links among health workers
- Reducing the need for maintenance and storage of records in referral centres
- Helping to standardize the services provided to pregnant women and newborn infants

Potential benefits of home-based maternal records to programme managers

- Helping in the introduction of a simplified "at-risk" approach in health-care delivery systems
- Strengthening the referral system
- Improving the coverage of vulnerable groups (mothers and children)
- Contributing to the achievement of health targets in family planning, breast-feeding, immunization, cervical smear testing, etc.
- Helping to involve communities and their resources in health care
- Providing data to help estimate current and future requirements, streamline logistic support for clinics and health centres, and compile national health statistics
- Improving the accountability to the community of health-care personnel

3 Adapting home-based maternal records

The WHO prototype home-based maternal record can be used as the basis for developing local records tailored to local health needs and priorities. The elements that need to be considered in developing such records are the functions envisaged for the records, their content, and their design and production.

3.1 Functions

The main functions of home-based maternal records have been outlined in section 2. Programme managers should consider how the use of the records will fit into the existing primary health care and information systems and how such records can address the particular maternal and child health problems prevalent in the area.

3.2 Content

3.2.1 Choosing risk factors

As discussed in section 2.1, potential risk factors for a given adverse outcome of pregnancy include attributes related to the individual woman, her environment, or her treatment. Because the home-based maternal record is aimed at enabling health workers functioning in one-to-one, *clinical* settings to detect increased risk, the choice of risk factors to be included in the record will be limited to those relevant to such settings. Six questions should be answered in making the choice, each of which will be considered in turn.

(1) Risk for what outcome?

The adverse outcomes chosen as targets for prevention should be important enough from a public health standpoint to justify the effort and expense of risk assessment and treatment. Importance is judged by a combination of prevalence and severity. Common adverse outcomes in developing countries include fetal and infant deaths, intrauterine growth retardation, prolonged labour, cephalopelvic disproportion, and neonatal trauma, asphyxia and infection (especially tetanus). Other outcomes that should also be targeted (even if rare in a particular community) include extremely preterm delivery and maternal death. Because risk factors are often specific to a particular outcome (see section 2.1), they should be chosen with the above outcomes in mind.

(2) How high is the risk?

Various indexes are available to measure the degree of risk associated with a given risk factor, including the relative risk, the risk difference and the attributable risk fraction (also called the etiological fraction). The *relative risk* is the ratio of the risk in women with the risk factor to

that in women without it. It is thus a measure of the strength of the association of the risk factor with the adverse outcome under consideration, and does not depend on either the prevalence of the outcome or that of the risk factor. The *risk difference* is the arithmetical difference between the risk in women with the risk factor and that in women without it. Its value depends on both the strength of the association between the risk factor and the outcome (i.e. the relative risk) and the prevalence of the outcome, and will therefore be higher for common outcomes than for rare ones. Thus, in countries with a high prevalence of intrauterine growth retardation, a risk factor such as short stature might be associated with an important risk difference despite its modest relative risk. The *attributable risk fraction*, which applies only to causal risk factors, is the proportion of all women in a given population experiencing an outcome that can be attributed to exposure to the risk factor, i.e. the proportion of women in whom that outcome would be prevented if exposure to the risk factor were eliminated in the population. Its value depends on both the strength of the association between the risk factor and the outcome (the relative risk) and the prevalence of the risk factor in the population, and will thus be higher for common risk factors than for rarer ones.

Factors associated with the highest attributable risk fractions are those with both a high relative risk and a high prevalence. The attributable risk fraction for maternal cigarette smoking is thus high in populations in which a high proportion of women smoke during pregnancy, but quite low in populations in which maternal smoking is rare. Risk difference and attributable risk fraction are the most important indexes to consider in formulating preventive strategies such as programmes of risk assessment and management. Because the outcomes to be targeted by the programme have already been chosen on the basis of their prevalence and/or severity, the attributable risk fraction is the most useful index in choosing causal risk factors. It has the added benefit of indicating the maximal goal attainable through risk factor detection and preventive intervention. For example, although only 5% of women in villages around Pune, India have a haemoglobin level below 8 g/dl, 40% of maternal deaths in that area would be prevented if anaemia of this degree were eliminated.

(3) How much technical skill is required to detect women at risk?
Even if an outcome is worth preventing and the attributable risk fraction associated with a given risk factor for the outcome is high, it may not be feasible or affordable to assess that risk factor if extensive training and/or sophisticated equipment are required for its detection. Where health workers are technically unskilled or there are other resource limitations, it may make more sense to focus on risk factors capable of detection with easily mastered, appropriate "low-technology" methods, even if that means reducing the priority of some targeted outcomes. Thus, assessment of easily obtained measurements such as maternal height, weight, gestational weight and arm circumference may have to be given priority over haemoglobin determination, blood pressure measurement and urine analysis (see section 3.3).

(4) What is the positive predictive value of the at-risk detection?
The *positive predictive value* of a measurement is the proportion of women in whom the risk factor is detected and who (in the absence of risk factor assessment and treatment) actually develop the adverse outcome under consideration. It depends on the *prevalence* of the outcome as well as the *sensitivity* (proportion of women who develop the outcome in whom the risk factor is detected) and *specificity* (proportion of women who do not

develop the outcome in whom the risk factor is not detected) of the risk factor measurement.[1] Sensitivity and specificity, in turn, depend on the reliability (repeatability) of the risk factor measurement within and between observers. Large random or systematic measurement errors thus detract from the ability to discriminate between women who will develop the adverse outcome and those who will not. The result is false-positive risk assessments and unnecessary "labelling" (the potentially adverse psychological effect of being identified as at risk), referral and treatment. The choice of risk factors to be included on a home-based maternal record should therefore take into account the evidence from the literature concerning their positive predictive values, as well as local factors which might modify the evidence or require additional training of the health workers responsible for the measurements. It may be useful, for example, to develop standardized procedures and a training programme for measuring maternal height, weight and/or arm circumference.

(5) Are effective interventions available to reduce the risk?

There is no point in assessing a risk factor unless women found to be at risk of a given adverse outcome can be offered safe and effective interventions capable of reducing that risk.[1] As discussed in section 2.1, a risk factor for a given outcome may be a true causal determinant of that outcome or merely a predictive "marker" that the outcome is more likely. For causal risk factors that are modifiable, it may be possible to intervene by tackling the factors directly so as to reduce risk. For example, a woman in the second trimester who is found to have had a low gestational weight gain can be given nutritional advice or supplements to reduce the risk of a growth-retarded infant. Even when risk factors cannot be modified, other interventions may be effective. Thus primiparity and short maternal stature, especially in combination, are risk factors for cephalopelvic disproportion. Although nothing can be done about these risk factors themselves, the risk of intrapartum death and neonatal asphyxia and/or trauma could be reduced by referral of short primigravid women for delivery in district hospitals having the necessary trained staff and facilities to perform caesarean sections, if necessary.

Because risk factors are outcome-specific, interventions that reduce the risk of one adverse outcome may conceivably increase the risk of another. For example, nutritional supplementation might reduce the risk of fetal growth retardation but increase that of cephalopelvic disproportion. Interventions of unproven effectiveness may occasionally be undertaken for compassionate reasons, e.g. the referral of women with chronic hepatitis.

(6) Do the net benefits of intervention justify its costs?

The mere availability of an intervention capable of reducing the risk of an adverse outcome does not by itself justify the assessment of one or more risk factors for that outcome. The degree of risk reduction achieved by the intervention may be quite limited and must be balanced against the potentially adverse consequences of referral, treatment (see previous paragraph) and labelling. Moreover, even if the net effect is beneficial (i.e. risk assessment and management do more good than harm), it may not be worth the time, effort and money it will cost to achieve. Where resources

[1] For further information, see Backett EM et al., *The risk approach in health care with special reference to maternal and child health, including family planning*. Geneva, World Health Organization, 1984 (Public Health Paper, No. 76).

are limited, it will often be necessary to restrict a risk assessment/management programme to those outcomes and risk factors that provide the most cost-effective benefits to maternal and infant health. For example, detection of short primigravid women for referral to district hospitals for delivery might be more cost-effective than detection and nutritional supplementation of women with inadequate weight gain.

Many recognized risk factors appear quite generalizable, in the sense of applying to many different geographical settings and over a long period of time. For example, primiparity, maternal short stature, low prepregnancy weight, poor gestational weight gain, and cigarette smoking have been associated with reductions in fetal growth in virtually every study in which they have been examined. Although the *magnitude* of the associations (relative risks and risk differences) may vary with place and time, their robustness probably reflects underlying biological mechanisms (not necessarily causal) that link the risk factors to their associated outcomes.

None the less, the answers to the six questions posed above are likely to vary considerably with local conditions. First, the prevalence of risk factors and outcomes differs substantially from one setting to another. Thus attention to goitre, malaria and neonatal tetanus will be important only in endemic areas. Second, local health policies must also be considered. For example, in countries where family planning has been adopted as national policy, it may be justified to give a prominent place on the record to child spacing and family planning. Some of these risk conditions can be included in part 1 of the WHO prototype record in the section for "Other health problems" (Fig. 4).

Programme managers should also consider the socioeconomic and environmental issues mentioned earlier, such as supportive infrastructures, care of other young children in the family while the mother is away at a referral centre, availability of transport for "at-risk" women, and ease of communication, e.g. by telephone and telegraph.

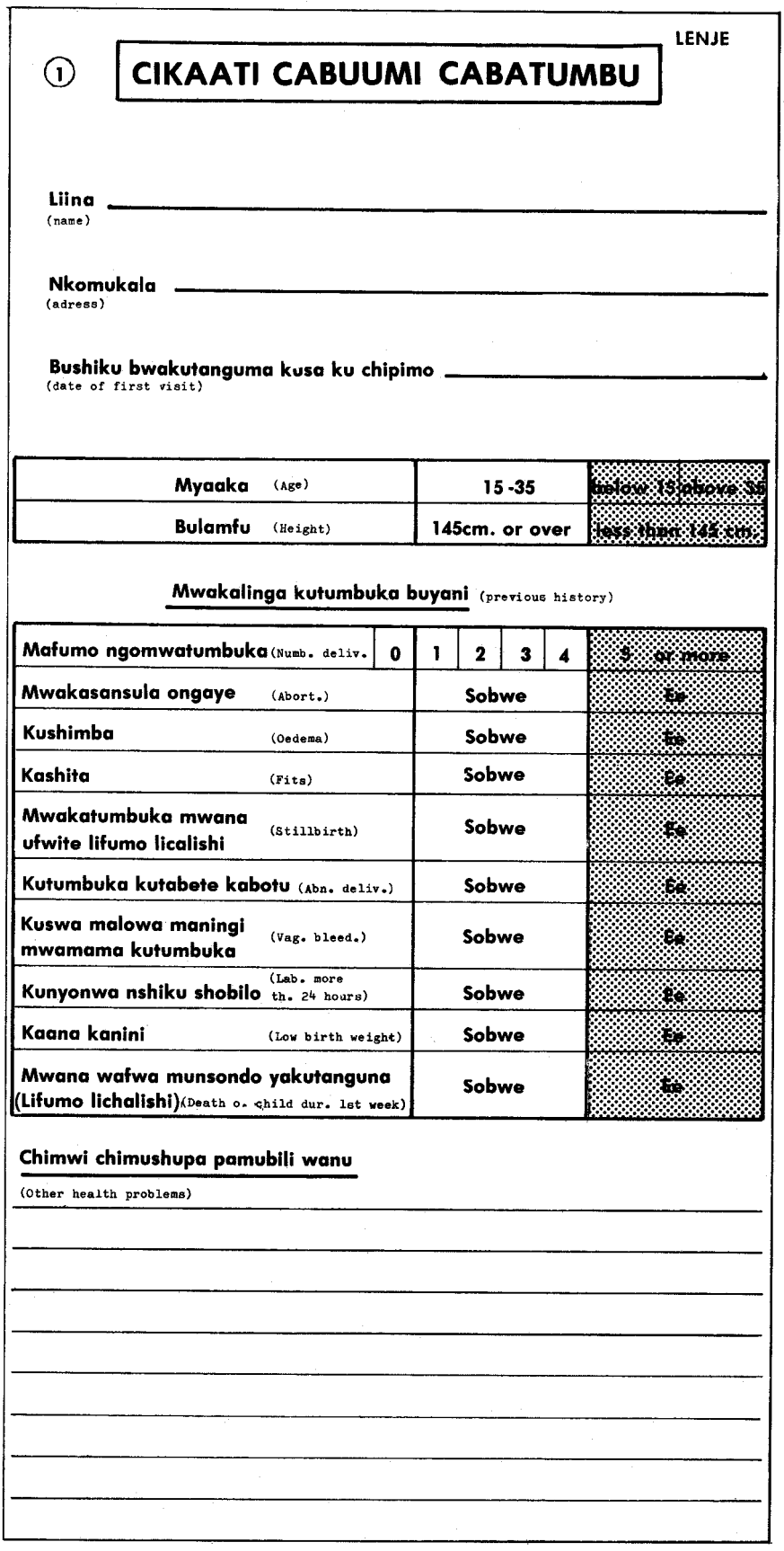
3.2.2 *Establishing cut-off points for risk factors*

Many of the factors associated with adverse outcomes for maternal or infant health, such as maternal height, weight and blood pressure, are continuous variables. Risk, on the other hand, is estimated from information obtained on groups of women, very few of whom will have the same value of the risk factor. The groups are generally constituted by dividing the population into various categories based on the measured value. The number of categories should be kept small, usually two to four. For example, maternal anaemia can be categorized, on the basis of haemoglobin concentration, as none or mild ($\geqslant$ 10 g/dl), moderate ($\geqslant$ 7 but $<$ 10 g/dl) and severe ($<$ 7 g/dl). The category associated with the lowest risk of the given outcome is usually regarded as the base, or reference, category with which the risk for each of the other groups is then compared.

Establishment of these categories requires that cut-off points be specified. The cut-off points chosen for a given risk factor will probably vary from one setting to another and will depend on the following considerations:

- The positive predictive value of high risk (i.e. a measurement beyond the cut-off point) should be reasonably high without sacrificing sensitivity.

Figure 4 *Home-based maternal record from Zambia: space is left in the panel for other risks or health problems, which may remain unfilled*



LENJE

① **CIKAATI CABUUMI CABATUMBU**

Liina (name) _____

Nkomukala (adress) _____

Bushiku bwakutanguma kusa ku chipimo (date of first visit) _____

Myaaka (Age)	15-35	below 15 / above 35
Bulamfu (Height)	145cm. or over	less than 145 cm.

Mwakalinga kutumbuka buyani (previous history)

Mafumo ngomwatumbuka (Numb. deliv.	0	1	2	3	4	5 or more
Mwakasansula ongaye (Abort.)	Sobwe					Ee
Kushimba (Oedema)	Sobwe					Ee
Kashita (Fits)	Sobwe					Ee
Mwakatumbuka mwana ufwite lifumo licalishi (Stillbirth)	Sobwe					Ee
Kutumbuka kutabete kabotu (Abn. deliv.)	Sobwe					Ee
Kuswa malowa maningi mwamama kutumbuka (Vag. bleed.)	Sobwe					Ee
Kunyonwa nshiku shobilo (Lab. more th. 24 hours)	Sobwe					Ee
Kaana kanini (Low birth weight)	Sobwe					Ee
Mwana wafwa munsondo yakutanguna (Lifumo lichalishi) (Death o. child dur. 1st week)	Sobwe					Ee

Chimwi chimushupa pamubili wanu

(Other health problems)

- The size of the high-risk category should not exceed the capacity of existing health services for referral and treatment of the condition or significantly reduce the likelihood that the community will comply with management advice (based on existing behaviour patterns).
- Since risk often increases with more extreme values of the risk factor, even within the high-risk category, cost-effectiveness should be maximized by adjusting the cut-off point to permit optimum balance between treatment effectiveness and resource consumption.
- The choice of cut-off point should be consistent with the overall goals and policies of the risk-assessment/management programme.

Severe anaemia, for example, has been shown to be a risk factor for maternal death in several developing countries. In a country with a high prevalence of anaemia, identification and hospital referral of *all* women with a haemoglobin level below 10 g/dl would result in a low positive predictive value, the treatment of many women unlikely to benefit from treatment, and a waste of resources. It may therefore be decided to treat women with moderate anaemia (haemoglobin < 10 but $\geqslant 7$ g/dl) at home and reserve referral and hospital treatment for those with haemoglobin levels below 7 g/dl.

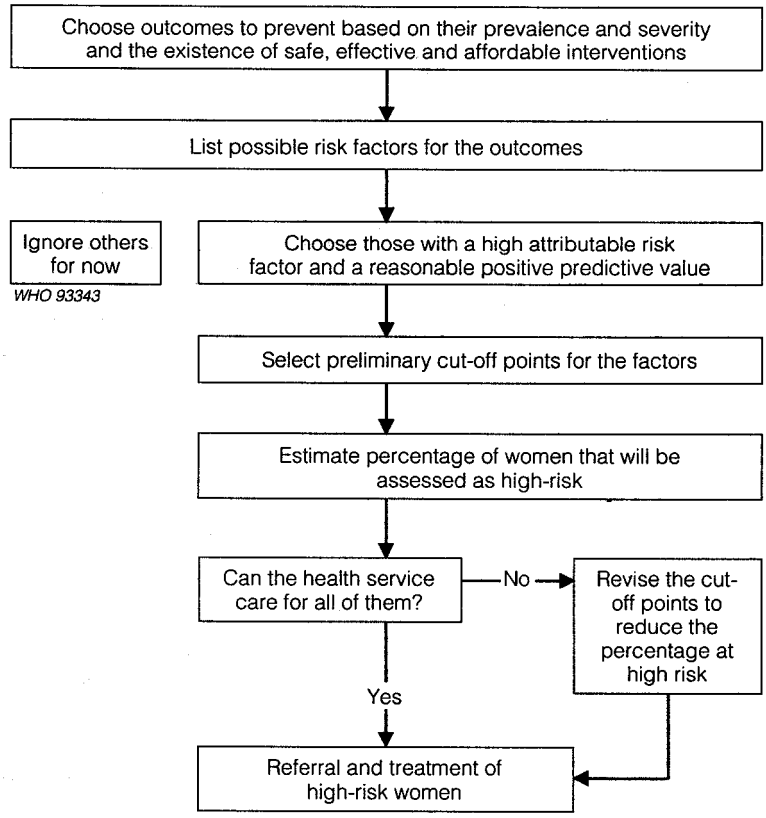
In the WHO collaborative study, the levels of risk for maternal age and parity were adjusted on the basis of local experience. In Yemen, primipara and parity 8 and above accounted for 37.8% of the pregnant women. If the cut-off point for high parity had been set at parity 5 instead of parity 8, a large number of women would have been identified as "at risk" and in need of referral. In contrast, parity of 5 and above was considered a risk in India because of its rarity and the high risk of an adverse outcome in that group. When the choice of risk factors was not made carefully, as in two other countries in the WHO collaborative study, the overwhelming majority of mothers (more than 80%) were identified as "at risk", i.e. as having one or more risk factors. This led to poor compliance at the referral level, as few of the mothers with past experience of uneventful pregnancies assigned any importance to the risk conditions recently identified through the record. Even if women had decided to comply with referral advice, there would have been overcrowding of the referral facility and a reduction in the quality of care. In the countries where "at-risk" women did not account for more than 15–20% of the total, larger numbers of women attended referral centres.

3.2.3 *Risk identification*

Risks can be identified and graded in a number of different ways (Fig. 5). In the WHO home-based maternal record, grading is based on the use of shaded boxes. The presence of a tick (✓) in a shaded box should alert the mother or community health workers to the presence of a risk condition (see also Figs 1 and 2). Colour has also been used in the boxes indicating risks, to make it easier to see whether the risk condition is present or not (Fig. 6).

In some countries, the severity of risk factors has been graded to allow differential decisions to be made regarding referral. Grading has been indicated by means of different intensities of shading (Fig. 7), dots (Fig. 8) or asterisks, or different colours (Fig. 9). In records from different countries, light shading, one red dot (or asterisk) or a yellow box indicates the need for consultation, confirmation or onward referral in the event that locally administered treatment is ineffective; dark shading, two dots (or

Figure 5 *Flow chart showing decision-making process for choosing factors for risk assessment to be included in home-based maternal records*



asterisks) or the colour red signifies the need for prompt referral to a facility where suitable treatment for the condition is available.

This differential approach helps to channel patients to the right referral facility and prevents overcrowding of such facilities.

