Federal Democratic Republic of Ethiopia
Ministry of Health

Postnatal Care

Blended Learning Module for the Health Extension Programme

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Ministry of Health

The Ethiopian Federal Ministry of Health (FMOH) and the Regional Health Bureaus (RHBs) have developed this innovative Blended Learning Programme in partnership with the HEAT Team from The Open University UK and a range of medical experts and health science specialists within Ethiopia. Together, we are producing 13 Modules to upgrade the theoretical knowledge of the country's 33,000 rural Health Extension Workers to that of Health Extension Practitioners and to train new entrants to the service. Every student learning from these Modules is supported by a Tutor and a series of Practical Training Mentors who deliver the parallel Practical Skills Training Programme. This blended approach to work-place learning ensures that students achieve all the required theoretical and practical competencies while they continue to provide health services for their communities.

These Blended Learning Modules cover the full range of health promotion, disease prevention, basic management and essential treatment protocols to improve and protect the health of rural communities in Ethiopia. A strong focus is on enabling Ethiopia to meet the Millennium Development Goals to reduce maternal mortality by three-quarters and under-5 child mortality by two-thirds by the year 2015. The Modules cover antenatal care, labour and delivery, postnatal care, the integrated management of newborn and childhood illness, communicable diseases (including HIV/AIDS, malaria, TB, leprosy and other common infectious diseases), family planning, adolescent and youth reproductive health, nutrition and food safety, hygiene and environmental health, non-communicable diseases, health education and community mobilisation, and health planning and professional ethics.

In time, all the Modules will be accessible from the Ethiopian Federal Ministry of Health website at **www.moh.gov.et**; online versions will also be available to download from the HEAT (Health Education and Training) website at **www.open.ac.uk/africa/heat** as open educational resources, free to other countries across Africa and anywhere in the world to download and adapt for their own training programmes.

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State Minister of Health

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Contents

Introduction to the *Postnatal Care* Module

As you already know from the previous Modules on *Antenatal Care* and *Labour and Delivery Care*, the time immediately following childbirth is a period of high risk for mothers and newborns. Around 65% of maternal deaths and 75% of newborn deaths occur in the first seven days after the birth, and around half of these deaths occur in the first 24 hours. A newborn baby is about 500 times more likely to die in the first day of its life than at one month of age. Thus, the postnatal period is a time when your close attention and care can make a huge improvement in the life chances of women and children in your community.

Early neonatal mortality (deaths of newborns in the first seven days) significantly contributes to the overall under-five child mortality of a nation. UNICEF has shown that early neonatal mortality alone accounts for about 40% of deaths of children aged under five years, and nearly 60% of deaths of infants aged under one year. Newborns whose mothers have died during labour and delivery, or in the postnatal period, have an even greater chance of dying themselves, partly due to the lack of postnatal maternal care, but also because the causes of maternal mortality and morbidity also pose a high risk to the baby.

Therefore, the skilled care provided during labour and delivery has to continue during the immediate postnatal period for both the mother and the baby – ideally with the same health care provider. This continuum of care should include counselling mothers on how to identify problems that need urgent attention in themselves or their babies, and practical help to ensure quick access to emergency maternal and newborn care if needed. This means creating good linkages between new mothers, their families and the nearest higher-level health facilities, and between the health facilities and the community, to strengthen the continuum of care and the early identification and referral of postnatal problems.

In practice, whether the woman delivers her baby at home or in a health facility, in the majority of cases postnatal care services are not routinely available in Ethiopia. Even if postnatal care is available, it is often not practiced properly, due to lack of knowledge and skill by the health workers, and at times due to lack of essential equipment and supplies. This *Postnatal Care* Module is designed to fill the knowledge gap by teaching you the basic information and skills to give immediate postnatal care to the mother and newborn, and to extend the awareness of effective postnatal care to others in the home and in the community at large. It has nine study sessions focusing on community involvement in postnatal care, normal and abnormal signs in the mother and newborn in the postnatal period, newborn evaluation and care, counselling on breastfeeding, keeping the baby warm, infection prevention and other issues, and special care for preterm and low birth weight babies. It ends with guidance on establishing an effective two-way referral link between yourself in the community and staff in the higher-level health facilities, so that more specialized postnatal assessment and intervention can happen quickly if required.

All of the principles and techniques taught in this Module will be reinforced and expanded in your practical skills training and also in the later Module on *Integrated Management of Newborn and Childhood Illness* (IMNCI). Blending the theory and practice of postnatal care and IMNCI will enable you to support the health and the survival of mothers, newborns, infants and older children in your community.