3.3 Design and production

3.3.1 Design

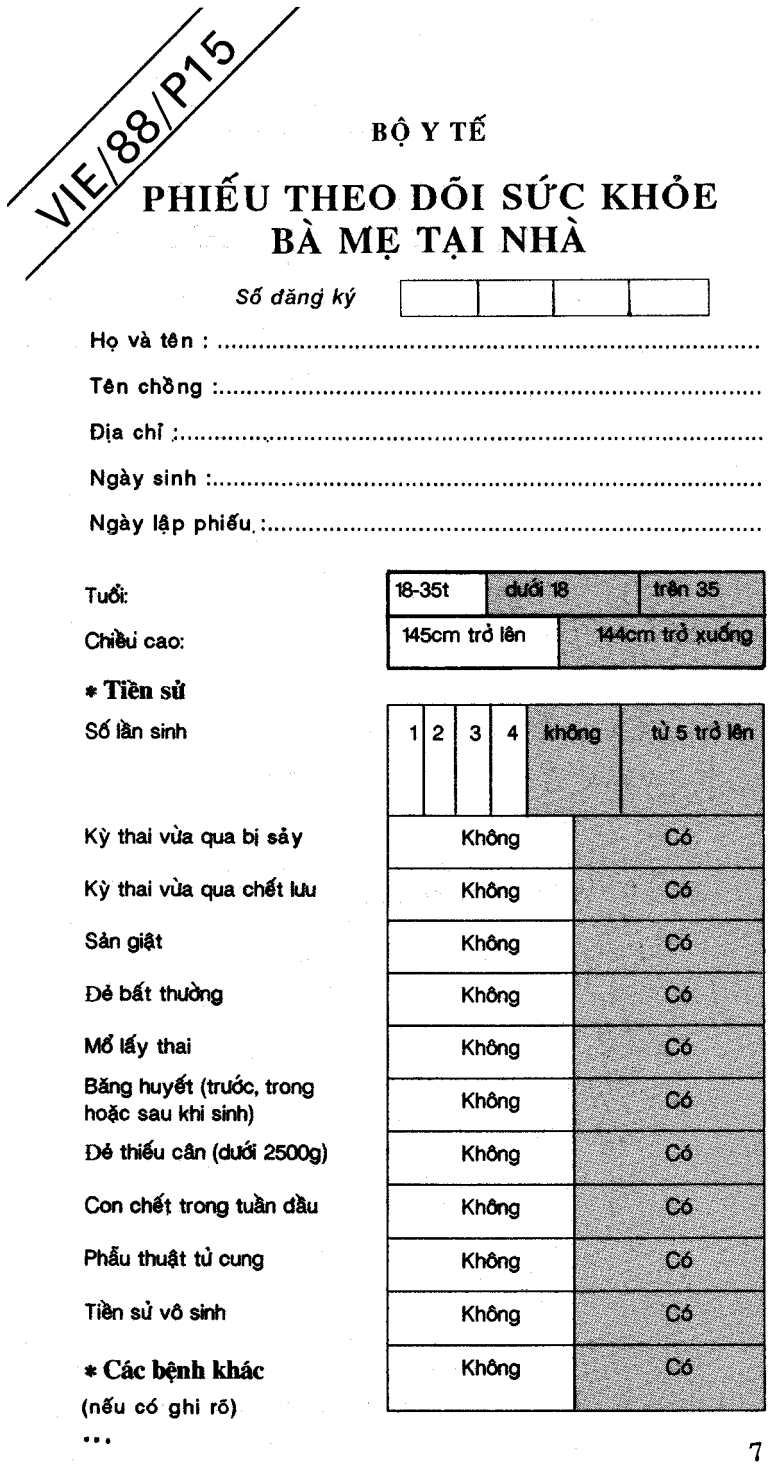
First impressions are important, so the front page of the records is likely to determine their acceptability both to the community and to health workers. The inclusion of an attractive and relevant photograph or coloured illustration could make a considerable difference (Figs 10 and 11).

The arrangement of the various parts of the record can help to enhance clarity and sociocultural acceptance. In Egypt, for example, part 6 (for the interpregnancy period), which includes information on family planning, has been placed between the parts for two pregnancies (Parts 2 and 4, Fig. 12) so that it is not visible when the record is folded.

In countries with a high level of literacy, written material in the record is acceptable. However, where literacy levels are low, pictorial presentation or the incorporation of illustrations becomes essential (Fig. 13). For good understanding and correct interpretation, the illustrations need to be of

Figure 6 *Home based maternal record for use in Viet Nam*

The presence or absence of the risk condition has been indicated by the use of colour in the boxes relating to the various risks.



VIE/88/P15

BỘ Y TẾ

PHIẾU THEO DÕI SỨC KHỎE BÀ MẸ TẠI NHÀ

Số đăng ký | | | | |

Họ và tên : .....

Tên chồng :.....

Địa chỉ :.....

Ngày sinh :.....

Ngày lập phiếu :.....

Tuổi:	18-35t			dưới 18		trên 35
Chiều cao:	145cm trở lên			144cm trở xuống		
*** Tiền sử**						
Số lần sinh	1	2	3	4	không	từ 5 trở lên
Kỳ thai vừa qua bị sảy	Không					Có
Kỳ thai vừa qua chết lưu	Không					Có
Sản giật	Không					Có
Đẻ bất thường	Không					Có
Mổ lấy thai	Không					Có
Băng huyết (trước, trong hoặc sau khi sinh)	Không					Có
Đẻ thiếu cân (dưới 2500g)	Không					Có
Con chết trong tuần đầu	Không					Có
Phẫu thuật tử cung	Không					Có
Tiền sử vô sinh	Không					Có
*** Các bệnh khác** (nếu có ghi rõ) ...	Không					Có

7

Figure 7 *Home-based maternal record from the Philippines: different intensities of shading are used to indicate the degree of risk*

PETSA NG UNANG PAGDALAW:
KAPANGANAKAN:

IDAD:	15 - 35	KULANG SA 15 TAON / HIGIT SA 35 TAON
TAAS:	LABIS SA 145 CM.	KULANG SA 145 CM.

NAKARAANG TALAAN:

BILANG NG PANGANGANAK	1	2	3	4	0	5 O LABIS
NAKUNAN *(Huling Pagbubuntis)*	HINDI				OO	
PAMAMANAS	HINDI				OO	
KOMBULSIYON	HINDI				OO	
PATAY NA IPINANGANAK *(Huling Pagbubuntis)*	HINDI				OO	
ABNORMAL NA PANGA–NGANAK	HINDI				OO	
LABIS NA PAGDURUGO PAGKAANAK	HINDI				OO	
PAGDADAMDAM NA HIGIT SA 24 NA ORAS	HINDI				OO	
MABABANG TIMBANG NG SANGGOL *(Kulang sa 2500 GM.)*	HINDI				OO	
NAMATAY ANG SANGGOL *(Sa loob ng isang Linggo Pagkasilang)*	HINDI				OO	

IBA PANG PROBLEMANG PANGKALUSUGAN

(TUBERCULOSIS, MATAAS NA PRESYON NG DUGO, ECLAMPSIA, HIKA, SAKIT SA BATO AT PAG-IHE, MALARIA, ANEMIA, SAKIT SA PUSO, BOSYO, DIABETES, AT IBA PA.)

Figure 8 *Home-based maternal record from Bandung, Indonesia*
Illustrations, written material and colours are successfully combined; red dots are used as indicators of severity of risk; solid black bars prevent marking of the box when it is not relevant.

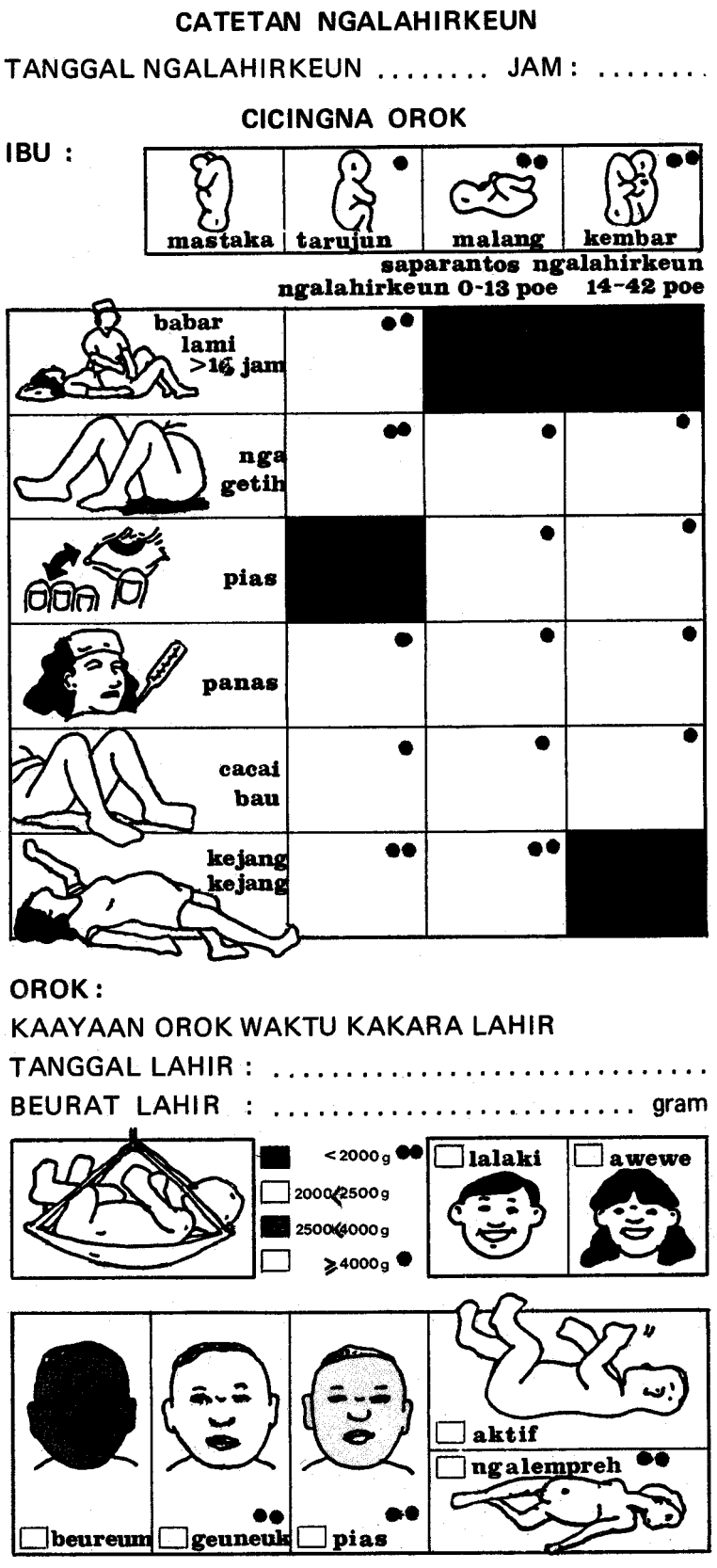
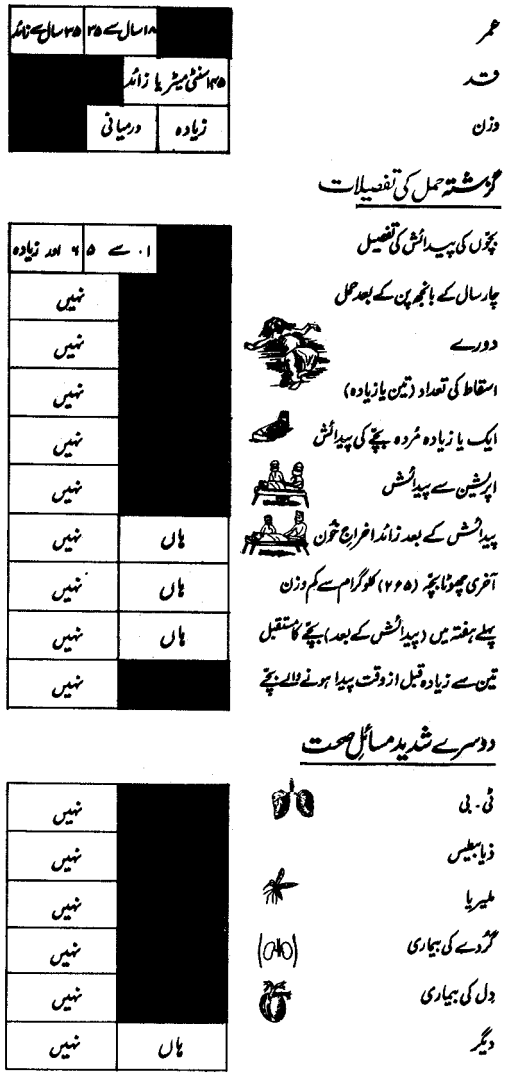


Figure 9 *Home-based maternal record from Pakistan*
Two colours are used—yellow to indicate moderate risk and red to indicate high risk; illustrations are too small to be understood easily.



reasonable size and clarity. In one country, the record has successfully combined illustrations with written material and colours (see Fig. 8). The use of coloured illustrations to convey specific messages can also help to make the record more attractive, but the inclusion of too many illustrations of small size merely confuses (see Fig. 14).

In order to ensure clarity, only essential information should be included. The bilingual records used in one centre were less attractive and acceptable because the printed matter was too crowded to be easily read (Fig. 15). Bold, clear printing is helpful but may take up too much space (Fig. 16) and make records very large. Risk factors that provide similar or overlapping information should be excluded. In one country, for example, information on the birth attendant present at delivery is included but the place of delivery is not. Since obstetricians, physicians or nurses generally attend deliveries in hospitals, nurse-midwives at health centres or in the home, identifying the birth attendant indirectly indicates the place where delivery occurred.

Figure 10 *Home-based maternal record from Bogor, Indonesia, with an attractive cover design*

KMS

KARTU MENUJU SEHAT

IBU HAMIL

Posyandu/Puskesmas/ Klinik Bersalin :
No. register :
Nama Ibu :
Nama suami :
Alamat :

IBU HAMIL YANG SEHAT DAN KEADAAN GIZI BAIK AKAN MELAHIRKAN BAYI SEHAT

BAWALAH KMS SETIAP PEMERIKSAAN KEHAMILAN

DEPARTEMEN KESEHATAN
REPUBLIK INDONESIA

Figure 11 *Home-based maternal record from Sri Lanka, with an attractive cover design*

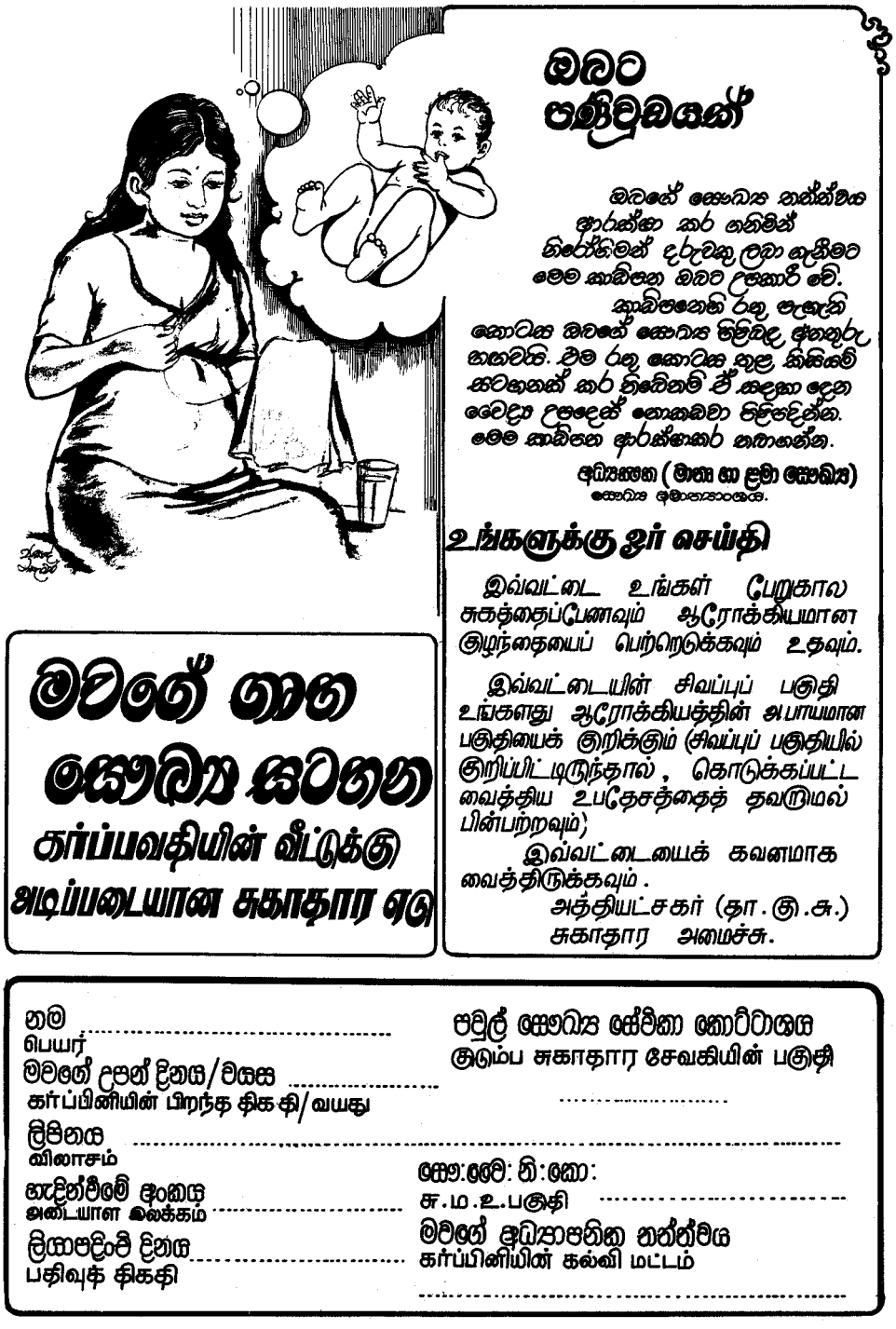


Figure 12 *Home-based maternal record from Egypt, with the interpregnancy panel placed between the two pregnancy panels*

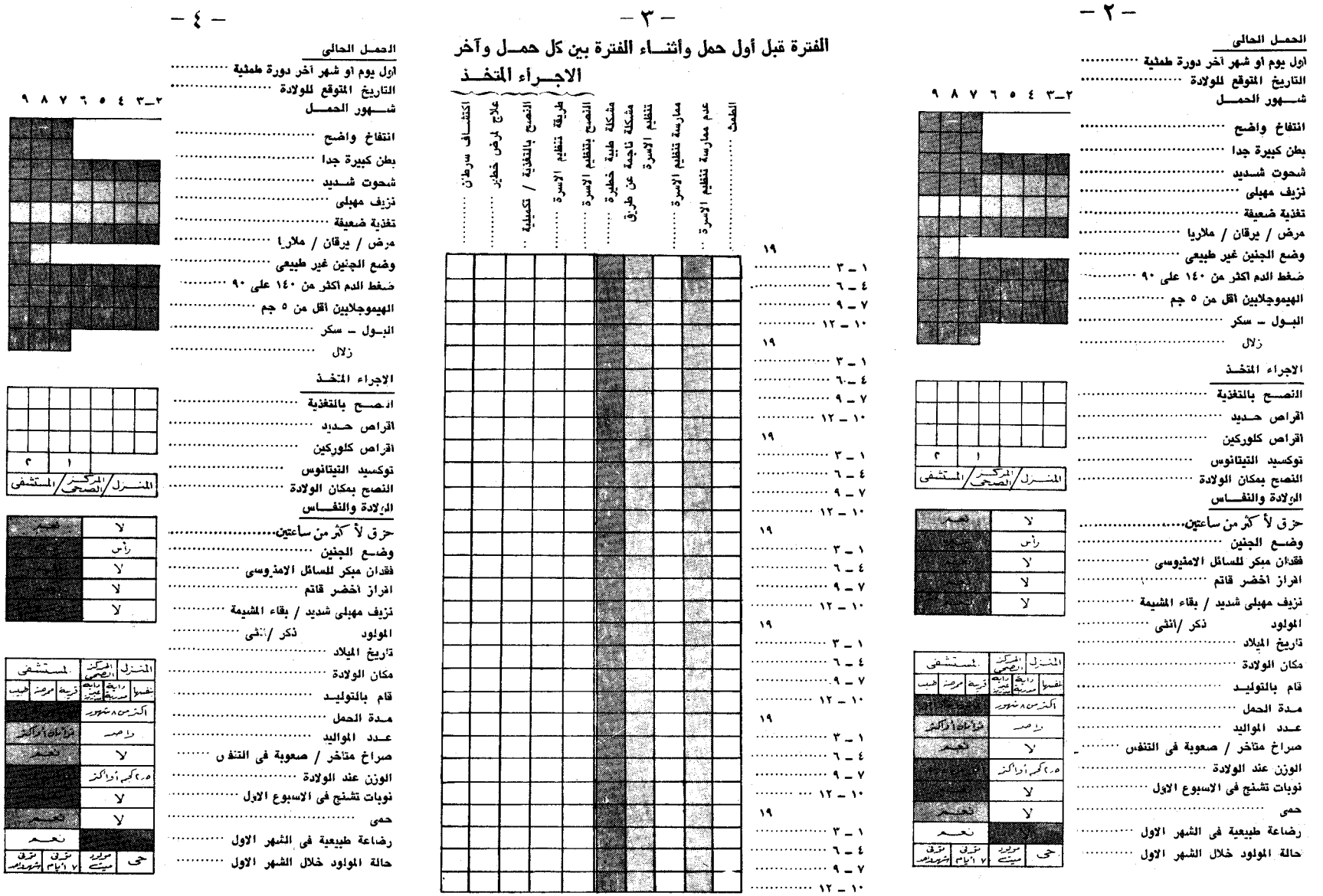


Figure 13 *Pictorial home-based maternal record from Chandigarh, India*

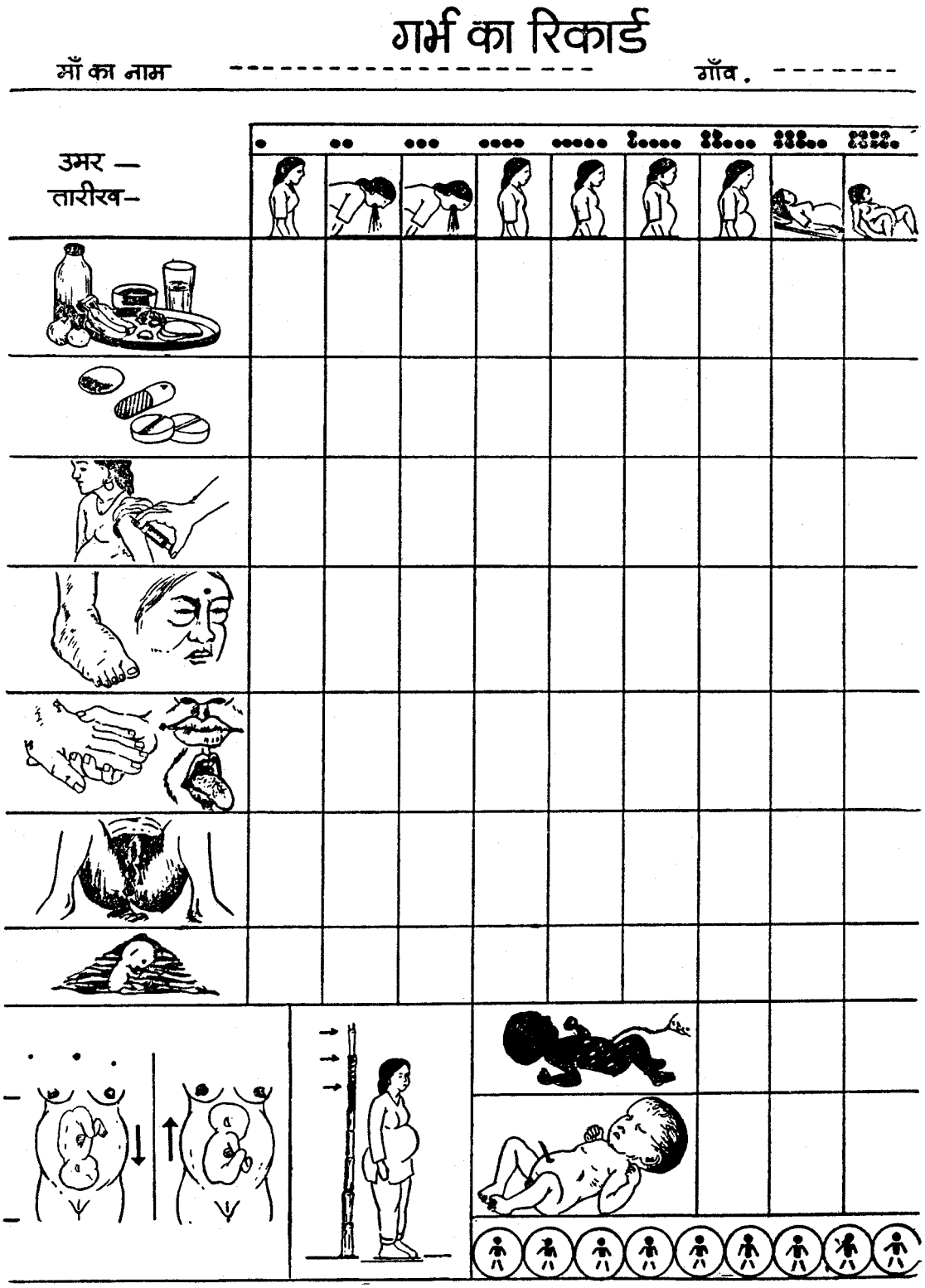


Figure 14 *A home-based maternal record in which the use of too many small illustrations confuses the user*

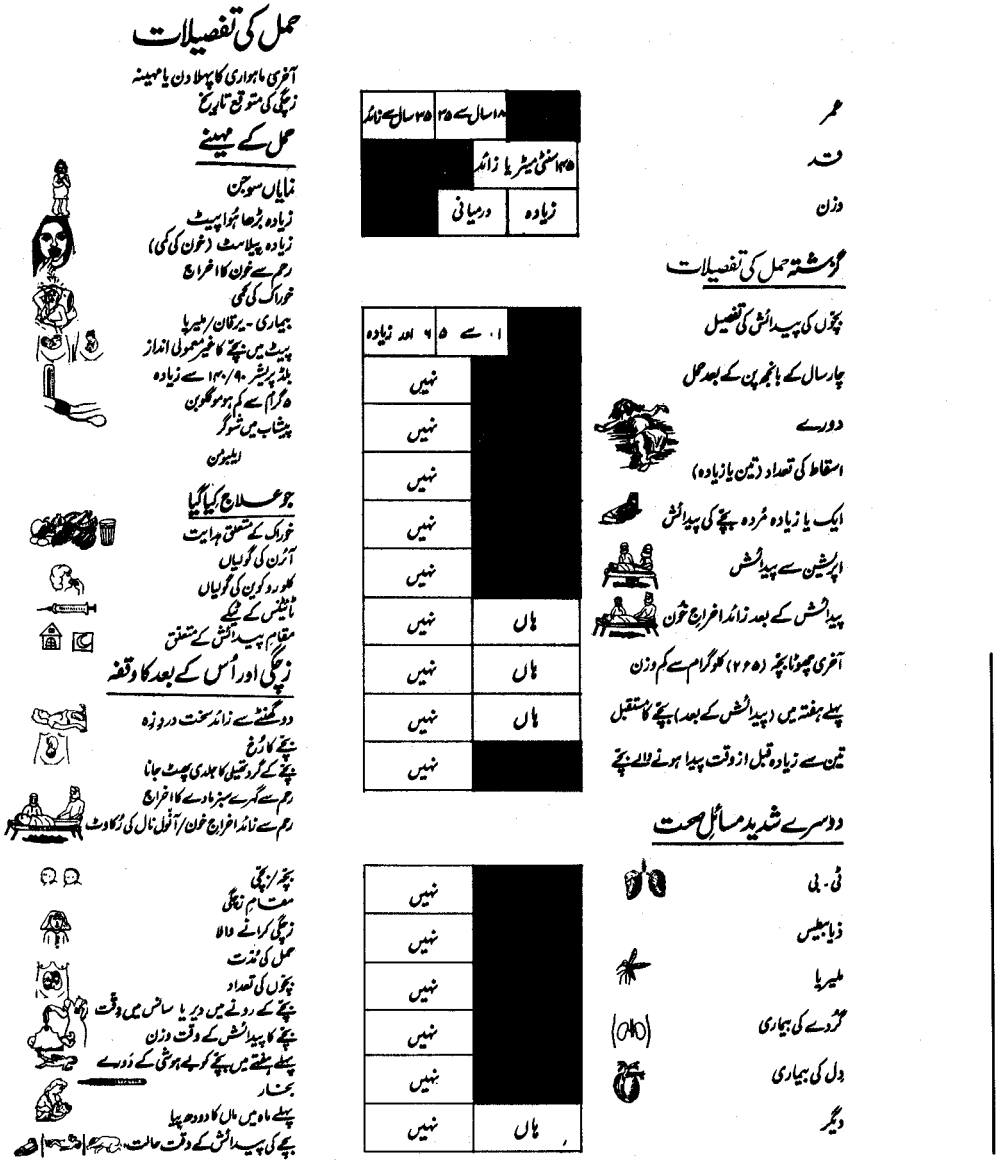
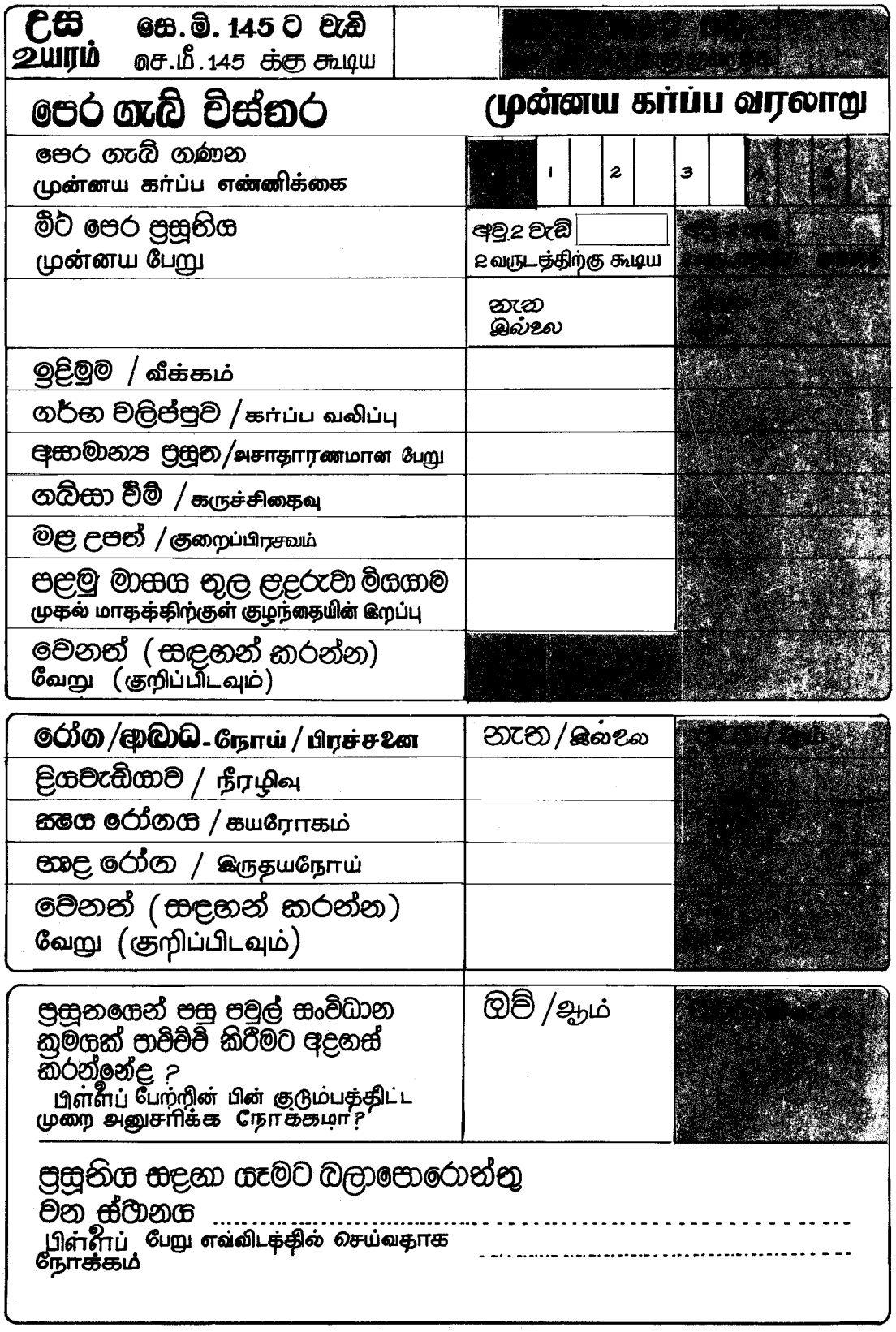


Figure 15 *A bilingual home-based maternal record that looks cluttered and unattractive*

1. Register with health worker / nurse as soon as you know you are pregnant.
   கரு தரித்தவுடன் சுகாதார ஊழியரிடம் (அ) நர்ஸிடம் பதிவு செய்து கொள்ளவும்.
2. Visit a clinic atleast four times during the pregnancy (twice in the last month).
   கருவுற்றிருக்கும் காலத்தில் குறைந்தபட்சம் நான்கு முறையாவது மருத்துவமனைக்கு செல்லவும்.
3. Eat well to improve your own and baby's health.
   உங்களுடைய மற்றும் உங்கள் குழந்தையினுடைய நலத்திற்காக சரியாக உண்ணவும்.
4. Eat more ragi, rice greens, dhal and milk.
   கேழ்வரகு, அரிசி, கீரை, பருப்பு, பால் ஆகியவற்றை அதிகமாக உண்ணவும்.
5. Consult the Health worker / Nurse / Doctor if you have,
   i. Anaemia
   ii. Oedema
   iii. Headache
   iv. Bleeding P. V.
   v. No foetal movement after five months
   vi. Breathlessness
   vii. Difficulty to pass urine
   கீழ்கண்ட குறைகள் இருந்தால் சுகாதார ஊழியர் (அ) நர்ஸ் (அ) மருத்துவரை அணுகவும்
   i. இரத்த சோகை
   ii. கால் வீக்கம்
   iii. தலைவலி
   iv. இரத்த போக்கு
   v. ஐந்து மாதங்களுக்குப் பிறகு குழந்தை அசையாமலிருத்தல்
   vi. மூச்சு திணறல்
   vii. குறைந்த அளவு சிறுநீர் போக்கு
6. Have clean clothes ready at time of delivery.
   பிரசவ காலத்திற்கென சுத்தமான உடைகளை தயாராக வைக்கவும்.
7. Do not let the cord be cut with dirty instruments. Use a new blade.
   கொடியை அசுத்தமான கருவிகளைக் கொண்டு அறுக்காமல் புதிய பிளேடை உபயோகிக்கவும்.
8. Do not give purgatives like casor oil to the baby or brand the child.
   குழந்தைக்கு விளக்கெண்ணெயோ, வேறு வித உண்டாக்கும் பொருள்களோ கொடுக்காதீர்கள்; சூடு வைக்காதீர்கள்.
9. Immunise your child from the sixth week onwards.
   ஆறுவது வாரம் முதல் உங்கள் குழந்தைக்கு தடுப்பூசி போடவும்.
10. Take the child to the clinic for regular check up.
    உங்கள் குழந்தையை மருத்துவ சோதனைக்கு தவறாமல் எடுத்துச் செல்லவும்.
11. Plan your family. Next child only after three years. After THREE STOP.
    உங்கள் குடும்பத்தை திட்டமிடுங்கள். ஒரு குழந்தைக்கும் அதற்கடுத்ததற்கும் மூன்று வருட இடைவெளி விடவும். மூன்று குழந்தைகளுடன் நிறுத்திக் கொள்ளவும்.

Figure 16 *A bilingual home-based maternal record in which the printing is bold and clear*



Combinations of risk factors provide greater predictive power than single factors. For example, haemorrhage in women with anaemia or toxaemia indicates a greater risk of an adverse outcome. However, an appropriate format for the inclusion of combined risk factors in home-based maternal records remains to be found.

If risks are not relevant or cannot be detected during a certain stage of pregnancy (e.g. fetal movements during the first few months or abnormal presentation during the first and second trimester), it should not be possible to make an entry for these factors at these times. This can be ensured by printing *solid* black bars over the relevant boxes (see Fig. 8). However, it is important to emphasize during training that health workers should not confuse these solid black areas with severe risk.

Any graphs that are included should be simple and easy to interpret. Graphs can be useful in detecting inadequate maternal weight gain, which might indicate a poorly growing fetus. While it might be difficult to use separate charts in which maternal weight-gain is plotted against height or prepregnancy weight-for-height (Figs 17 and 18), a simple weight-gain record is easy to fill in and understand (Figs 19 and 20).

3.3.2 Size

There can be no firm recommendations about size, but it is best to avoid extremes. Very small records, though economical to produce and convenient to carry, may be too small to include enough information or may look cluttered. Very large records are expensive to produce and impractical to carry and store. In the WHO collaborative study, there was a wide variation, both in length (27.5–66.0 cm) and in width (23.5–65.0 cm), in the size of records used.

3.3.3 Material

The material used must be sturdy and resistant to pests and high humidity. Records are usually designed to last 8–10 years. However, experience has shown that even within one year they can become torn or stained and may have to be replaced. Moreover the record may be eaten or spoilt by cockroaches, rats or other pests commonly encountered in the home in many developing countries. It is therefore worth considering a higher initial investment to provide records of better quality which will be more durable.

The material chosen should be of an acceptable colour and of a texture that will permit entries that are clearly legible and cannot be smudged. Sturdy card is generally available but records made of card require a plastic wallet or bag for protection. Plastic cards are a more expensive alternative, which do not require protective bags but are sometimes difficult to write on. Ideally, it should be possible to write on the record with a ball-point pen.