Study Session 1 Postnatal Care at the Health Post and in the Community

Introduction

Postnatal care (**PNC**) is the care given to the mother and her newborn baby immediately after the birth and for the first six weeks of life (Figure 1.1). This period marks the establishment of a new phase of family life for women and their partners and the beginning of the lifelong health record for newborn babies (or **neonates** — a term often used by doctors, nurses and midwives).

Although for most women and babies, the postnatal period is uncomplicated, effective postnatal care (PNC) is also about recognizing any deviation from expected recovery after birth, and evaluating and intervening appropriately in a timely fashion. It is of major concern that less than 6% of women in Ethiopia give birth in health facilities and not more than 10% receive any postnatal care within two days of delivery. Your role as a Health Extension Practitioner is therefore vitally important in improving this situation, identifying danger signs and reducing the adverse outcomes for mothers and newborns.

In Ethiopia, as in all countries, the postnatal period is often marked by specific cultural practices. Understanding the beliefs and cultural practices in your community is fundamental in ensuring appropriate postnatal care. In this first study session, you will learn why care in the postnatal period is so important, and about the need for community participation and involvement for optimum PNC. We briefly summarise some methods of community mobilisation, and how to establish partnerships with the key *gatekeepers* who can help you look after new mothers and their babies.

Learning Outcomes for Study Session 1

When you have studied this session, you should be able to:

1.1 Define and use correctly all of the key words printed in **bold**. (SAQ 1.1)

1.2 Explain the importance of postnatal care in terms of when most mothers and newborns die, and the main causes of these deaths. (SAQ 1.2)

1.3 Briefly describe the main physiological changes in the mother and newborn in the postnatal period. (SAQ 1.3)

1.4 Describe the main danger signs in the postnatal mother and newborn. (SAQ 1.3)

1.5 Explain the importance of community involvement in postnatal care and describe how you would establish partnerships with gatekeepers in the community. (SAQ 1.2)

1.1 Why is effective postnatal care so important?

The time when effective postnatal care can make the most difference to the health and life chances of mothers and newborns is in the **early neonatal period**, the time just after the delivery and through the first seven days of life. However, the whole of the **neonatal period**, from birth to the 28th day after the birth, is a time of increased risk. Deaths during the first 28 days of babies who were born alive is reported by all countries in the world as the **neonatal**

mortality rate (the number of babies who die in the first 28 days) per 1,000 live births. Similarly, reports of maternal mortality include deaths of women from complications associated with postnatal problems, not just problems arising during the birth. Both these rates are important indicators of the effectiveness of postnatal care.

So the first reason why you need to focus more care and attention on the postnatal period is that this is a very critical time for the mother and her newborn baby. The national **maternal mortality ratio** (MMR) in Ethiopia is one of the highest in the world: at the last Demographic and Health Survey in 2005 (European calendar) 673 mothers died per 100,000 live births. Similarly, the **early neonatal mortality rate** was also very high, with 39 babies dying in the first week of life per 1,000 live births (EDHS, 2005). Ethiopia is one of five African countries that (together) account for *half* of all the newborn deaths in the whole of Africa.

This high risk period is also the time with the lowest coverage of maternal and child health care in Ethiopia. This is the second reason why you need to focus more attention on postnatal care.

If all newborns received high impact and cost-effective interventions during the postnatal period, it is estimated that neonatal mortality could be reduced by between 10–27%. In other words, high postnatal care coverage could save up to 60,000 newborn lives a year in Ethiopia, and help the country to meet the Millennium Development Goal of reducing under-five child mortality by two-thirds by the year 2015.

Ideally, postnatal care is best delivered in a health facility. However, due to many socio-economic and cultural reasons, such as the distance to travel and the cost of attending, most rural mothers give birth at home. Therefore, in the Ethiopian context, the most realistic way of providing optimum postnatal care for the foreseeable future is likely to be through home visits by a skilled health care worker such as you.

1.2 When do most mothers and newborns die in the postnatal period?

Mothers and their newborn babies are at highest risk of dying during the *early* neonatal period, especially in the first 24 hours following birth and over the first seven days after delivery (see Table 1.1). As you can see from the table, 45–50% of the mothers and newborns who die do so in the first 24 hours after birth, and 65–75% of the maternal and neonatal deaths occur within one week of birth. This is compelling evidence to provide optimum and integrated maternal and newborn care during the first few days after delivery.

Table 1.1 Global estimates of maternal and newborn mortality in the first seven days after the birth.

Deaths after delivery	First 24 hours (%)	First seven days (%)
Maternal mortality	45	65
Neonatal mortality	50	75

For some life-threatening maternal and newborn conditions, effective postnatal care is either given in the first few hours and days, or it will happen too late. The earlier these clinical conditions are detected, the more effectively they can be managed; the quicker they are referred for specialised treatment, the better

the outcomes will be. Unfortunately, most of these interventions are highly time-dependant in order to be effective. You should keep this in mind while providing care to mothers and their babies in the first few days of postnatal life.

1.3 What do mothers and newborns in the postnatal period die from?

The main purpose of providing optimal postnatal care is to avert both maternal and neonatal death, as well as long-term complications. To be effective you therefore need to know the major causes of death in the postnatal period, so that you can provide quality and timely postnatal care at the domestic and Health Post level.

Knowing what mothers and newborns are dying from is important in order to identify the high impact interventions that address all the major causes of death during the postnatal period. Table 1.2 shows the percentage of maternal deaths from the major causes for women in Africa.

Table 1.2 Causes of maternal death in Africa.

Causes of maternal death	**Percentage (%)**
Postpartum haemorrhage	34
Localised infection or disseminated infection (sepsis)	16
Hypertensive disorders of pregnancy (pre-eclampsia, eclampsia)	9
HIV/AIDS	6.2
Obstructed labour	4
Abortion	4
Anaemia	4
All other causes of death	30

You learned about anaemia, hypertensive disorders and abortion in Study Sessions 18, 19 and 20 of the *Antenatal Care* Module. Obstructed labour and postpartum haemorrhage were taught in Study Sessions 9 and 11 of the *Labour and Delivery Care* Module.

Table 1.3 shows the causes of newborn deaths in Ethiopia. You will learn about special care for preterm and low birth weight babies in Study Session 8 of this Module.

Table 1.3 Causes of newborn deaths in Ethiopia.

Causes of newborn deaths	**Percentage (%)**
Infection:	47
· Diarrhoea	3
· Tetanus	7
· Other infections, including neonatal infection (sepsis)	37
Birth asphyxia	25
Prematurity and low birth weight	17
Congenital defects (deformities present at birth)	4
All other causes	7

Infections, including diarrhoeal diseases and tetanus, are described in detail in the *Communicable Diseases* Module. Birth asphyxia and neonatal resuscitation were covered in Study Session 7 of the *Labour and Delivery Care* Module,

- Why is it really important for you to understand the main factors causing mothers and babies to die in the postnatal period?

□ You probably thought of many reasons, but the most obvious one is the huge difference that the delivery of appropriate and prompt postnatal care could have on Ethiopia's neonatal mortality rate: a reduction of between 10–27%, or up to 60,000 newborn lives saved every year.

- Think for a moment about the main causes of maternal and neonatal death. Which ones do you expect to see most in your role as a Health Extension Practitioner?

□ If you use the numbers in Tables 1.2 and 1.3, then you probably said postpartum haemorrhage for mothers and some form of infection for babies and also for mothers. You might also have picked out eclampsia (mothers) and neonatal asphyxia (babies).

1.4 Why are women and newborns at high risk in the postnatal period?

The most critical period for complications in the postnatal mother arising from bleeding (*post-partum haemorrhage*) is in the first 4–6 hours after delivery, due to excessive blood loss from the site where the placenta was attached to the mother's uterus, or from rupture of the uterus during labour and delivery. Haemorrhage can also threaten the baby's life if it occurs before delivery and the baby is starved of oxygen and nutrients.

Both the mother and the baby are also at high risk of developing other complications if the physiological adjustments that take place in their bodies after the birth do not occur properly. This can result in loss of function or interruption of essential supplies of oxygen and nutrients needed to sustain life.

1.4.1 Physiological changes in the postnatal mother

During labour and delivery, there is inevitably some loss of blood and other body fluids (for example, from vomiting and sweating), which is tolerable by the majority of women. Some degree of this is normal. Additionally, most women in labour remain for long hours without taking food or sufficient fluids, which can leave them dehydrated. Unless they are rehydrated quickly after the birth, physiological complications become more likely.

During pregnancy, activity in almost all the mother's body systems changes, including the heart, lungs, blood volume and blood contents, reproductive system, breasts, immune system and hormones. In the postnatal period, all these dynamic body systems have to adjust from the pregnant state back to the pre-pregnant state, and there is a potential risk of complications as these adjustments occur. Common examples are breast infections and *deep vein thrombosis* (blood clots in the veins of the legs), which are described in Study Session 3 of this Module. The period in which these physiological adjustments take place in the postnatal mother is called the puerperium. You will learn all about it in Study Sessions 2 and 3.

Additionally, labour is a painful experience for most women, particularly for those giving birth for the first time. There is also tension and anxiety about the outcome of labour and delivery. Having a baby is a joy (Figure 1.1), but it can also be a source of worry. Women in the postnatal period are often coping with stressful conditions and thus they need sustained psychological support.