3.3.4 Printing

The type and quality of the printing will depend on the financial resources and printing facilities available. In some countries, printing is possible only in one colour. The card may then be printed in black and white, but

Figure 17 *Weight-for-height curves in a home-based maternal record in use in primary health care*

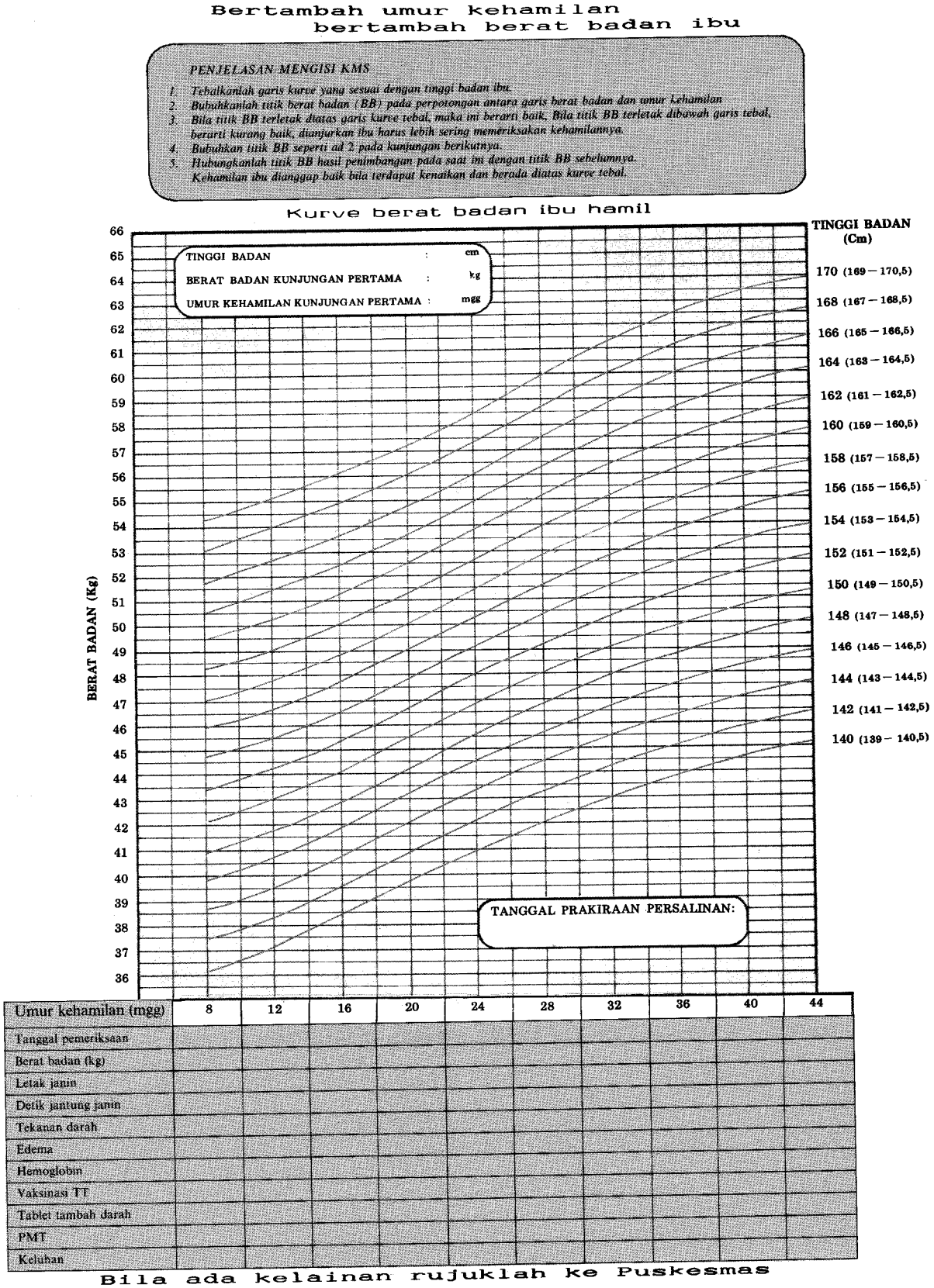


Figure 18 *Graph of weight gain during pregnancy: colourful, but complex for use in primary health care*

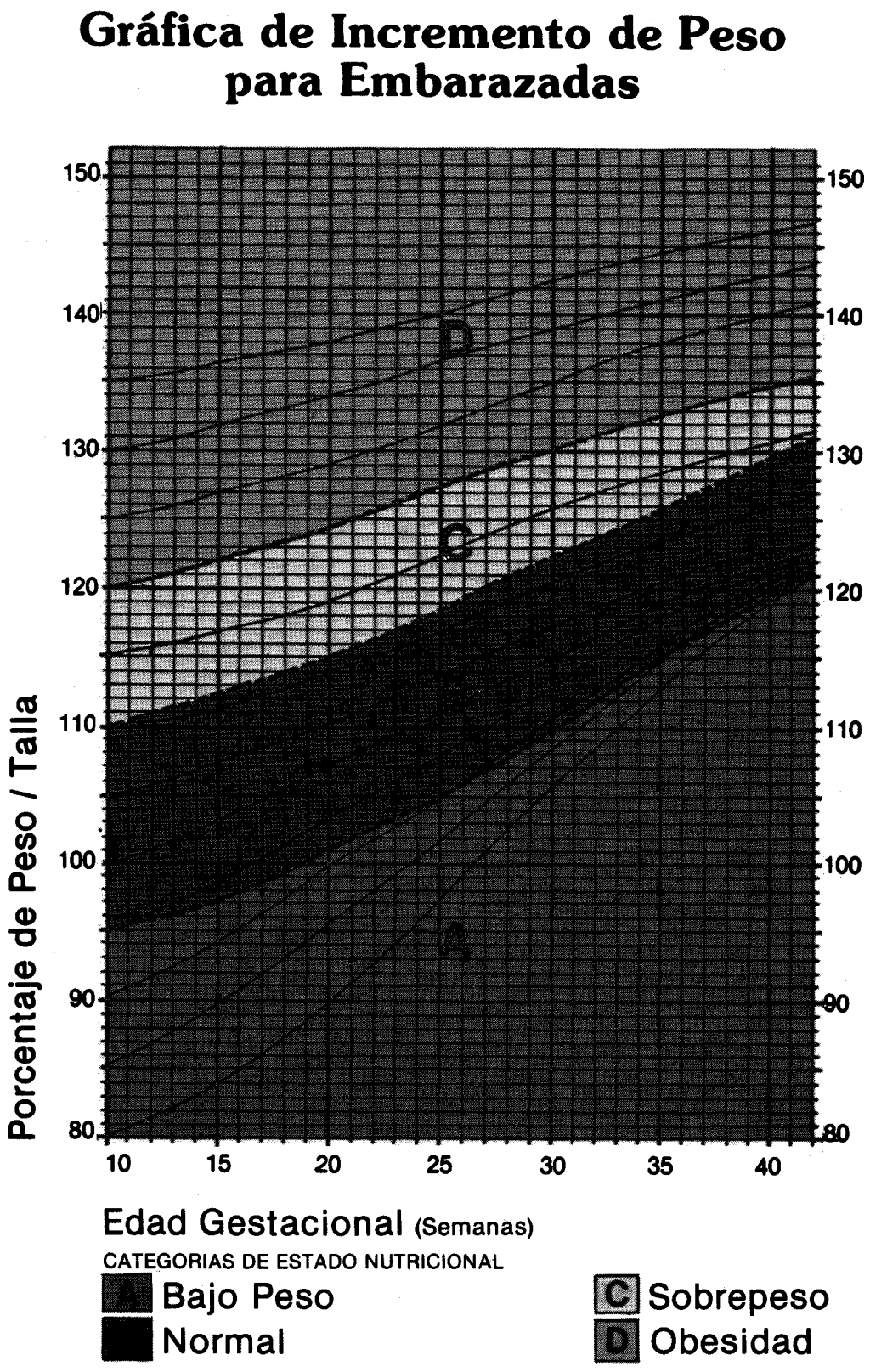


Figure 19 *Home-based maternal record from Kasa, India: a simple way of presenting weight curves*

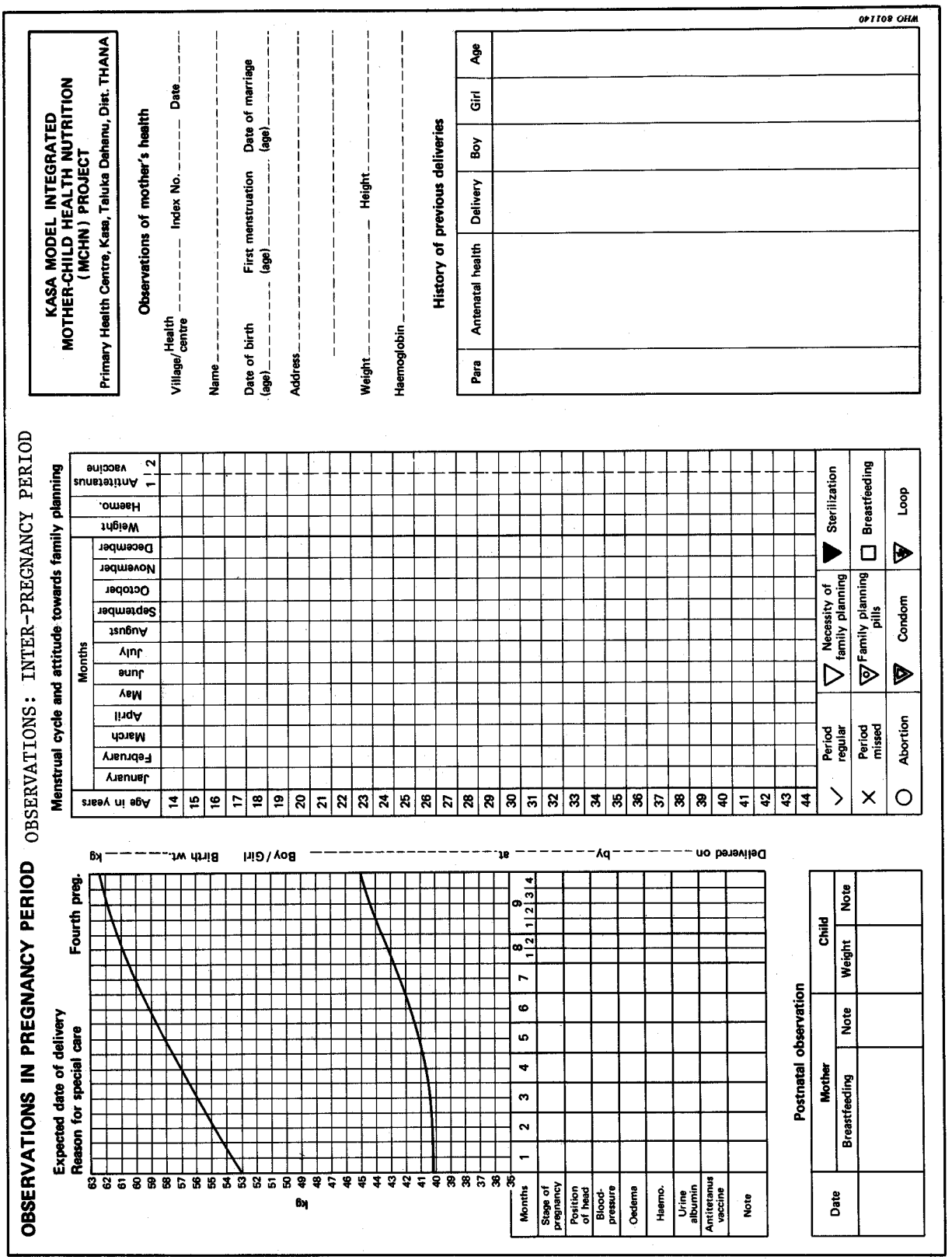
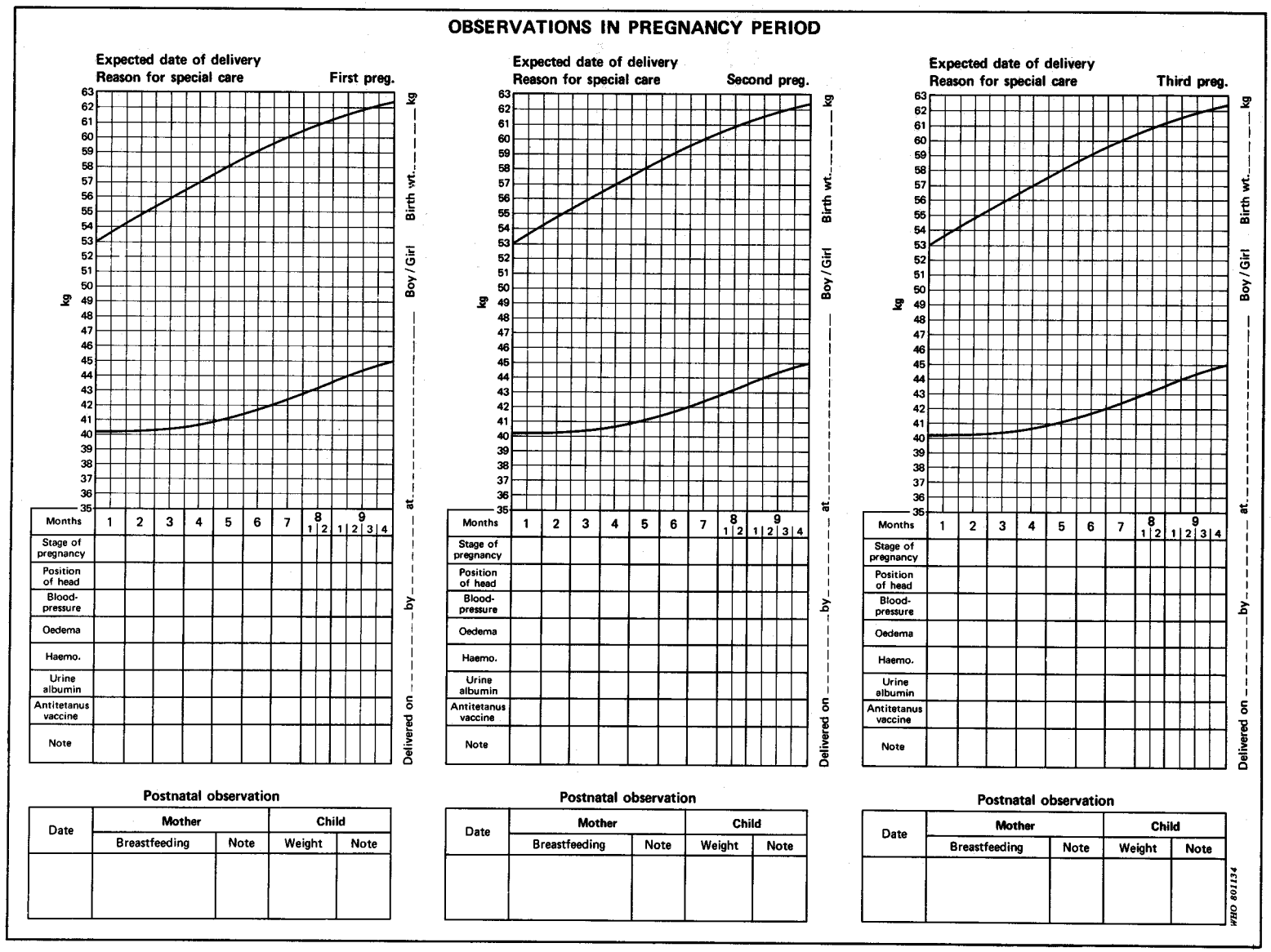


Figure 20 *Home-based maternal record from Kasa, India (side 2)*
If a woman's weight lies between the reference curves it is satifactory; a weight below the lower line indicates severe malnutrition. The record is for use in four pregnancies.



two different shades, light and dark to indicate moderate and high risk, can still be incorporated. If printing the two different shades cannot be achieved using local facilities, printing blocks can be made outside the country. Colour printing should be considered wherever it is available at an affordable cost; it provides better contrast and is more attractive and may therefore be more acceptable. Different intensities of the same colour or different culturally acceptable colours can be used to advantage to indicate moderate and high-risk conditions. Methods of calculating the numbers of records needed both initially and every year subsequently are described in section 5.2.

Adapting the home-based maternal record

Actions to be avoided

- **Do not copy** the WHO prototype record without adapting it to local needs and translating it into the local language.
- **Do not include** so much information that the record looks cluttered and confusing.
- **Do not design** records containing written material alone for use in areas where literacy among women and community health workers is low.
- **Do not incorporate** risk factors that are uncommon or difficult to recognize or that cannot be managed easily and affordably.
- **Do not include** health actions for problems that are not important or not supported by local health policy.
- **Do not request** duplicate records.
- **Do not use** colours or languages that are alien to the local culture.
- **Do not include** subject matter that requires much writing.
- **Do not print** large quantities of records before pretesting the format.

3.4 Examples of selected records

Following feasibility trials, several countries have now adapted the WHO home-based maternal record for local use. Information on two records is given below to serve as an illustration for programme managers wishing to devise suitable records for their own districts or provinces.

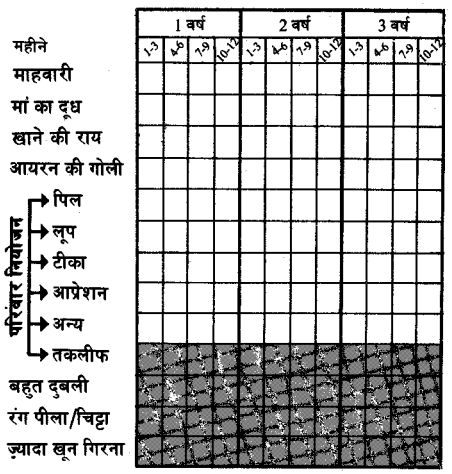
In India, a home-based record has been developed which links maternal and child care and includes child growth monitoring (Figs 21 and 22). This provides a continuous account that helps mothers and community health workers to strengthen maternal and child care. Two attractive photographs are included for health education purposes.

Figure 21 *A home-based joint mother–child record in use in India: side 1*

रैफरल सैंटर के सुझाव

तारीख	बीमारी/इलाज

दो गर्भ के बीच का रिकार्ड



गर्भ के दौरान ज़्यादा खाना खाएं।

माँ के दूध के साथ बच्चे को ऊपरी खुराक भी दें।

मां और बच्चे का स्वास्थ्य रिकार्ड

नाम | पति का नाम

पता | जाति

पहली बार दिखाने की तारीख

उम्र (वर्ष) 18 से कम | 18-35 के बीच | 35 से ऊपर

कद (सेंटीमीटर) 145 से ऊपर | 145 से कम

पहले कितने बच्चों को जन्म दिया 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7

पिछले गर्भ की जानकारी

सोजिश	नहीं	हां
दौरे	नहीं	हां
गर्भ के दौरान या बाद में खून गिरना	नहीं	हां
दर्द 24 घण्टे से ज़्यादा रहे	नहीं	हां
मरा हुआ बच्चा या अपने आप गर्भपात	नहीं	हां
पहले असाधाराण जन्म	नहीं	हां
कम वजन का बच्चा (2500 ग्राम से कम)	नहीं	हां
सात दिन के अन्दर बच्चा मर गया	नहीं	हां

इस गर्भ की जानकारी

आखिरी माहवारी (तारीख) _____

जन्म की संभव तारीख _____

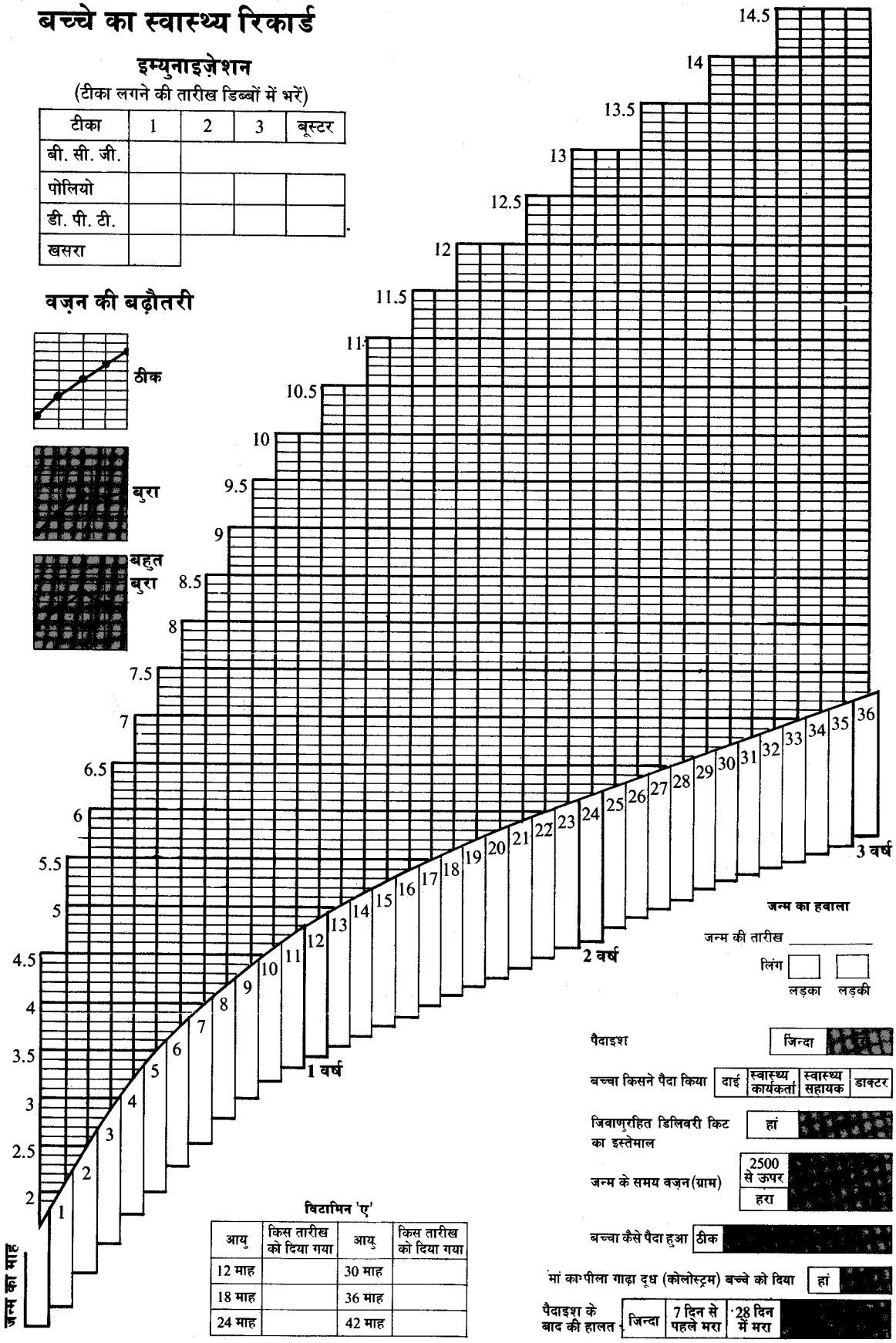
महीने	3	4	5	6	7	8	9
खून की कमी							
सोजिश							
*खून गिरना							
बहुत दुबली							
ज्यादा बड़ा पेट							
टेढा या उल्टा बच्चा							
* बच्चे का न घूमना							
* ब्लड प्रैशर 140 से ऊपर							
हीमोग्लोबिन 8 ग्राम से कम							
पेशाब में चर्बी							
छोटे कूल्हे							

* जल्दी हस्पताल ले जाइए ।

गर्भ की देखभाल
(✓का मतलब किया)

खाने की राय		
आराम की राय		
आयरन की गोलियां		
टी.टी. (तारीख)	(1)	(2)
डिलिवरी की जगह के बारे में राय	घर	हस्पताल
जिवाणुरहित डिलिवरी किट के बारे में सलाह	हां	नहीं

Figure 22 A home-based joint mother–child record in use in India: side 2



This record has the following disadvantages:

— it covers only one pregnancy;
— the interpregnancy panel (which stresses child spacing) is small;
— nutrition monitoring during pregnancy is not incorporated.

In the Indonesian (Bandung) record, nutrition monitoring during pregnancy is included (Figs 23 and 24). Illustrations, some of which are coloured, have been added to increase participation by semiliterate or illiterate community members. Risks are graded as follows: one red dot indicates a risk requiring the attention and care of the midwife; two red dots indicate a serious problem that should prompt immediate referral. Where risks are either not applicable or not relevant, boxes have been coloured black to prevent marking with a tick or cross. The main feature of the record is the inclusion of one full panel devoted to labour and delivery, during which the risk of adverse outcome is greatest.

This record, which is currently under trial, has the same disadvantages as the Indian record described above in that it relates to only one pregnancy. The illustrations on one of the panels are very small and therefore cannot be clearly understood. Three panels have been allocated to child growth monitoring. The space for recording growth during the first year of life, when growth is rapid, is limited and makes it difficult to interpret any slowing of growth or faltering of the growth curve. The record covers the monitoring of child spacing during the interpregnancy period, but this is not clear. Other interpregnancy events that may be important are not included.

3.5 Appropriate technology

Home-based maternal records will have a favourable impact on maternal and perinatal health only if their use is supported by appropriate technology and health personnel trained in its application for detecting risk factors. Other technologies that can be used are described here.

3.5.1 Cord-care kits

Safe, disposable cord-care kits are now widely used in an effort to control neonatal tetanus. Guidelines for the production, supply and use of such kits have been produced by WHO (*13*). The choice of kit will depend on the resources available and the local requirements.

3.5.2 Diagnosis of anaemia

Severe anaemia, either alone or in combination with other risk factors, is a cause of high maternal mortality rates in developing countries. It can be prevented and treated in primary health care settings.

Even if no technical support for estimating haemoglobin is available at grass-roots level, anaemia can be diagnosed reasonably well by clinical examination, based on the colour of lips, tongue, nails and conjunctivae. The face of a severely or moderately anaemic patient looks pale.

Primary health care workers can be trained to recognize anaemia by clinical examination and to refer suspected cases for confirmation.

Figure 23 *A home-based joint mother–child record in use in Bandung, Indonesia; side 1, incorporating illustrations and nutritional monitoring of the mother*

FAKULTAS KEDOKTERAN
UNIVERSITAS PADJADJARAN
BANDUNG 1986

KARTU IBU – ANAK

TANGGAL : KODE DUKUN :

KATERANGAN UMUM :

NAMI :
UMUR :
ALAMAT :

KATERANGAN KAKANDUNGAN :

JUMLAH KALAHIRAN :
JUMLAH BURUSUT TULUY : (⩾ 2●)
JUMLAH LAHIR – HIRUP :
JUMLAH BUDAK ANU MASIH HIRUP :

KALURON : (⩾ 3●)
KUNGSI OPERASI, NGALAHIRKEUN ANU SAADI :

☐ MUHUN ● ☐ HENTEU

TANGGAL NGALAHIRKEUN ANU SAADI :

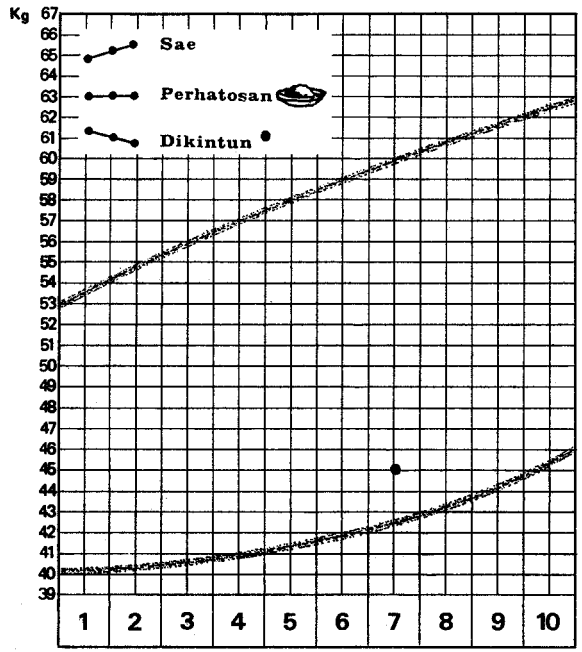
BULAN KARESEBAN ANU PANUNGTUNG :

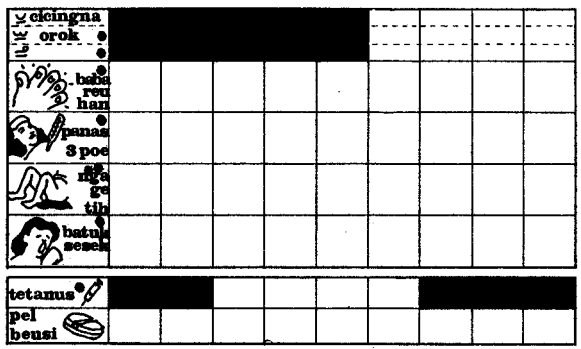
DIKINTUN : ●) PUSKESMAS/POSYANDU
●●) RUMAH SAKIT

DIRANCANG KU :
LABORATORIUM ILMU KESEHATAN ANAK
F. K. UNPAD

CATETAN KAKANDUNGAN

BEURAT : ..... Kg.
JANGKUNG : ..... Cm (< 145)●
LINGKERAN PEUPEUTEUYAN : ..... CM (< 22)●



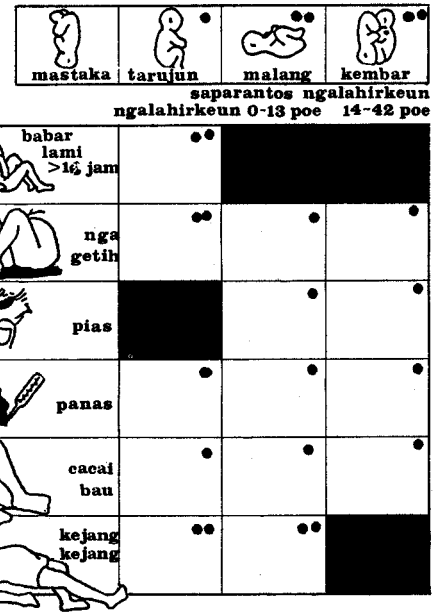


CATETAN NGALAHIRKEUN

TANGGAL NGALAHIRKEUN ..... JAM : .....

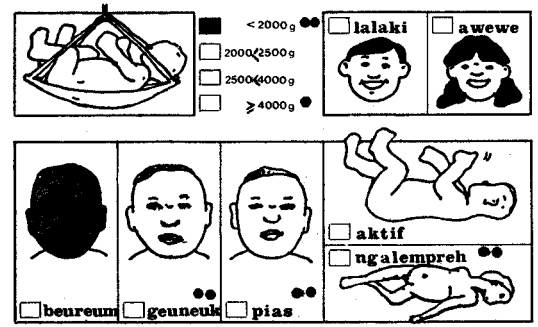
CICINGNA OROK

IBU :



OROK :

KAAYAAN OROK WAKTU KAKARA LAHIR
TANGGAL LAHIR : .....
BEURAT LAHIR : ..... gram



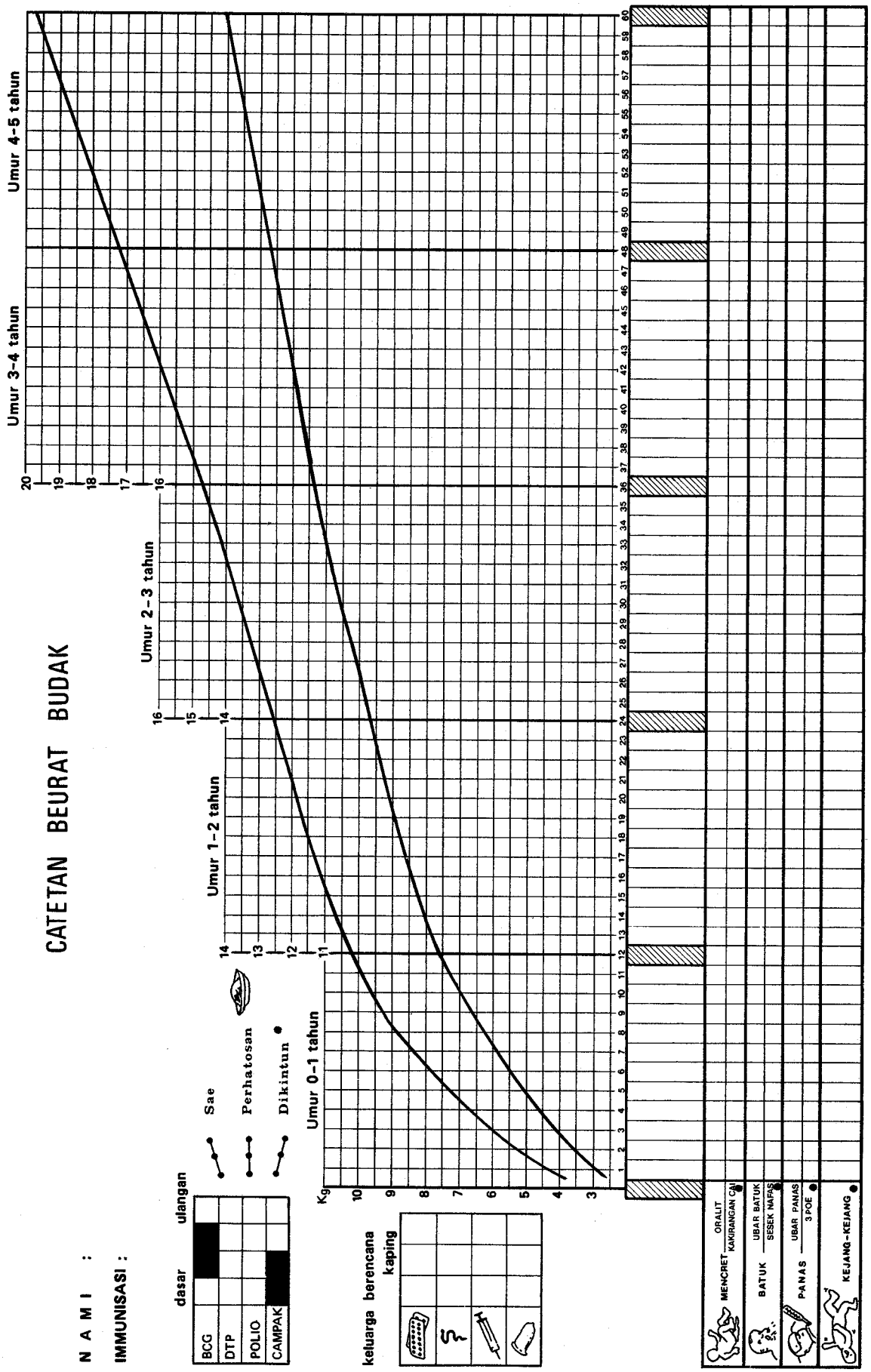


Figure 24 *A home-based joint mother–child record in use in Bandung, Indonesia: side 2*

Diagnosis depends on the accuracy with which pallor can be distinguished from normal colour. Good training can considerably enhance the confidence with which health workers can diagnose the severity of anaemia. A coloured picture of an anaemic woman, showing the pallor of the conjunctivae, tongue, nails and lips for comparison with patients is a useful aid. An alternative is to provide three strips of pink colour of different intensities, indicating mild, moderate and severe anaemia, for comparison with the palpebral conjunctiva (*14*).

Estimation of haemoglobin using the methods of Tahlqvist and Sahli is based on the principle of comparing the colour of blood with a standard. These methods, together with the copper sulfate method (*15*), are more precise than colour comparison by clinical judgement but require constant availability of equipment or reagents, and involve pricking the patient to obtain blood. More sophisticated tests based on colorimetric and spectrophotometric methods are available in selected referral institutions only but are not suitable for large-scale application in community settings. The decision to provide technological support for the diagnosis of anaemia will depend on the available resources and the training of primary health care workers.

The establishment of appropriate cut-off points for therapy, i.e. for oral and parenteral iron or blood transfusion, will depend upon the findings of published research or treatment schedules for the country, which provide guidance on mode of administration of iron for anaemia of various degrees of severity. If these are not available, decisions must be based on local experience or consultaton with experts.

3.5.3 Recognition of low birth weight

In several developing countries low birth weight is a serious risk, threatening survival and quality of life in some 30–50% of all babies born. Recognition of low birth weight and provision of graded, need-based care are priorities in these countries.

Because of financial and technological constraints, it may not be possible to provide weighing scales to all community health workers. In these circumstances, specific guidelines will be needed to help health workers and mothers to recognize low-birth-weight and premature babies on the basis of clinical criteria, such as gestational age and physical appearance. However, these methods are crude and mistakes are likely.

In some cases, arm or chest circumference measurement tapes are given to traditional birth attendants who are then instructed in the locally established criteria for predicting outcome. The tapes are colour-coded to indicate the chances of survival, and for this purpose they are reasonably accurate. However, they are of no use in monitoring the progress of low-birth-weight and premature babies (*16*, *17*).

In many countries, weighing scales can be provided but the birth attendants are illiterate. In such situations, it is possible to use weighing scales on which different colours indicate various weight ranges (*18*). Although these are not very accurate, they can help birth attendants in deciding whether babies need normal care at home, special care and supervision at home, or referral. Inexpensive tubular spring scales are available with three weight ranges indicated by three different colours. For example, green may indicate a birth weight in the range 2500–5000 g,

yellow 2000 g to less than 2500 g, and red less than 2000 g. Babies whose weights fall in the green part of the range should receive normal care at home, those in the yellow part should be given special care at home, and those in the red part should be referred for consultation or special care. The choice of colours to indicate cut-off points will depend on local cultural acceptability. This approach helps to ensure effective utilization of limited resources in that special care is given only to those who need it. However, while it is useful for categorizing babies according to risk, it does not permit subsequent monitoring of growth as measured by weight gains or losses.

In countries where birth attendants are literate and in situations where delivery is institutional, weighing scales can be provided for accurate measurement of birth weight, to help in the recognition of risk and for monitoring the progress of low-birth-weight babies during early life.

The cut-off point for decisions regarding special care and referrals for low-birth-weight babies will be based on local experience of the relationship between birth weight and adverse outcome. This, in turn, depends on the relative prevalence of preterm births and intrauterine growth retardation, on the resources available and on the capacity of health facilities to handle these problems.

3.5.4 Management of birth asphyxia

Birth asphyxia is a very serious condition that is responsible for a large number of neonatal deaths in many developing countries, especially within the first 24 hours of birth. Many children who survive are left with physical and mental handicaps. Safe obstetric care and timely referral of women at risk of developing the complications that lead to birth asphyxia are essential for its prevention. However, if asphyxia does occur, immediate appropriate management is necessary, since there will be no time for the safe transport of these babies to a referral centre.

Because of the training required if birth attendants are to learn how to resuscitate an asphyxiated baby and because of the equipment that is also needed, it is more important and appropriate to focus on the prevention of birth asphyxia and the timely referral of women who are likely to deliver asphyxiated babies. The home-based maternal record should therefore make provision for the recording of relevant risk factors during antenatal and interpregnancy periods. Some of the risk factors that correlate with birth asphyxia are toxaemia, hypertension, poor obstetric history, bleeding, severe anaemia, severe malnutrition, abnormal presentation in pregnancy and breech presentation, cord prolapse with pulsations, and prelabour rupture of the membranes.

Policies on recognition of birth asphyxia and method of resuscitaton will depend on the resources available and the background of birth attendants. Assessment of birth asphyxia is based on respiratory rate, heart rate, colour and reflex activity. The Apgar score has been widely used, but its value as a diagnostic or predictive method for birth asphyxia is being increasingly questioned. Because of the constraints on the use of these criteria in home deliveries, often conducted by elderly, illiterate traditional birth attendants who do not have watches and cannot calculate the Apgar score, it may be necessary to select just two or three simple criteria which can be easily and reliably assessed.

Management of birth asphyxia includes ensuring a clear airway, providing assisted breathing and maintaining circulation. Even in the most primitive conditions, birth attendants can be taught to clear the airway by postural drainage of secretions and to clean the mouth and pharynx, using a finger wrapped in gauze. If resources permit, it may be possible to provide disposable mucus suction traps. More sophisticated suction apparatus can be provided for well developed health facilities.

Traditional birth attendants can be trained to use mouth-to-mouth insufflation to assist breathing. Where resources permit, a safe reusable mask can be provided. Initial experience indicates that birth attendants can be trained in the necessary skills for using bags and masks. Facilities for intubation and oxygen administration are available only in referral hospitals. These cannot be used in the community since they demand special technical skills and are expensive; they are not required in most cases of asphyxia.

It is difficult to save a baby with poor circulation and a weak or absent heartbeat. Simultaneous cardiac compression and air insufflation are difficult to provide if this emergency occurs at home, since two trained and experienced individuals are needed to carry out the procedures correctly. Health centre staff should train the traditional birth attendants at the site of delivery, which can be the home or the health centre.

3.5.5 Maternal nutrition monitoring

In adapting the home-based maternal record, several countries have included the monitoring of nutritional status during pregnancy by criteria other than "woman very thin". It is clear that this criterion, used in the WHO record, is not sufficiently sensitive and will identify only the most serious cases.

Nutritional status has a definite relationship with pregnancy outcome, and severe maternal malnutrition is associated with poor growth of the fetus. This may result in the birth of a growth-retarded baby that is at increased risk of death and of impaired postnatal growth and development. Poor nutritional status is often associated with anaemia, and both are definite risks for maternal mortality. Monitoring of maternal nutritional status is therefore particularly important in countries where the incidence of low-birth-weight babies is high.

Measurement of height is a good indicator of prolonged malnutrition during childhood. Risks during labour and the chances of delivering low-birth-weight babies are higher in women who are very short. Although it is a major risk factor, short stature may be hard to assess—it is uncommon and therefore not a powerful attributable risk factor. The association of short stature with poor outcome varies in different population groups, since height is to some extent genetically determined; norms can therefore vary a great deal from place to place. If height is to be used as a criterion in the diagnosis of malnutrition, identification of local cut-off points is essential. The use of a colour-coded bamboo or wooden stick will help in screening for short stature.

A common method of monitoring nutritional status is to record weight gain regularly during pregnancy and to compare it with prepregnancy weight, when this information is available. Use of this method obviously

depends on the availability of weighing scales and is therefore more common in clinics and health centres than in the community. It is important to use local norms in determining the significance of weight changes. Norms determined on the basis of experience in other areas or neighbouring countries can be used initially until local values can be established.

Weight data can also be used to plot weight curves, which can be included in the home-based maternal record. For example, in Maharashtra, India, two weight curves were printed on each pregnancy panel on the record. The woman's weight curve was plotted and if it lay between the two printed curves it was considered satisfactory. A curve lying below the lower line indicated severe malnutrition (Figs 19 and 20).

The records developed at the Nutrition Research and Development Centre, Bogor, Indonesia, show different weight curves for different heights (Fig. 17). While this system provides additional information, it is more complex—it involves accurate measurement of two body parameters and necessitates careful recording on, and interpretation of, complicated charts.

There are several ways in which a weight chart can be incorporated in a home-based maternal record. The additional space needed can be made available by reducing the number of pregnancy panels. If the record covers only a single pregnancy, weight curves during pregnancy may be incorporated in another panel. Alternatively, the record could be enlarged so as to include eight panels, or weight curves could be shown in the half of the panel where referral findings are included, or on the panel where past history is summarized.