Figure 1.1 Having a healthy baby is a source of joy, which effective postnatal care can help to ensure. (Photo: Nancy Durrell McKenna at SafeHands for Mothers)

1.4.2 Complications in the newborn

Risk of infection

While in the uterus, the baby was well protected by the fetal membranes and the antibacterial action of the amniotic fluid in which it was bathed, and by maternal antibodies that cross the placenta and defend it against infections that the mother has already encountered. After birth, antibodies in the colostrum (first milk) and true breast milk, and natural barriers like the baby's skin, give the newborn most of the protection from infection that it has when newly born. Its own immune system will take several months to develop adequately.

Risk of asphyxia

The newborn baby's blood circulation system undergoes major adjustments when it takes its first breath outside the uterus. While the baby is in the uterus, very little blood goes to the lungs because the baby isn't breathing air. The fetal lungs cannot perform the **gas exchange** (absorbing oxygen and releasing waste carbon dioxide), which occurs from the moment of birth onwards.

■ Where does fetal gas exchange occur during the baby's life in the uterus?

□ Oxygen is absorbed into the fetal blood from the mother's blood as they come close together in the placenta; carbon dioxide from the fetus passes into the mother's blood and is expelled from her body in her breath.

You learned about gas exchange in the placenta in Study Session 6 of the *Antenatal Care* Module.

Immediately at birth, the blood vessels that bypass the lungs are opened and all the blood in the baby's circulation is then able to pass through the lungs, where it undergoes gas exchange. It is a critical moment for the newborn when the lungs start to function. Failure to breathe is a common reason for birth asphyxia. Also, preterm newborns often have difficulty in getting enough oxygen after birth because their lungs are not fully matured, so gas exchange does not occur effectively.

You will learn more about neonatal jaundice in Study Session 6, and also in the Module on the *Integrated Management of Newborn and Childhood Illness* (IMNCI).

While in the uterus, the majority of toxic (poisonous) or waste chemicals are cleared from the baby's blood by the placenta, which routes them to the mother's liver, where they are broken down (the process is called *detoxification*). After the birth, the baby's liver takes over this function, and detoxifies the waste chemicals produced in the body or taken in through the mouth. One of the tasks the liver has to perform is detoxifying a protein called *bilirubin* released when 'old' red blood cells are broken down. Red blood cells survive for only a short time and are then broken down and replaced. If the newborn's liver is unable to cope with the load of 'old' red blood cells that need to be broken down, bilirubin builds up in the baby's body, giving the skin a yellowish appearance. This condition is called **neonatal jaundice**, and is most serious when the skin appears yellow on the palms of the hands and soles of the feet.

The newborn's kidneys also make a significant contribution to the clearance of toxic chemicals from the body, which are excreted in the urine. Immaturity in the functioning of the kidneys can also result in newborn complications as toxic chemicals build up in the body.

■ Imagine that you are talking to the mother of a very newborn baby and she tells you that the baby arrived a bit early. What should you immediately be concerned about?

□ First you need to check if the baby can feed adequately. You will probably think of the immaturity of a preterm baby's lungs and check whether this baby shows any signs of respiratory distress. You may also think of the immaturity of the liver and kidneys and check for signs of jaundice.

1.5 Your actions in the postnatal period

You cannot assume that a successful delivery and healthy-looking mother and newborn in the immediate postnatal period will mean that they will continue in a good state. Complications may occur because of the physiological adjustments in the mother and newborn described above (which we will discuss in more detail in later study sessions in this Module), and the rapid adaptations the baby must make to life in the external environment. Therefore, you need to watch carefully for danger signs in the immediate and later postnatal period. Before sending the mother and the baby home (if they delivered at the Health Post), or before you leave both at their home after the delivery, watch them for the first six hours after the birth. If you were unable to attend the birth, visit them as soon as you can within the first 24 hours, and ideally in the first six hours.

1.5.1 Evaluating the postnatal mother

In the first six hours, evaluate the mother for the danger signs described below:

- *Inadequate uterine contraction*: A poorly contracted uterus is a danger sign; consider referral if (after six hours) the uterus is bigger than the normal size at 20 weeks of gestation, and it cannot be felt easily because it is soft in consistency.
- *Fresh vaginal bleeding:* Some bloody discharge (called *lochia*) is normal in the immediate postnatal period, but there shouldn't be active bleeding visible with fresh bright-red blood.

- *Vital signs unstable or indicating shock:* Blood pressure and pulse rate should be normal before you leave the mother. If her blood pressure is dropping and her pulse rate is rising, the woman may be going into shock due to internal bleeding. If the uterus remains enlarged after the birth, and the vital signs indicate shock, it may be due to blood accumulating in the uterus.

Refer the mother urgently if you see any danger signs, take the baby too.

1.5.2 Evaluating the newborn baby

You should evaluate the newborn for the following danger signs in the first six hours:

- *Inadequate breastfeeding:* Preterm, very low birth weight, asphyxiated or sick babies generally cannot suck breast milk well. Sucking increases milk production, so do not discourage the mother from breast feeding if she is not producing sufficient milk initially. Rehydrate her and encourage the baby to suckle.

Breastfeeding is described in detail in Study Session 7.

- *Neonatal jaundice:* Yellowish discoloration of the newborn's skin is an indication for immediate referral to the nearest health centre or hospital if it begins within the first 24 hours, or after the baby is two weeks old.
- *Fever, repeated vomiting, swollen abdomen, or no stool after 24 hours:* Fever (temperature equal to or above 37.5°C), vomiting and the other danger signs indicate that there is a serious infection and/or an obstruction somewhere in the gastrointestinal tract.

Refer the mother and baby soon.

- *Hypothermia:* If the baby feels cold to the touch, or has a temperature of less than 35°C, this is known as **hypothermia**. Place the baby in skin-to-skin contact with the mother, wrap them both in warm blankets and put a warm cap or shawl on the baby's head. Refer them quickly if the baby's temperature does not rise soon towards normal.

Preventing hypothermia by using the 'warm chain principle' is described in detail in Study Session 7.

- *Respiratory distress:* The baby is in **respiratory distress** if it is breathing at above 60 breaths per minute, its chest is 'in-drawing' (ribs sucking inwards as the baby gasps for breath), its lips are blue, and/or its heart rate is above 160 beats per minute.
- *Bleeding from the umbilical stump or other site:* If the umbilical stump was tied too loosely before it was cut, it may bleed, or the baby may bleed from the anus, indicating blood loss from the stomach or intestines.

The total amount of blood in an average weight newborn is only 240 ml; even 30 ml of blood loss is enough to cause shock.

- *Red swollen eyelids or pus discharging from the eyes:* If you have already treated the baby's eyes with tetracycline ointment at birth, refer the mother and baby for specialised care.

1.5.3 Follow-up after immediate postnatal care

During the first postnatal visit, you should also remember to:

- Counsel the mother and her husband/partner about family planning, immunization, and breast feeding, as you will learn later in this Module.
- Make an appointment for her to come to your Health Post or visit her at home after three days, six days and six weeks (Figure 1.2 on the next page) if everything is progressing normally.
- Make an additional appointment to visit her at home after two days if there are any complications which have not resulted in referral, or if the baby was pre-term, low birth weight or suffers from low body temperature.

Low birth weight and pre-term babies are the subject of Study Session 8.

Figure 1.2 A postnatal checkup is a good time to counsel mothers about immunization and family planning. (Photo: UNICEF Ethiopia/Indrias Getachew)

1.6 Community mobilisation for postnatal care

Community mobilisation is defined as an action stimulated by a community, or by others, which are planned, carried out and evaluated by community members, organisations or groups, to solve community health problems. In this study session, the focus is on health problems arising during the postnatal period. Community mobilisation is a continuous and cumulative process of communication, education and organisation to build leadership and implementation capacity.

1.6.1 Methods for mobilising community action

Box 1.1 summarises the main methods for community mobilisation. Our coverage is brief here because you have already met all the methods in the Module on *Health Education, Advocacy and Community Mobilisation*.

Box 1.1 Methods for community mobilisation

Posters: Well-designed posters, placed and located in the right place can facilitate messages to keep reminding people about the issue of concern.

Letter writing: This is one way of delivering health messages to literate members of the community. It gives the exact message and can be kept for future reference.

Illustrated leaflets: Pictures are a good way of getting the message to people whose level of literacy is insufficient to understand letters (Figure 1.3).

Home visiting: This is the best way of mobilising the community, because you can be sure that the message has been delivered.

Figure 1.3 Illustrated leaflets in the local language can help to communicate your health messages to new mothers. (Photo: UNICEF Ethiopia/Indrias Getachew)

Community mobilisation is based on a high level of **community participation**, which occurs when community members taking part in identification of problems and needs, and then plan, implement, monitor and evaluate community activities to solve the identified problem.

The fundamental principle that you always need to remember is that you are not there to 'enforce' community participation. Your role is to explore, to learn from community wisdom, and to educate and persuade community members to bring about the necessary changes — in this case to improve postnatal outcomes. The final word and the final decision always belong to the community.