The use of other measurements, such as left arm circumference, is an attractive alternative. However, while arm circumference can be used to screen for severe malnutrition in prepregnancy or early pregnancy, it cannot provide accurate information on weight gain or loss. Local reference standards must be established.

3.5.6 Other examples

The use of a calendar of lunar or local events in calculating the expected date of delivery (see Annex 1) and the self-monitoring of fetal movements (*19–21*) are further examples of linkages between appropriate technology and the home-based maternal record. However, some of these methods need to be field tested for specificity, sensitivity and predictive power. Programme managers can improvise other simple means of encouraging the participation of mothers, community members, traditional birth attendants and community health workers in promoting self-diagnosis and self-care and in using the "at-risk" approach.

4 Guidelines for the use of home-based maternal records

4.1 General guidelines

The purpose of introducing the home-based maternal record is to provide easily available, comprehensive information on the health of a woman before her first pregnancy, during the current pregnancy, delivery, and postpartum period, and in the periods between subsequent pregnancies, and on her family planning status. In addition, the records can provide information on the health status of newborn babies during the first month of life.

If possible, in areas where home-based maternal records are introduced, all women in the community between the ages of 15 and 44 years who may become pregnant should have records, irrespective of whether or not they are currently pregnant or participating in family planning. The record should be started during the first contact at home or in the clinic, health centre or hospital, and filled in as regularly as possible thereafter.

The purpose of the record, its importance, and the need to preserve it safely should be properly explained to all those who use it—women, family members and health workers at primary and referral levels. Detailed guidelines should be available to help community health workers, midwives, nurses and physicians to examine women, fill in the cards correctly and provide advice, treatment or referral as appropriate.

When the record is filled in, answers to all the questions should be entered in an appropriate way, for example, by putting a cross (×) for negative answers and a tick (✓) for positive ones or by writing the appropriate value in numbers or the appropriate information in words. The absence of an entry means either that the woman has not been asked that particular question, or that she has not been attended to or examined.

In the WHO prototype record, five of the six panels have shaded boxes which are used to indicate the presence of risk conditions. A tick (✓) in a shaded box means that a condition is present that may endanger the health of the woman or her newborn baby and that requires attention. As previously mentioned, the boxes can be graded by using light and dark shading or different colours to indicate the severity of the risks: a darker shade or a particular colour could indicate a higher level of risk. Those women with a tick (✓) in a box of the dark shade or chosen colour require immediate care or a check-up in hospital, whereas those with a tick (✓) in a box of a lighter shade or of the second designated colour may need no more than proper supervision and care by the community health worker or nurse-midwife. However, these women too can be referred if necessary.

The decision to incorporate different shades, colours or other markers should be made at the country level when the home-based maternal record is developed. (Further details on how to fill in the WHO record are given in Annex 1.)

Information on the baby's health during the first month of life, entered in the portion below the findings during pregnancy, should be transferred to the child growth chart after the end of that month. In this way, a link can be established between the home-based maternal record and the child growth chart.

The section on remarks to and from a referral centre should include a note made by the person who initiated the referral. Information on the action taken and advice given should be entered in simple language that can be understood easily by primary health care workers and mothers. Any written instructions should be simple, clear and concise. If necessary, the referral section can be extended by attaching additional pages to the record in order to strengthen referral support and foster communications between health professionals at the different levels.

As the content of home-based maternal records will vary to some extent, depending on local adaptations (see section 3), it is not possible here to give more than an outline of the principles and procedures for their use. Precise instructions should be developed at the local level. For example, the guidelines should give precise instructions on the administration of iron tablets, chloroquine tablets for malaria prophylaxis (if appropriate) and tetanus toxoid. Local policy may be to give iron tablets to all women. In some countries or areas, however, drug shortages may mean that iron tablets can be given only to those who are anaemic. The necessary action should be specified and, if shortages are expected, it is helpful to provide instructions on what to do when they arise.

4.2 Guidelines for community health workers

Detailed and specific guidelines for community health workers should be prepared at national or provincial level. In doing this, it is essential to give careful consideration to local conditions, including the educational level, understanding, training and job description of community health workers, locally prevalent risk factors and their definitions, facilities and personnel available at first and second referral levels, the existing communications and information systems, and facilities for transporting sick individuals. The guidelines should specify:

— the risk factors chosen, including the necessary definitions and simple explanations;
— the person(s) who will normally carry out initial antenatal screening and the methods to be used;
— instructions for filling in the record;
— referral procedures and structure, including known problems in referral and possible ways of overcoming them;
— action(s) to be taken to deal with specific risk factors; and
— how to train mothers and family members to use the records.

4.3 Guidelines for nurse-midwives, nurses and physicians

Guidelines for the use of home-based maternal records should also be developed for all health personnel at the first referral level, such as auxiliary nurse-midwives, nurses, medical or health assistants and physicians, all of whom are responsible for the care of women during their reproductive period.

Staff at the first referral level should maintain a logbook or register (see Annex 3) of minimal but essential information on identified risk factors for mothers and babies in their area, family planning acceptance, tetanus toxoid immunization, outcome of pregnancy (including abortion, stillbirth, live birth, birth weight and maternal death), serious health problems, referrals and other important events. This can be done by close cooperation and continuous interaction between staff at referral and community levels. The maintenance of this information system will help ensure continuity of health care.

Staff at this level are often responsible for the training of primary health care workers, an important component of which will be to help these workers to acquire the skills necessary to identify risk factors, fill in the records and promote self-care. Specific guidelines will be needed for conducting seminars or workshops for the training of physicians, nurses and senior midwives in the practical use of the records so that they, in turn, will be able to train auxiliary nurse-midwives, midwives, community health workers and traditional birth attendants. Training should include practical information on how to fill in the records, with clear instructions on the symbols to be used.

5 Introducing home-based maternal records into the health-care system

5.1 Administrative aspects

The introduction of home-based maternal records requires careful thought and planning and the provision of the necessary financial resources. It is useful to field test a locally adapted record before any decision is made to proceed with its introduction on a larger scale.

Home-based maternal records are suitable for use in areas with a well established primary health care infrastructure, preferably with literate primary health care workers. They can be particularly useful in areas where maternal and neonatal mortality is high.

When the introduction of records is being planned, initial considerations should include a review of available health statistics, and existing primary health care infrastructure and resources, both human and financial. Further steps will include:

- the development and production of a home-based maternal record to suit local conditions (see section 3);
- the development of guidelines for training and for the introduction and use of records (see section 4);
- the provision of adequate support for referral centres;
- consultation with health professionals from an early stage;
- consultation with technical staff concerning existing technology (for measurement of height, weight and blood pressure, estimation of haemoglobin, examination of urine), existing human resources (physicians, nurses, midwives, community health workers and traditional birth attendants), and existing information systems (recording, reporting and feedback of data);
- arrangements to ensure adequate monitoring and evaluation of the records;
- discussions with community leaders concerning the way in which home-based maternal records are to be introduced and operated;
- approaches to international and nongovernmental organizations and voluntary groups that may be willing to provide assistance.

Suggestions for solving a number of problems that may be encountered in the introduction and use of home-based maternal record programmes are outlined in Annex 4.

5.2 Support services

5.2.1 Logistic support

The annual requirements for home-based maternal records and guidelines should be calculated from the target population and the number of health personnel involved. For example, in a population of one million there will

be some 200 000 (20%) women of reproductive age. If the birth rate is 30 per 1000, there will be between 30 000 and 37 500 pregnancies (including those that result in stillbirth and abortions) each year. If a target of 50% coverage is set, 15 000–18 750 records will be required for the coverage of pregnant women and 100 000 for all women of reproductive age. If records are supplied to pregnant women only, the annual requirement will be high (15 000–18 750). However, if all women of reproductive age are covered at the 50% level, there will be a high initial requirement (100 000) but the subsequent annual requirement will be low (5000–5500 at the 50% coverage level); the latter number represents the number of girls reaching reproductive age every year. Calculations should also take account of replacements that will be needed because cards are lost or damaged.

Other essential health-care supplies, such as drugs, vaccines and equipment, can also be realistically calculated and should include requirements for referral facilities; the strengthening of referral services can convincingly enhance the prestige of the record. Facilities and supplies needed for the care of "at-risk" cases should be available at all times and well maintained. Involvement of the staff at referral institutions, and assignment to them of clear responsibilities in respect of home-based maternal records are necessary to ensure satisfactory support in the management of "at-risk" women.

The need for training materials should also be considered, since adequate training is essential for the successful introduction and use of home-based maternal records.

If the state is unable to meet all costs, suitable alternatives can be explored. For example, international and nongovernmental organizations and voluntary agencies such as women's groups can be approached for help, especially in the early stages of a home-based maternal records programme. The community may be asked to bear at least part of the costs, or introduction of the records can be gradual, being increased as resources become available.

5.2.2 *Training*

(1) Planning

Programme managers will need to prepare plans for training staff in the use of home-based maternal records in districts where they are to be introduced. Decisions will have to be taken regarding the levels and types of training to be organized, the number of workers to be trained at each session, the training materials required,[1] the duration and location of training courses and the funding required. Plans should include provisions for continuing education and training for existing staff and for newly posted health staff and community workers in order to maintain the level of knowledge needed in the use of the records. Staff from referral centres should be asked to share in the training process so as to ensure their involvement when the records come into use.

[1] The following training manuals are available on request from Maternal and Child Health and Family Planning, World Health Organization, 1211 Geneva 27, Switzerland: *Home-based maternal records. (1) An illustrated guide for traditional birth attendants and community health workers. (2) Training module for health workers. (3) Training module for trainers. (4) Training module for programme managers.* Geneva, World Health Organization, 1992.

(2) Techniques

The recommended method of training is by means of short explanatory presentations of 15–30 minutes' duration to acquaint supervisory staff with the concepts of the risk approach in maternal and child health care. Presentations should be followed by group discussions, group work, role-playing and problem-solving techniques. In addition, "hands-on" training in the community is essential, with practice in filling in the home-based maternal records in real and hypothetical situations, and demonstrations and practice of haemoglobin determination, urine analysis and preparation of malaria smears.

(3) Content

Staff who will themselves go on to supervise the training of other staff should receive training in the following subjects, with emphasis on the managerial aspects:

- the health status of mothers;
- the concept of the risk approach in maternal and child health care, using the home-based maternal record in the context of primary health care;
- the objectives of using home-based maternal records;
- integration of the use of records with maternal and child health care, including efforts to promote child survival;
- methods of filling in home-based maternal records;
- distribution and use of guidelines for the use of home-based maternal records;
- training methods;
- evaluation and information systems;
- referral care in secondary institutions;
- the responsibilities and tasks of health workers at each level;
- supportive supervision: planning a schedule of supervision and use of supervisory tools and checklists;
- estimation of workloads for services and supervision;
- appropriate technology for weight and height measurement, haemoglobin estimation, urine examination, use of the fetoscope and tetanus toxoid administration;
- evaluation and field testing of home-based maternal records;
- planning the introduction of home-based maternal records;
- estimation of initial and annual human, material and financial resources required;
- development and formulation of progress and impact indicators.

5.2.3 Training needs of health workers

Health workers (nurses, midwives, medical assistants) who will undertake the training of community health workers and traditional birth attendants should be trained in:

- first referral care;
- estimation of workload, service targets and resource requirements;
- logistic support;
- teaching of skills for risk identification, self-care, referral and use of appropriate technology;
- supervisory methods (checklists);
- training methods, including the organization of practical training in the field;

- methods of filling in home-based records;
- data collection and transmission, including methods of keeping logs and registers and preparing monthly returns;
- strategic actions for increasing advocacy and community demand;
- use of progress and impact indicators.

5.2.4 *Training needs of primary health care workers*

Primary health care workers (community health workers and traditional birth attendants) who will examine women and fill in the home-based maternal records at the community level should receive instruction in:

- identifying the target population, including early registration of pregnancy;
- use of appropriate technology in identifying risk factors;
- methods of filling in records;
- methods of keeping registers of pregnant and non-pregnant women;
- health education of family members, and increasing advocacy and community demand;
- methods of using the records to generate basic data and feeding them into the information system;
- procurement and maintenance of supplies and equipment.

5.2.5 *Education and promotion*

Home-based maternal records will not be successful without an informed and involved community. Plans for the introduction of records should therefore include a strong educational and promotional component. Community health workers should try to involve local community leaders and educate women and family members, emphasizing active participation in self-care, early recognition of risks, and initiation of appropriate and timely care when risks are present. Community leaders also need to understand that early and universal registration of pregnancy will ensure health care coverage throughout the vulnerable period, which should reduce both infant and maternal mortality.

The use of home-based maternal records can be promoted through both traditional methods and the mass media, e.g. by the use of posters, advertising in village markets, fairs and festivals, informal discussions, classes for parents, periodic community assemblies, articles or advertisements in newspapers, and brief programmes and features on radio or television. In Egypt, a large wall poster of a home-based maternal record effectively caught the attention of mothers and health workers. In the Philippines, midwives and community health workers used T-shirts with "HBMR" printed on the back and front to promote the use of records and enhance their prestige.

5.2.6 *Supportive supervision*

The success of home-based maternal records will also depend on supportive supervision and monitoring at all levels, and the rapid solution of any problems encountered in the field. Regular interaction with mothers, community health workers and traditional birth attendants and the auditing of records will help supervisors to learn quickly about any problems that may arise. Periodic reviews of a sample of records, logbooks and registers by supervisors will help to emphasize the importance of these records and ensure that the system is functioning well.

5.2.7 *Linking up with priority programmes*

The interest of community health workers, midwives and nurses can be sustained by linking up the use of home-based maternal records with the national priority programmes in which these health workers are involved. The assignment of specific targets, e.g. in family planning, anaemia prevention and control, immunization with tetanus toxoid, growth monitoring, and control of malaria, goitre and tuberculosis, may also be appropriate.

5.3 Monitoring and evaluation

There will always be a demand for duplicate records at clinics, health centres and hospitals because of the following:

- fear that the family may lose the home-based maternal record;
- the need of health staff to be able to undertake evaluation and analysis of the data whenever necessary; and
- the need of policy-makers and supervisors for centre-based records for purposes of audit and supervision.

However, if the essential items in the home-based maternal record are complimented with records including simple logs and tally sheets kept by community health workers and, at referral levels, records of items required for data complilation and report preparation, duplicate records will not be necessary. If the existing registers and logbooks are simplified and the methodology carefully explained to health workers, the health information system can be considerably improved. It is necessary to ensure that the important items in the record correspond to those in the reports generated. Health workers must also be convinced that, provided families are given adequate explanations and education about the need to keep the records safe, they will do so with pride and a sense of achievement and participation. This will also help save the time that would otherwise be spent in filling in duplicate records, and in their storage and retrieval.

Programme managers must constantly review with health workers the progress made, with specific reference to the proportion of the population covered and to achievements related to national programmes, such as reduction in mortality rates, the success of breast-feeding and control of low birth weight following the introduction of home-based maternal records. This feedback is a useful method of sustaining interest among community health workers, midwives and physicians, and the community.

While its frequency will depend on the local resources available, regular monitoring should be undertaken to enable programme managers to plan systematically and strengthen any weak areas. Special efforts are needed if routine statistics are considered unreliable. The following aspects should be considered:

- a listing of all health facilities, groups and community-based organizations providing home-based maternal records;
- the proportion of health outposts using records;
- the proportion of villages and hamlets covered by records through home visits;
- the proportion of eligible women covered;

- the proportion of records distributed through: home visits by health personnel and others; community outreach services and/or mobile units; and first-level health facilities.

Evaluation should determine the quality and adequacy of the health information provided by home-based maternal records relating to antenatal and postnatal health visits, pregnancy, risk factors during pregnancy, tetanus toxoid coverage, birth weight, fetal, neonatal and maternal deaths and their causes, the proportion of mothers breast-feeding, and the use of family planning methods. WHO has prepared guidelines to assist in this type of evaluation (*13*).

One method of evaluation is to develop indicators for which data can be collected, collated and monitored through the existing health information system. The use of impact or process indicators is outlined below. Home-based maternal records can also be assessed by means of focus group discussions and surveys; these methods are considered further in Annex 5.

5.3.1 Health impact indicators

Programme managers can select important indicators of maternal and child health care which are included in the home-based maternal record. Evidence of impact is best obtained using a method of evaluation that incorporates concurrent controls; ideally, eligible villages or communities are randomly allocated either to the group being evaluated or to serve as controls. If concurrent controls are not feasible, an estimate of impact can be obtained by comparing outcome indicators after the introduction of records with those before introduction, using available health-service statistics. Appropriate indicators include the following:

- perinatal mortality rate: trends and causes;
- neonatal mortality rate: trends and causes;
- proportion of babies of low birth weight;
- maternal mortality rate: trends and causes;
- birth rate and birth interval.

They are useful only if health-service statistics are available and reliable, and if the population in which records have been introduced is large (about one million). In addition, if the results are to be correctly interpreted, records should have been kept for at least 3–5 years. Although the interpretation of the results of before-and-after comparisons may be difficult because of temporal trends and other biases, this method is often the only practical one.

If the available statistics are incomplete or unreliable but an evaluation of the impact of records is desired, the data may be obtained in a suitably chosen sample population of about 100 000 by asking women to recall the events of the past year. However, estimates of maternal mortality are unlikely to be reliable, even if the rates are high. The error in recall can be minimized by the application of a correction factor, provided that information on comparative studies is available where prospective registration (registration with follow-up for a prescribed period) has been compared with the findings of one-year recall.

Regardless of the evaluation method used, formal statistical analysis of the impact of home-based maternal records may require comparison of

many different communities, with the community as the unit of analysis, since records are generally used by an entire community rather than by individual women within a community.

5.3.2 *Process indicators*

When home-based maternal records have been used in a small population, indirect but powerful evidence of their impact can be obtained by evaluating the following carefully chosen process indicators:

- early registration of pregnant women;
- number and quality of antenatal visits during a pregnancy;
- proportion of deliveries conducted by trained staff;
- referrals of patients at risk, and the number of referred patients who actually arrived at referral facilities;
- tetanus toxoid coverage (particularly if tetanus mortality is high);
- use of disposable cord-care kits;
- contraceptive coverage;
- the proportion of women given anaemia prophylaxis;
- the proportion of women given malaria prophylaxis or treatment;
- the proportion of women given treatment for goitre.

The list of process indicators to be evaluated will depend on the resources available and programme priorities. Resources will dictate whether they are to be evaluated through special studies or from available statistics. The method and statistical considerations are similar to those for health impact indicators (section 5.3.1).

5.4 Promoting countrywide use

The commitment of government, the private sector, voluntary agencies and the community is crucial if home-based maternal records are to be introduced and used successfully throughout the country. The records must be considered as an integral part of primary health care, essential to the success of maternal and child health care. Experience from any limited trials or introductions should be reviewed and any constraints or problems encountered should be addressed. The Bangladesh Population and Health Consortium (BPHC) designed a pictorial record after review of available experience, focus group discussion with traditional birth attendants and extensive consultations with several interested organizations. A total of 70 000 pictorial records were introduced through a network of 33 nongovernmental organizations in the country. An evaluation in collaboration with WHO demonstrated that the record was being correctly used, was widely accepted by mothers, and was useful in improving maternal and child health care as well as health information. The evaluation also provided an opportunity for further refinement of the record and then widening its distribution through nongovernmental organizations and government institutions.

A clear policy should be established for the introduction of records, in which the role of programme managers, health workers and volunteers is defined, specific targets for coverage are set, and adequate resources for the promotion, implementation and evaluation of the programme are committed. It is essential to involve health professionals at the outset so as to ensure their full commitment to the programme.

A detailed implementation plan can then be developed for approval by the authorities, which should include training and promotion programmes; regional and local adaptations of the records may be needed, particularly in large countries with a diversity of cultures and languages and where access to health facilities is limited by geographical factors (islands, mountainous regions, etc.).

As part of the plan, process and impact indicators should be developed for use in monitoring and evaluation, which should be integrated with the existing health information system. Following the WHO collaborative study in the Philippines, a home-based maternal record was introduced in three provinces of one region to investigate the feasibility of extending its use to larger areas. Its introduction led to prompt referral (within one day) of 62.2% of the women at risk and to increased use of available maternal and child health services. Evaluation and monitoring were considered important in further extension of its use. Over a period of one year, experience not only confirmed the operational feasibility of the record but also underlined the importance of its countrywide introduction. The provision of adequate referral support is, of course, necessary for a programme to be successful.

Factors that facilitate or impede the countrywide introduction of home-based maternal records are summarized in the boxes below and on page 62.