1.6.2 Why is community participation so important?

When people are involved and participate in an activity, they develop a sense of ownership and responsibility, which helps to sustain initiatives, activities and programmes. It also has the following benefits:

- Increased availability of resources as community members willingly contribute time and resources to what they consider to be their own initiatives and activities.
- A sense of unity among community members.
- Increasing confidence as the successes of their contributions are registered.
- People are empowered to exercise their skills, talents and develop their potential.
- Behaviour change will be quicker and easier.
- Controlling harmful traditional practices becomes easier.

1.6.3 Establishing partnerships with community gatekeepers

The primary targets of postnatal care are the mother, her newborn baby and the father. However, there are secondary targets — the **community gatekeepers** who can influence decision-making that affects the mother and baby's health. You need to involve these people right from the outset when you introduce a postnatal care service in your community. Give particular attention to involving:

- Official village administrators

- Religious leaders, church or mosque groups
- Opinion leaders and village elders
- Women's associations or women's clubs
- Youth associations
- Neighbourhood social committees
- Farmers' associations or agriculture associations
- Traditional birth attendants (TBAs), traditional healers
- Village drug vendors
- Any others you think are relevant to the specific circumstances.

Without the cooperation and collaboration of these individuals and groups it will be difficult to provide optimum postnatal care. In particular, it is essential to establish a good link and harmonise your efforts with the traditional birth attendants (TBAs). The following activities will help you to do this (Box 1.2):

Box 1.2 Establishing a partnership with traditional birth attendants

- Contact the TBAs in your community and discuss how you can support each other in providing postnatal care to women, newborns and families. Together you can create new knowledge which is more locally appropriate.
- Respect their knowledge, experience, opinions and influence. Ask them to explain the knowledge they share with the community.
- Share with them your information about postnatal care. Provide copies of health education materials that you wish to distribute to community members and discuss the content with them.
- Involve them in counseling sessions for families and other community members. Include them in meetings with community leaders and influential groups.
- Discuss the recommendation that all deliveries should be performed by a skilled birth attendant like you. When this is not possible, or not preferred by the woman and her family, discuss how the TBAs can provide more effective postnatal care, and when to make an emergency referral to you or to a higher health facility.
- Make sure TBAs are included in the referral system and provide them with feedback on women they have referred to you.

■ Why do you think it is important to involve TBAs and local healers as described above?

□ They are important partners, because they know the local culture, are respected by the community, and have a lot of experience in dealing with most of the social problems arising during the postnatal period.

■ Imagine you are a TBA with many years of experience. A Health Extension Practitioner begins to work in your village and asks for your help. What kinds of things would make you most likely to want to cooperate and support her practice?

□ Of course there is no single right answer to this question, just as there is no single TBA to whom all answers will fit equally. However, you probably included some of the following points:

- She treats you with respect and as an equal.
- She shows a real interest in the traditional childbirth practices in your village.
- You can see that she values your knowledge and experience.
- She gives you the opportunity to learn about new childbirth practices.
- She asks you to join her as a partner in a joint effort to improve postnatal care for the women and newborns in your village.
- She invites you to meetings with village leaders and other gatekeepers to mobilise community support for postnatal care services.

1.7 Conducting a community profile

You learned how to conduct a community profile in Study Session 1 of the *Antenatal Care* Module.

Before you can provide an effective postnatal care service to your community, you should know the total population you are going to serve and how to collect **vital statistics**, such as births, deaths and information on migration of people into and out of the area. In addition you need to record all women in the reproductive age group (approximately 15 to 45 years), who may become pregnant in the future, and the number of currently pregnant women with their expected date of delivery.

You should also record the names and addresses of all TBAs, local healers, village drug vendors and any other private practitioners. Register all community organisations that may support you in mobilising human, financial and transportation resources, in case emergency medical referrals are required for the mother and baby. You will learn about the referral link in the final study session of this Module. All of the above information needs to be updated every four to six months.

You may not need to conduct community mobilisation separately for PNC. It should be done in an integrated and harmonised way with all other community-based maternal, neonatal and child health services. Box 1.3 summarises the activity for community mobilisation to support postnatal care.

Box 1.3 Community based postnatal services

- Visit individual community leaders, TBAs and traditional healers to engage their support.
- Organise orientation meetings for all opinion leaders and gatekeepers.
- With community leaders and TBAs, plan and organise community meetings to educate community members about postnatal care.
- Carry out home visits to teach parents and caregivers about postnatal care (Figure 1.4 on the next page).
- Distribute information, education and communication (IEC) materials to community leaders and community members.

Figure 1.4 A home visit from a supportive health worker can help new mothers to learn new skills. (Photo: UNICEF Ethiopia)

Summary of Study Session 1

In Study Session 1 you have learned that:

1 The maternal mortality ratio and neonatal mortality rate in Ethiopia are among the highest in the world.

2 Around 45–50% of mothers and newborns die in the first 24 hours after the birth, and 65–75% of maternal and newborn deaths occur in the first week.