Factors that facilitate the countrywide introduction of home-based maternal records

- The existing health-care delivery system includes female community health workers who are in continuous and direct contact with the community and mothers—they are members of the community and serve a small or at least manageable population.
- The major problems that affect maternal and child health care are well known to policy-makers and to the community.
- The literacy level of mothers and community health workers is known, so that the record can be adapted accordingly.
- Mechanisms for routine training and supervision exist and it is possible to incorporate and integrate the use of records within existing health-care delivery systems without substantially changing the routine.
- Referral support is available and accessible and the community is aware of this.
- Community health workers are willing to fill in the record, and health professionals are ready to give support through training, supervision and management of risk conditions.
- Community institutions exist that assist in the initiation of self-care, and in seeking referral. (Examples include the Women's Union in Yemen, Mahila Mandals in India, and women's groups in Indonesia that are active in supporting health programmes.)

Factors that impede the countrywide introduction of home-based maternal records

- Large segments of the population cannot be reached because of difficult terrain, language barriers, or social and economic problems.
- Health services are not easily accessible.
- Health workers do not belong to the community.
- There is poor integration of health services in such activities as maternal and child health, family planning, oral rehydration, the Expanded Programme on Immunization, and malaria and nutrition programmes.
- There is no satisfactory reporting or information system.
- There is a lack of information on risk factors and suitable cut-off points in the area where records are to be introduced.
- The required technological support, e.g. safe disposable delivery kits, is not available, and tetanus toxoid and haemoglobin estimation and blood pressure measurement facilities have not been incorporated in primary health care and are available only in health institutions.
- Professionals insist on clinic-based records or duplicate records that include complex information on hospital-based investigations or therapeutic procedures.
- The private and voluntary sectors are opposed to or do not support home-based maternal records.
- The political system is unstable and resources are not always available.
- There is political or civil strife.

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ANNEX 1 Instructions for filling in home-based maternal records

The following instructions are suggestions only and apply to the WHO prototype home-based maternal record, which was developed for collaborative studies and has six panels/parts (see Figs 1 and 2). Instructions for filling in locally adapted home-based maternal records should be written in the local language and in a manner appropriate to the educational level of community health workers. Only those terms that are familiar to the people and the community should be used. These can be ascertained through pretesting.

Part 1: Past history and risks during previous pregnancy

This part is used to record the identification details and registration number of the woman. It should be filled in by community health workers, nurse-midwives, physicians or anybody who is contacted first by the woman. Traditional birth attendants can ask schoolchildren or some literate member of the family or the community to help in filling in the record.

Name For ease of recognition, insert the full name—in some countries certain names are very common and this can create confusion.

Number Write the registration number clearly on the first visit. This will be useful for the identification of the record and for establishing a link with the child registration number and the growth chart. The number must match that used in the records of nurse-midwives or in clinics to establish a link with the information system. The midwife or nurse should allocate code numbers to each village or neighbourhood in a city. House numbers can also be used if available.

Address Write down the detailed address together with recognizable and important landmarks and house numbers (when available) to facilitate home visiting, mailing a letter or the communication of messages. If there is a change of address, it is essential that the new address is inserted promptly.

Date of first visit Write down either the date on which the woman first visits the health centre or the date on which she is first contacted by the health worker.

Age Since age may be one of the risk factors during pregnancy, it is important to know the exact age of the woman. However, this may be difficult to assess in areas where women are not literate. An indirect method may have to be used, e.g. assessment from appearance, age of eldest son or daughter, comparison with relatives, friends or neighbours, or reference

to some important event in the community or country, such as a flood, earthquake, volcanic eruption, cyclone or other natural disaster, independence, an election, or the death of a leader.

Mark the appropriate box for the woman's age. A tick indicates the presence of a risk factor, a cross that the problem is not present but the procedure was carried out. If neither a tick nor a cross is present, the procedure/assessment has not been carried out.

Height The method used to measure height should be appropriate to the educational level of the health workers. Possible methods include measuring with a tape or comparing with marks made on a wall. If the local cut-off level for the risk factor is known (e.g. 145 cm in some countries), illiterate traditional birth attendants can use a stick of the appropriate length. For pregnant women who are taller than the stick, short stature is not a risk factor. Short women are considered to be at risk since they may experience difficult childbirth. Birth attendants can also fix a point on their own bodies, e.g. the eyes, the tip of the nose, the chin, etc., which is at a height equivalent to the cut-off point for the risk factor. Pregnant women who do not come up to this point are at risk. Another possibility is to ask the women to walk under a beam which is fixed at the level of the cut-off point. Women who can pass under it easily are at risk. Illiterate traditional birth attendants or community health workers can be helped to establish the standard for the cut-off point and trained by their supervisors to use it to identify the women at risk.

Previous history If a woman is pregnant for the first time, do not fill in these columns. Otherwise enter information about previous pregnancies, labour, newborn infants and the postpartum period.

Number of deliveries Write down the total number of children born alive or dead. Quite often women give only the number of live births. They may sometimes add up all pregnancies whether they ended in abortions or in deliveries. Enquire specifically how many babies the woman has had, including stillbirths and livebirths but excluding abortions. Abortions and stillbirths must be clearly differentiated from one another.

Abortion (last pregnancy) Make separate enquiries about abortion, defined as the expulsion of the products of conception up to six and a half months (28 weeks to be exact) of pregnancy. This enquiry should be made only with reference to the last delivery.

Oedema Oedema is swelling of the feet, hands or face. Mild oedema is normal in pregnancy. Women may describe gross swelling of the hands or feet to the extent that they cannot put on their rings or shoes. They may also say that their eyes look small when they wake up in the morning.

Fits These jerky movements of the body or a part of the body, often accompanied by stiffness, are associated with loss of consciousness.

Stillbirth (last pregnancy) A stillborn child is one who, after birth, does not cry, breathe or show any signs of life. The pregnancy should have lasted more than six and a half months. As for abortion, this enquiry is made only with reference to the last pregnancy.

Abnormal deliveries These include caesarean section, forceps delivery, face, hand or shoulder presentation, breech delivery and vacuum extraction.

Excess vaginal bleeding after delivery

Excess vaginal bleeding after delivery means bleeding that is assessed by community health workers, traditional birth attendants or family members as greater than normal. This assessment is necessarily subjective. Health workers should try to make some approximate assessment based on local descriptions, the number of pads used or the duration of blood loss.

Labour lasting more than 24 hours

This is defined as strong labour pains lasting longer than a full day and night. The cut-off point established for duration of labour in the first pregnancy should be different from that for subsequent pregnancies, since labour is of longer duration in the first pregnancy than in subsequent ones.

Low birth weight (less than 2500 g)

If the exact weight cannot be recorded because the birth attendant is illiterate, the use of different colours for different weight-ranges on the scales used for weighing may be helpful. In areas where scales are not available for newborn babies, the chest or arm circumference may be used. Low birth weight is indicated by a chest circumference of less than 29.0 cm or an arm circumference of less than 9.0 cm. The cut-off levels should be decided locally, depending on the sensitivity, specificity and predictive value of the measurement used and on available resources.

Death of child during first week

The baby is born alive but dies before 7 days have elapsed.

Other health problems

Information should be entered on any health problem of a serious or chronic nature, such as tuberculosis, diabetes, malaria, high blood pressure, kidney or heart disease or rhesus incompatibility. The choice of other health problems will depend on their local prevalence. This section should include the conditions considered by programme managers to be of local importance. Specific conditions should be mentioned on the record. Experience indicates that if this is not done, either the section will not be filled in or entries will be made for conditions that are of little relevance.

Parts 2–4 Current pregnancy

In the WHO record, there is space to include information on three pregnancies. Local policies will dictate the number of pregnancies to be included on locally adapted records.

Information should be entered only on the current pregnancy. Information on subsequent pregnancies will be entered during those pregnancies. When filling in information on a subsequent pregnancy, update the mother's age and number of deliveries on the front of the record and review other pages to learn about the risk conditions experienced during the previous pregnancy. The mother's "at-risk" status is likely to change with her age and number of deliveries.

On the WHO record, all the information on the current pregnancy except the items enclosed in the box surrounded by thick lines (blood pressure, haemoglobin, urine albumin, and weight) should be filled in by community health workers, literate family members or literate mothers. Staff at the first referral level should be responsible for filling in the items enclosed by the box. However, in areas where community health workers

are auxiliary nurses or nurse-midwives, they can fill in all the information since they are trained and equipped to do so.

Last menstrual period (LMP)

In developing countries, non-literate women may not remember the exact date of their last menstrual period but they may be able to relate it to a particular identified event, e.g. a festival or phase of the moon. Find out the month and approximate day and enter that as the first day of the last menstrual period. The LMP can be used to calculate the expected date of delivery.

Expected date of delivery (EDD)

To calculate the approximate date of delivery, add 7 days to the date of the LMP and then count 9 months forward. Alternatively, after adding 7 days to the date of the LMP, count 3 months backwards and then add one year.

Example: The date of the LMP was 4 March 1990. Add 7 days — 11 March 1990. Now count 9 months as follows: 11 April (1), 11 May (2), 11 June (3), 11 July (4), 11 August (5), 11 September (6), 11 October (7), 11 November (8), and 11 December (9). The EDD is 11 December 1990. Or subtract three months, i.e. February (1) January (2) and December (3)—11 December 1989. Now add one year. The EDD is 11 December 1990.

Another possibility is to use a local events calendar or lunar calendar (Fig. A1.1)[1]. First determine the season in which the woman had her last period. Then determine the local month. Now ask the woman to recall the lunar phase (full moon, three-quarter, half, quarter or no moon). Then follow the arrow in the calendar (Fig. A1.1) to determine the expected local month of delivery. The use of a lunar calendar can help to indicate the expected date to the nearest week but not the nearest day.

Example: An Indian woman cannot remember the date of the LMP according to standard calendar months but knows that she had her last period at the beginning of summer, during the wheat harvest. The local month was "Vaishakh" (around May) and the full moon was close. The lunar calendar ready reckoner indicates the expected time of delivery as end of Magh (around February).

Month

Each of the seven boxes alongside each risk factor is intended for information on one month of pregnancy. There are no boxes for the first and second month, since pregnancy is usually not registered so early. After two months of pregnancy, enter information as a tick or cross in the appropriate box.

Date/Month

Write down the date, month and year of the first check-up.

Severe pallor

The colour of the nails is a reliable method of recognizing pallor. The tongue, lips and lower eyelids are other places where pallor can be assessed. A description of pallor adapted to local terminology may be useful.

Pitting oedema

Press the skin over the shin. If a visible depression forms and remains for more than a few seconds, pitting oedema is present.

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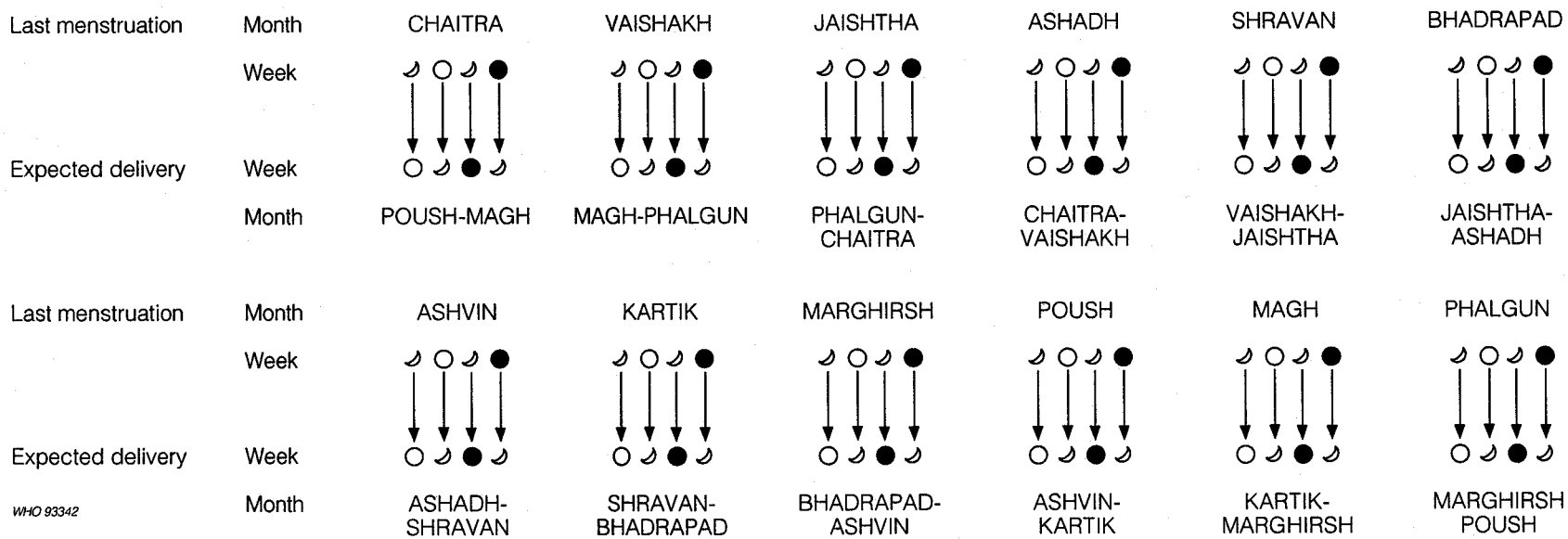
[1] Shah KP. *The local events and lunar calendar to predict expected week of confinement.* Geneva, World Health Organization, 1981 (unpublished document available on request from Maternal and Child Health and Family Planning, World Health Organization, 1211 Geneva 27, Switzerland.

Fig. A1.1 Simplified lunar calendar for use in calculating expected date of delivery



Vaginal bleeding This is defined as any vaginal blood loss that is more than spotting during pregnancy.

Very thin The face is pinched, arms and legs are very thin and there is little palpable fat on the abdomen.

Very large abdomen The size of the abdomen (tummy) is much larger than expected for the duration of the pregnancy. This may be the result of too much water in the bag or of there being more than one baby in the womb. Each of these conditions is an extra risk for the mother.

Abnormal presentation This includes breech, face or shoulder presentation.

Weak fetal movements If there are less than 10 fetal movements in 12 hours, or less than three in 3 hours, they are weak and the woman should be referred immediately since the life of the baby may be in danger.

Blood pressure (BP) above 140/90 Measure blood pressure using the locally recommended method. Put a tick (✓) only if it is more than 140 mm Hg systolic or 90 mm Hg diastolic.

Haemoglobin below 8 g/dl Estimate blood haemoglobin and insert a tick (✓) if it is below 8 g/dl or below the cut-off level suggested by the health centre or health authorities. The cut-off level determines whether treatment for anaemia should be given locally or at referral level; it can therefore vary, depending on the risk and the capacity of the system to manage the problem.

Urine examination Examine the urine for albumin. If more than a trace is present, put a tick (✓) in the box. Urine albumin estimation is normally carried out during the last three months of pregnancy.

Weight in kg Enter the weight in kilograms in figures in the appropriate box for the month of pregnancy.

Action taken Information on action taken should be filled in by community health workers or literate members of the family or community. However nurse-midwives or staff from the referral level may have joint responsibility for some of the actions. Nurse-midwives, nurses or physicians must ensure a continuous supply of vitamins, iron and folic acid, and—where necessary—chloroquine tablets. They are also responsible for training community health workers and traditional birth attendants in the proper use of these tablets according to the locally established schedules of management or prophylaxis.

Food advice A pregnant woman should eat more because she has to meet both her own needs and those of her baby, which is growing rapidly in her womb. If she does not eat enough, she will become weak and her baby will be at increased risk of low birth weight. She should not only eat more but also more often. If locally available, she should try to include pulses (or legumes), seasonal vegetables (especially green leafy vegetables), fruits, milk, meat and eggs in her diet. Whenever advice on food is given, enter a tick in the box.

Iron tablets Give out iron tablets according to the locally agreed schedule and instruct the woman to take them daily after meals. This helps in preventing and treating anaemia. Whenever tablets are given to the woman, enter a tick (✓)in the box.

Chloroquine tablets Give chloroquine or other suitable drug for treatment of fever in areas where malaria is endemic. Early treatment of malaria can prevent complications during pregnancy. The choice of drug, its dose and duration will vary according to the recommendations made by the local health authorities in accordance with government policy. Drugs may also be given for prophylaxis, in accordance with local recommendations. Whenever tablets are given, tick the appropriate box on the woman's record.

Tetanus toxoid Community health workers should motivate all pregnant women to have tetanus toxoid injections since they protect babies from a fatal disease—neonatal tetanus. Two injections of tetanus of toxoid are given at an interval of 1–2 months after the third month of pregnancy. The second injection should be given at least 1 month before delivery. If tetanus toxoid is given, tick the appropriate boxes for the first and second dose. If there is a history of these injections having been given during the preceding 3 years, follow the instructions given in the locally recommended immunization schedule as to the booster dose to give.

Advice on place of delivery Around the middle of the pregnancy, discuss the place of delivery with the mother and the family so that adequate preparations and arrangements can be made well ahead of time. This decision should be based on previous history and the degree of risk in the present pregnancy. Mark a tick (✓) in the shaded or coloured area. Nurse-midwives must be consulted about the place of delivery if any of the shaded areas on the record has been ticked. The risks involved in home delivery need to be explained. A woman whose record has a tick in a heavily shaded area or locally identified colour denoting high risk should give birth in a hospital with adequate facilities.

Labour/delivery In many areas, delivery is assisted by a traditional birth attendant or a relative who may not be able to read and write. Under these circumstances, information gathered from the person who attended the delivery should be noted on the record as soon after the delivery as possible, otherwise the precise details of the event may be forgotten.

Duration The duration of labour is considered to be prolonged if strong and frequent labour pains have lasted for more than one day and one night (24 hours). The cut-off point for prolonged duration may be different for primiparous, as compared with multiparous, women. Whenever labour is prolonged, mark the appropriate box.

Presentation Note which part of the baby comes out first, the head or any other part (cord, hand, shoulder, foot, breech). Presentations other than head are abnormal.

Type of delivery In a normal delivery, the baby is born head first. Fetal presentations and deliveries such as breech, cord, hand, shoulder, caesarean, forceps or vacuum extraction should be considered as other types of delivery and are not normal.

Excess vaginal bleeding This is defined as more than normal vaginal bleeding after the delivery of the baby, and may indicate that the placenta or part of it has been retained. It may also be related to tears in the perineal region. The decision as to what is to be regarded as abnormal will depend on local norms. Suitable information on the normal quantity and duration and the number of pads used should be provided during the training of birth attendants so as to ensure reasonable assessment and timely action when

excess bleeding occurs. Record any information on whether or not there was excess vaginal bleeding.

Baby Include information on the baby up to 1 month of age in this record. On the day of the birth, prepare the child's growth chart and fill that in regularly.

Date of delivery Write down the date, month and year of the baby's birth.

Sex Record whether the baby is male or female.

Place of delivery Tick the place where the delivery occurred. "Hospital" includes any institution where technically qualified personnel are present and equipment is available. If delivery took place in a private clinic or a nursing home, it should be considered as an institutional delivery. If a baby was delivered at home or on the way to the hospital, regard this as home delivery.

Conducted by Indicate who conducted the delivery. The abbreviations used are:

TBA traditional birth attendant;

Rel. relative or neighbour (include birth attendants who do not regularly conduct deliveries or untrained birth attendants);

ANM auxiliary nurse-midwife;

RN/RM registered nurse/registered midwife.

Duration of pregnancy Refer to the EDD and record whether pregnancy was longer than 8 months, or 8 months or less. A baby born at or before 8 months, or 3 or more weeks before the end of the full-term period, is a preterm baby. The use of months rather than weeks is preferred here since members of the community, community health workers and traditional birth attendants in most countries are unfamiliar with calculating pregnancy duration in weeks. For example, a baby born after 26 weeks of pregnancy is considered as having been born after 6 months. Note that 3 months is equivalent to 13 weeks.

Number of babies This indicates whether the delivery resulted in the birth of one baby or more. If two or more babies are born, include the information on each baby separately, using the next pregnancy panel.

Birth weight Tick whether the baby weighs 2500 g or more or less than this. Babies of less than 2500 g are considered to be of low birth weight (see also comment on page 67).

Crying Tick the "delayed" box if one or more of the following are present: the baby takes a long time to cry (more than 5 minutes) after being born and some action has to be taken to make it cry; it has difficulty in breathing; it has blue (cyanosed) lips and tongue.

Breathing difficulty Breathing difficulty is considered to occur if there is marked suction of the lower chest when breathing in, if there is grunting, or if the nostrils become visibly prominent with each breath. Record "breathing difficulty" if any of these are observed at birth or at any time during the first month of life.