3 Effective postnatal care within six hours of the birth, and after two days, six days and six weeks could significantly reduce maternal and neonatal mortality.

4 The most common causes of postnatal maternal death include haemorrhage, eclampsia, infection and ruptured uterus.

5 The most important causes of neonatal death are infection, birth asphyxia, prematurity and low birth weight.

6 The postnatal period is a time of rapid physiological adjustment for the mother to the non-pregnant state, and for the newborn adapting to life outside the uterus.

7 Danger signs for the mother in the postnatal period include the uterus not well contracted, active vaginal bleeding and shock.

8 Danger signs for the newborn include jaundice, respiratory distress, fever and other signs of infection, hypothermia, persistent vomiting, and bleeding from the umbilical stump or anus.

9 Before launching a PNC service, you should conduct awareness creation and sensitization sessions to ensure full community participation, and involve community leaders, traditional birth attendants and healers; also carry out home visits to teach parents and caregivers and distribute information, education and communication materials.

Self-Assessment Questions (SAQs) for Study Session 1

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 1.1 (tests Learning Outcome 1.1)

The following is a list of key terms used in this study session, each with a definition. Which of the definitions below are (i) fully correct, (ii) partially correct, and (iii) wrong. Write a short sentence for each of the partially correct or wrong definitions, using the term correctly.

(a) **Neonate** — a newborn baby.
(b) **Postnatal care (PNC)** — care given to the baby immediately after birth.
(c) **Neonatal mortality rate** — the number of babies, in every 1,000 live births, who die within the first 28 days of their life.
(d) **Early neonatal period** — the time just after delivery and through the first seven days of life.
(e) **Maternal Mortality Ratio (MMR)** — the number of mothers who die giving birth.
(f) **Early neonatal mortality rate** — the number of babies who die just after delivery.
(g) **Neonatal period** — from birth to the 28th day after the birth.
(h) **Gas exchange** — what citizens of the US engage in when they go to the petrol station.
(i) **Neonatal jaundice** — a condition which can occur when the newborn's liver is unable fully to detoxify the blood.

SAQ 1.2 (test Learning Outcome 1.2 and 1.5)

Imagine that you are trying to convince the Ethiopian Finance Minister to put more money into postnatal health care and he wants the evidence as to why. Write a short letter outlining the key points that you would emphasise.

SAQ 1.3 (tests Learning Outcome 1.3 and 1.4)

You have done a good job persuading the Finance Minister, but he has asked the Health Minister to check that you really know what you are talking about. She asks you to list the key signs for potential complications that you should look out for in a postnatal mother and the main danger signs in the newborn baby. What would you write in your list?

Study Session 2 The Normal Puerperium

Introduction

In this study session you will learn about the normal postnatal changes that occur to women during the six weeks after childbirth. The postnatal period is also known by doctors, nurses and midwives as the **puerperium**. It includes the normal processes of physical and psychological adjustments during this period. Do you remember the physiological changes in pregnancy from the *Antenatal Care* Module, Study Session 3? Here we focus in detail on the normal adjustments during the puerperium, in particular the changes that occur in the reproductive system and in other body systems.

Puerperium is pronounced 'poo-ayre-peer-ee-um'.

Some women in your postnatal care may not understand all of the normal changes which they experience after childbirth. They may become alarmed about changes that are perfectly normal, or ignore symptoms that are really danger signs. Some women find mothering a new baby very easy and natural; for others the mothering role may be difficult. As a Health Extension Practitioner working in the community, you have a unique opportunity to assist mothers and their families to cope with the adjustments during the postnatal period.

Learning Outcomes for Study Session 2

After studying this session, you should be able to:

2.1 Define and use correctly all of the key words printed in **bold**. (SAQ 2.1)

2.2 Describe the expected physiological responses of new mothers during the normal puerperium. (SAQ 2.2)

2.3 Explain what advice you will give new mothers for self-care during the puerperium at home. (SAQ 2.2)

2.1 Changes in reproductive organs during the puerperium

The important physiological events that occur during the puerperium include, among others, the return of the reproductive organs and the levels of the female hormones to approximately their pre-pregnant state. We will briefly describe these changes in turn, always focusing on what can be expected in a normal postnatal woman.

2.1.1 Uterus

The full term uterus has grown at least ten times bigger than it was before pregnancy. On its own it weighs approximately 1kg (not including the baby, placenta, amniotic fluid, etc), whereas its pre-pregnant weight was only 50–100 gm. Immediately after the baby is born, the uterus can be palpated at or near the woman's umbilicus (belly button), as it contracts to expel the placenta and fetal membranes. It normally shrinks to its non-pregnant size during the first six weeks after delivery, but most of the reduction in size and weight occurs in the first two weeks. At around this time, the uterus should have shrunk enough to be located in the woman's pelvis, below her umbilicus.