Condition of baby Record whether the baby is alive, born dead or dies during the first 7 days or between 7 and 28 days after birth.

Part 5: Remarks to and from referral centre

This section of the record is filled in initially by the community health worker when referring the "at-risk" mother to either a nurse or a doctor. The latter should insert a brief comment about the problem and the treatment advice given. The information about the problem, the action taken and the advice given should be simple and concise. However, brevity does not mean that critical information or important advice that can affect the quality of care should be omitted. Further panels can be attached when this panel is full. These findings can be valuable if the woman seeks referral care again in a health centre or hospital. This section is also intended to serve as a link between the community health workers and the women on the one side and the referral facilities on the other.

Part 6: Before first pregnancy and during interpregnancy period

Information on women between the ages of 15 and 44 years who may become pregnant, but at present are not, should be entered here. In order to include all the women living in a particular area, community health workers should visit each home at least once every three months to enquire about the woman's health and welfare and take timely action before complications or problems develop. A record should be started when the first contact is made (during pregnancy or an interpregnancy period, as the case may be). If information needs to be entered on this panel, it should be inserted in the appropriate column for the month under consideration. The year should be noted for identification purposes. It is suggested, in the light of the weaknesses of health infrastructures and poor communication facilities in most developing countries, when it may not be possible to ensure more frequent contacts, that information should be entered at least once every three moths after the first visit. If, for any reason, a visit is not made, a literate woman can fill in the columns herself or with the help of someone else.

Breast-feeding If the mother is continuing to breast-feed the baby after the first month, this should be indicated by a tick (✓) in each three-month column (or preferably, each month within a subdivided column).

Menstruation Ask about the month of the last menstrual period. Put a cross (×) if a menstrual period has been missed, or two crosses (××) if two periods have been missed. If two crosses are present in the box, this suggests pregnancy. This may not apply during the first 4–6 months following childbirth if the mother is fully breast-feeding her baby. Early identification of pregnancy will help community health workers to provide care throughout pregnancy and thus ensure a favourable outcome. Where permitted by national legislation, guidance can be given on early termination of pregnancy if this is in a woman's best interests. Termination of pregnancy can thus be made safer, and the practice of clandestine abortions reduced.

Family planning Mark with a tick (✓) the column for any of the family planning methods that have been used during the 3 months under consideration (one tick for

each month; in all, three ticks in the box). In front of every column (pills, injections, IUD), place a tick (✓) or a cross (×), whichever is applicable. Motivate the family and seek help from neighbourhood health workers or a supervisor to get the couple to decide on which family planning method, among those favoured in the country, to use $1\frac{1}{2}$–3 months after delivery. Frequent contact with the mother provides greater opportunities for initiating discussions about child spacing and its importance.

Surgical This covers permanent methods of contraception—vasectomy or tubectomy. These are advised for couples who do not wish to have any more children or who already have large families. Enquire whether any such operation has been performed and make an appropriate mark in the box.

No method If no family planning method is used, mark the box accordingly and try to motivate the couple to use suitable contraceptives. The help of supervisors can be sought whenever it is considered necessary.

Complications If excessive vaginal bleeding, dizziness or nausea, or pain in the lower abdomen or in the legs is reported by a woman who is practising family planning, refer her to the next referral level and note the problem in panel 5 of "Remarks to and from referral centre".

Information on extreme thinness, pallor, malaria (fever with signs), other problems such as serious or chronic illness, or on the use of chloroquine prophylaxis for malaria should be entered in the appropriate boxes. The necessary action, whether health education or therapy, should be taken and an appropriate entry made.

ANNEX 2

Monthly recording and reporting system for "at risk" women in the Kasa Integrated Mother–Child Health–Nutrition Programme, Kasa, India

In 50 villages in the Kasa Primary Health Centre area of India, where about 6860 home-based records were distributed, information was recorded at monthly intervals by community health workers in the local language on specially prepared sheets. On one side, the details of "at-risk" women, their specific risk conditions and the type of action taken were recorded. On the other, similar information was recorded on children aged under 5 years. An outline of the form for "at-risk" pregnant women requiring special care before delivery is given below.

Village: Name of part-time social worker:

Serial number	Name of woman	Age	Parity	Reason for special care	Action taken

Reasons for special care

A pregnant woman is "at risk" when one or more of the following risk factors are present:

- she weighs 38 kg or less before pregnancy;
- she weighs 42 kg or less at the 8th month of pregnancy;
- she gains less than 1 kg a month after the 5th month of pregnancy;
- she is less than 145 cm tall;
- she is less than 18 or more than 30 years old when she has her first baby;
- she is 35 years old or more at the time of pregnancy;
- she has a history of abortion or stillbirth during a previous pregnancy;
- her previous child died within a month of birth;
- her previous delivery was by caesarean section;
- it is at least her fifth child;
- she has swollen legs during pregnancy;
- there is a possibility that she may have twins;
- she has high blood pressure.

ANNEX 3

A register for consolidating information from home-based maternal records

A register consolidating the health information recorded on home-based maternal records should be maintained by the staff who fill in the records. These registers should be kept at health outposts, centres and hospitals. Table A3.1 (page 77) shows suitable column headings for use in such a register.

Table A3.1 *Suitable column headings for a register for consolidating information from home-based maternal records*

Name of woman	Name of husband/ surname	Address	Has she a home-based record? Yes or No	Date when information gathered for the first time	Age	If pregnant, is she at risk? If yes, what is the risk condition?	Does she know about the risk? Mark (✓) for Yes, (×) for No for each contact	Did she visit HSC/HC/HOSP.? Contact N/P? Mark (✓) for Yes, (×) for No for each contact[a]	Months of pregnancy when first visit or contact made

[a]HSC = health subcentre; HC = health centre; HOSP. = hospital; N = nurse; P = physician.

Tetanus toxoid I and II dose given (month of pregnancy)	Date of delivery	Baby boy or girl	Live or dead	Birth weight	Delivery conducted by trained/ untrained person	If not pregnant, is she at risk? If yes, state risk condition	After delivery visited/contacted HSC/HC/HOSP/ CHW/N/P?[a] Mark (✓) for each visit/contact	Whether the record lost	Left the area	If dead, when? What was the cause?	Remarks

[a]HSC = health subcentre; HC = health centre; HOSP. = hospital; CHW = community health worker; N = nurse; P = physician.

ANNEX 4

Problems encountered in the introduction of home-based maternal records

A number of problems are likely to be encountered in the introduction of home-based records into the health-care system. Ten typical examples are listed here, together with suggested solutions.

1. ***The district manager is worried that home-based maternal records will not be popular, since most women are illiterate and therefore will not understand what is written on the records.***

Solutions

- The record may be adapted to include at least some illustrations or photographs to help women to understand both the risks and the actions to be taken.
- Simple graphs may help people to understand some risks; for example, poor weight gain in pregnancy can be demonstrated by a low weight-gain curve as compared with a reference curve.
- While talking to the mothers, community health workers can explain that a tick in the shaded boxes indicates the presence of a risk factor. A literate person can be asked to help them to understand the risk to which they are exposed.
- The programme should ensure that literate community health workers and members of the community explain the records to illiterate women.
- The record can be simplified and the number of items reduced until the literacy level increases.

2. ***In some areas community health workers, although quite competent, are semiliterate and therefore have difficulty in filling in the records.***

Solutions

- Community health workers should seek the help of a literate midwife in the area. While the health workers can provide the information, the midwife should fill in the records.
- The help of a literate person in the health worker's family or a schoolteacher or neighbour may be sought. Since these people may well be close to the family and interested in their welfare, and also because they have to fill in only one record, they may be able to help more than the health worker, who is likely to be busy. Such community involvement will enhance the educational role of the records and their acceptance and use.

3. ***Home-based records are often "lost" by mothers, and community health workers complain that they have to replace them frequently.***

Solutions

- Determine the reasons for "loss". It is possible that mothers may not understand the value of the records, misplace them, and report them as "lost".

- Community health workers should again explain to the families how records can help in the provision of health care. A sense of pride in participating in improving health care will help to reduce losses.
- Managers should ensure that presentation of home-based maternal records enables mothers to obtain services such as tetanus toxoid immunization, family planning services, nutritional supplements, and iron and folic acid tablets easily and continuously, as well as referral services when necessary. Families should be convinced that the record is a "passport" to easy care and preferential treatment in referral institutions when risk factors are present. When people begin to appreciate what the records can do for them, they will take greater care of them.

4. *The programme manager does not know the risk factors prevalent in the district and is therefore unable to decide what to include in the record and what to leave out.*

Solutions

- The programme manager should collect and examine available hospital-based information, available service statistics regarding the causes of deaths, and any published studies on maternal and perinatal mortality.
- If institution-based or published data are not available, a meeting should be convened at which people working in the district concerned can describe their experience of risk factors.
- The priority health programmes and targets for the district should be reviewed.
- It may be worth making a small investment in a rapid study aimed at identifing the priority areas for incorporation in the record.

5. *Participation by professional health workers is poor and referral support is inadequate.*

Solutions

- Hold a workshop to explain to health workers their crucial role in the home-based record programme, stressing that:
  - their participation will reduce the burden on hospitals since, after home-based maternal records have been introduced, much preparatory work will already have been done by community health workers, traditional birth attendants and community members before the patient arrives; and
  - it will thereby improve the quality of health care.
- Keep them involved not only in providing professional support but also in training and supervising community health workers. They should be involved in the home-based maternal records programme right from the planning stages.
- Inform the health workers about the success of the home-based maternal record programme and acknowledge their active involvement in contributing to that success.
- Convince them that use of the records is helping to improve both the information system and the quality of care.

6. ***Many areas in the district are sparsely populated and poorly served by transport systems. The health centres are not staffed in these areas and it is therefore difficult to introduce home-based maternal records.***

Solutions

- Explore the possibilities of involving traditional birth attendants, women's groups, schoolteachers or any other community-based groups or institutions in filling in the records.
- Train the above-mentioned community-based individuals or groups and advise them to seek additional help from literate members of the community.
- Establish suitable points from which records can be distributed to mothers, e.g. schools or post offices.
- Advertise the records in camps, village fairs, and weekly village markets so that the maximum number of people can take advantage of the system.

7. ***Community health workers feel that the records make extra work and want some kind of incentive for undertaking it.***

Solutions

In general, it is not a good idea to offer incentives on either an *ad hoc* or a regular basis. However, some health workers may be rewarded by their communities for good work.

- Organize training sessions in which the numerous advantages of records to community health workers are clearly explained. Emphasize that the records will reduce rather than increase the workload, since filling them in is much quicker than writing long notes. In addition, the records are not the responsibility of a single worker—they may be filled in by community health workers, nurse-midwives and doctors. Consequently, the work is shared.
- Records help to improve community health workers' skills so that they can do a better job and gain greater credibility in the community. In areas where community health workers are compensated by the people, this could mean increased income in the form of tips and gratuities as a consequence of community and family satisfaction.
- In areas where community health workers have many targets established by the state, e.g. in family planning, tetanus toxoid immunization, and deliveries by trained personnel, it is important to convince them that these targets can be attained more easily through the use of records thanks to the increased participation of the community.

8. ***Maternal and child health information has been incomplete and inaccurate since home-based maternal records were introduced. The staff feel that this is either because of the lack of clinic- or centre-based records or because such records are not properly kept up to date.***

Solutions

- The system of keeping logs or registers in health outposts, health centres and hospitals should be altered so that essential information needed for generating reports and data is recorded at the same time as the records are filled in. The staff responsible for filling in the records should be instructed accordingly.

- The information provided by illiterate health workers should be recorded in the home-based maternal records as well as in records of service statistics.
- Reports should be reviewed regularly. It may be found that problems stem from the recording system rather than from the introduction of home-based maternal records. In administrative meetings at health-centre levels, it should be stressed that a clinic-based system is unlikely to improve the information system. In fact, the extra work-load involved in storing and retrieving records will adversely affect rather than improve quality.
- Programme managers can review and improve the reports and information to be entered on the records. Duplication should be avoided as far as possible, and the collection of unnecessary and unimportant data discontinued.

9. Community demand for home-based records is poor and most people do not know about them.

Solutions

- Social mobilization and community outreach services need to be strengthened. Meetings with community leaders and opinion-makers should be organized at which the numerous advantages of a records system can be explained. Use should be made both of the mass media and of informal traditional gatherings.
- Encourage women with positive experience with the record to explain the system to others who may be reluctant to accept it. This method of communication is often better accepted than conventional methods of health education.
- Make the records more easily available through health stations and other channels, e.g. shops, women's groups and other social institutions.
- Integrate the promotion of records with campaigns for the Expanded Programme on Immunization, oral rehydration, growth monitoring, or other popular programmes.
- Arrange for public support or endorsement of the records by a popular artist, sportsman or politician.
- Introduce records as part of a package of integrated health and social welfare services—this will enhance their credibility.

10. Health workers may find it difficult to relate information about age, parity and previous obstetric history to subsequent pregnancies.

Solution

- Space for recording age, parity and previous relevant obstetric history can be provided separately for each pregnancy.

ANNEX 5 Methods of assessing home-based maternal records

Various aspects of the development, introduction and use of home-based maternal records can be assessed using the focus group discussion and survey techniques described below. The choice of the evaluation methods to be used will depend on the resources and the health information available.

Focus group discussions

Focus group discussions provide qualitative data rather than an assessment of quantitative aspects of a given problem. They can be used to examine important questions and to provide guidance on the direction of future planning. In assessing home-based maternal records, the technique can be used with mothers, community groups, community health workers and other health-service providers, such as nurses and doctors. To be effective, the discussions should be carried out separately for separate groups; participants in focus group discussions should be homogeneous in terms of their background and characteristics.

Focus groups should consist of 10–12 participants and a group leader who will direct the discussions. Group leaders must possess certain qualities. Ideally, they should be the same sex as the majority of the participants and well versed in the technique of directing focus group discussions. They should be articulate, but should avoid forcing their own points of view on the group.

Focus group discussions are not conducted like interviews, but the leader should follow certain guidelines, use a check-list to ensure that all the issues are discussed, and allocate a reasonable amount of time to each topic. During the discussions, deviation from the central theme should be avoided, though there should be sufficient flexibility for participants not to feel inhibited in expressing their views freely. As far as possible, no participant should be allowed to dominate the discussion.

It is important to avoid taking too many notes during the discussions; this interferes with watching the actions and expressions of the participants, and sometimes inhibits the discussions, since participants may feel threatened if they see that their views are being recorded. The main points raised should be noted, and additional details written down as soon as possible after the conclusion of the discussions. It is useful to have one or two people to assist the group leader in recording the findings. Even seemingly minor issues should be noted, since this information may later prove to be of immense value. Tape recorders can assist the process, but permission for their use should be sought from the participants, since this may also be considered a threat. The final report should include all the points of view expressed.

The following core issues are suitable for assessment by focus group discussions:

- Size, colour, and shape of the record card (some existing cards should be shown to the participants to help them to make a choice).
- Plastic bag to contain the record—size and strength.
- The most important health problems encountered by women, mothers and newborn babies.
- The people or services contacted when the problem is a minor one.
- The choice of service when the problem is serious.
- The ability to distinguish minor problems from serious ones.
- Whether records should be kept by mothers or the clinic.
- Using cards with pictures, illustrations or various ways of alerting readers to any risks present, e.g. by shading or using graphs.
- Design of printed material—is there sufficient space or does the record look cluttered?
- Print size—is it adequate, too small or too big?
- Language—simple or complex, locally understandable?
- What should be added, what should be deleted?
- The use of records to help in the identification of risks by:
  - — encouraging families and communities in self-care;
  - — promoting child spacing;
  - — providing a "passport" for referral care;
  - — helping to achieve continuity of care during pregnancy, and the postpartum and interpregnancy periods.
- The use of records in promoting health education.
- Ways in which the records can be linked with child care, family planning and primary health care.
- The integration of the records into existing recording and information systems.
- Records as a powerful tool for improving the skills of community health workers.
- How the records can improve communication and provide links among health-care providers.
- Filling in the records—is it complex or simple, does it take more time than the existing recording system?
- The categories of staff involved in filling in the records.

Planning will determine the success of focus group discussions. The place, date and time of the discussions and the type of participants to be invited must be planned well ahead of time. However, the spontaneity of the discussions should not be curbed. They should be organized at a time that does not interfere with the normal activities of the participants so that they are not distracted. Generally, the optimum duration of the discussions is 30–40 minutes. While it is not essential to cover all the issues in one session, there are practical difficulties in assembling the same group on more than one occasion.

Problem-centred discussions

For problem-centred discussions, appropriate participants are invited to deal with a particular problem. For example, the objective may be to introduce and operate a home-based maternal record system in a particular area. The problems to be discussed include the planning and operation of the system and the identification of potential constraints.

The chief of the maternal and child health services might organize a workshop in which health professionals who are to act as trainers and middle-level programme managers, policy-makers and administrators, community leaders, statisticians and designers are invited to participate. Suitable topics for discussion include the following:

Suggested topics for discussion

- Acceptance of home-based maternal records.
- Availability of records.
- Information on births, deaths and health problems.
- Choice of risk factors and cut-off points.
- Provision of the required referral support.
- Provision of the appropriate technology.
- Existing training, and any changes needed.
- Ways of increasing pregnancy registration, particularly for underprivileged and underserved women.
- Using records for identification and management of risk factors and ensuring continuity of health care.
- Ensuring professional involvement.
- Encouraging community involvement.
- Links with child growth charts.
- Links with the existing health information system and necessary modifications to the system.
- Links with priority health targets.
- Ensuring political and financial commitment.

Household surveys

The existing health information database in many countries continues to be unsatisfactory because of weak primary health care infrastructures and incomplete and inaccurate health reporting. Data are often obtained from health centres and hospitals and then extrapolated. This leads to erroneous interpretation because most of the events of interest and importance relating to pregnancy, childbirth and care during infancy take place outside hospitals and health centres. In order to make an accurate assessment of maternal and child health interventions in these areas, it is necessary to conduct household surveys. The required information is collected from a sample of households in the locality under consideration. Such surveys can be undertaken rapidly and the findings quickly made available for interpretation.

Questions of critical importance should be framed on the basis of suitable indicators. Detailed guidelines will be needed on sample size, sampling technique, training, survey methods, recording of data and methods of data analysis. Both sample size and sampling methods will depend on the accuracy desired and the resources available.

The cluster survey technique, which has been recommended for diarrhoea treatment surveys for the Expanded Programme on Immunization, is simple and operationally feasible.[1]

[1] *Training course for mid-level managers: evaluate immunization services.* Geneva, World Health Organization, 1991 (unpublished WHO document WHO/EPI/MLM/91.9, available on request from Expanded Programme on Immunization, World Health Organization, 1211 Geneva 27, Switzerland).

Experience indicates that, while reliable data on coverage can be generated, information on mortality suffers from people's inability to remember past events correctly. The verbal autopsy technique for determining the cause of death may be unreliable in inexperienced hands. It is hoped that improvement in coverage will eventually be reflected in a decline in mortality thanks to management of health problems in good time.

Depending upon the resources available, the programme manager can make the appropriate choice of the trainers, surveyors and guides.

Knowledge and behaviour surveys

Household surveys and focus group discussions can be complemented by the use of a questionnaire to investigate the knowledge and behaviour of the family, community health workers and traditional birth attendants. For the assessment of home-based maternal records, the questionnaire should be constructed in such a way as to elicit pertinent information on knowledge of the records and how they are used. A well constructed questionnaire can yield useful semiquantitative information which can be used to improve communication and to indicate any corrective measures needed.

The success of the child growth chart in reducing levels of infant morbidity and mortality – chiefly by raising awareness of the contributory factors – has been the principal impetus to the development of the WHO prototype home-based maternal record. This record takes the form of a card, retained by the woman herself, on which information about her pregnancies, the births of her children, and her health between pregnancies can be recorded. A pre-eminent consideration in its design was that it should be useful to the individual to whom it refers, rather than exclusively to health professionals. It was also seen as essential that the record should be adaptable for use in societies with widely differing health needs, treatment facilities, and levels of literacy.

This book is a comprehensive guide to all aspects of the development, adaptation and use of home-based maternal records in the context of primary health care, and draws heavily on the results of a WHO collaborative study. Other topics covered include the additional information that may be incorporated into records, such as health education messages and nutritional advice, and training of health personnel in using the records and evaluating the information they yield. Decision-makers at all levels, from health ministries to community health programmes, should thus find the book of immense value whenever the introduction of these records is under consideration.

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