The inner lining of the uterus (the **endometrium)** rapidly heals after the birth, so that by the seventh day, it is restored throughout the uterus, except at the placental site. The inside of the uterus, where the placenta was attached, undergoes a series of changes which reduce the number of blood capilliaries entering that site. The capilliaries that remain 'leak' blood plasma for a time, which results in a normal vaginal discharge called **lochia**. This discharge often continues for several weeks after the birth. In the first week, the lochia is bloody and brownish red, but it gradually changes over time to a more watery consistency. Over a period of two to three weeks, the discharge continues to decrease in amount and the colour changes to pale yellow (straw coloured). The period of time the lochia continues varies, with an average duration of around five weeks, with a waxing and waning amount of flow and colour. Each woman has her own pattern, with the various phases of the lochia lasting for different lengths of time.

2.1.2 Cervix

Immediately after the delivery, the muscular walls of the cervix are relaxed, thin and stretched. The cervix may also appear swollen and bruised from the delivery, and it may have small breaks where the tissue was torn as the baby passed through. But within the first day the cervix has usually narrowed and regained its normal muscular consistency. On vaginal examination with a gloved hand, you should find the cervical opening about two fingers in diameter by 24 hours after the delivery, and by the end of the first postnatal week the opening narrows to one finger width.

2.1.3 Vagina and vulva

The vagina, which was stretched widely to allow the passage of the baby, gradually shrinks to its non-pregnant size and state over a period of about three weeks after the birth. By this date, the increased blood flow and swelling of the vagina and vulva, which was visible immediately after delivery, should have disappeared. Sexual intercourse may resume when the lochia ceases, the vagina and vulva are healed, and the woman is physically comfortable and emotionally ready. Physical readiness usually takes about three to five weeks, but the woman may not feel ready for sexual intercourse for a longer period and she should not be forced to accept it. Your role is to speak gently to her partner to ensure he understands and respects her feelings. In most communities there is a norm for when sexual intercourse starts, which is often after the puerperium ends, at around six weeks from the birth.

Remember that birth control is important to protect against another pregnancy following too soon after the previous birth. The first ovulation is very unpredictable and the woman may get pregnant again even before the return of her first menstrual period.

Birth spacing was discussed in Study Session 14 of the *Antenatal Care* Module.

- What is the benefit of using postnatal family planning to space out the births of more children?

- An interval of at least two years between births, and preferably a longer gap, reduces the risk of complications occurring to the mother during the next pregnancy. It also increases the health of the new fetus and the previous infant who may still need it's mother's constant care and attention (Figure 2.1).

Figure 2.1 A community health worker's role includes helping mothers to use family planning to space their children. (Photo: UNICEF Ethiopia/Indrias Getachew)

2.1.4 Perineum

The perineum is the part of the body between the vaginal opening and the anal opening. It has been stretched and traumatized, and sometimes torn, during the process of birth. Or it may have been cut intentionally with sterilized scissors by a skilled birth attendant to widen the opening and help the baby out. Most of the muscle tone (strength) of the perineum is regained by six weeks after the birth, with more improvement over the following few months. You can help the mother to regain the muscle tone by encouraging her to contract and relax the muscles of the perineum ten times as soon as it is comfortable to do so, and to repeat this exercise several times every day. Strengthening the perineum is important because it forms the 'pelvic floor' which supports her uterus, vagina and bladder.

2.1.5 Abdominal wall

The abdominal wall remains soft and relatively poorly toned for many weeks after the birth, but it gradually becomes stronger over time. The extent of return to the muscular tone of the pre-pregnant abdomen depends greatly on the amount of exercise the woman takes as she returns to full fitness. For rural women, who work in the fields as well as in and around the home, the problem can be putting too much strain on their abdominal muscles (for example to lift heavy weights) too soon after the birth.

2.1.6 Ovaries

The resumption of normal function by the ovaries is highly variable and is greatly influenced by breastfeeding the infant. The woman who exclusively breastfeeds her baby has a longer period of *amenorrhoea* (absence of monthly bleeding) and delayed first ovulation after the birth, compared with the mother who chooses to bottle-feed. A woman who does not breastfeed may ovulate as early as four weeks after delivery, and most have a menstrual period by twelve weeks; the average time to the first menstruation for a woman who is not breastfeeding is seven to nine weeks after the birth.

Amenorrhoea is pronounced 'aye-men-or-ee-ah'.

In the breastfeeding woman, the resumption of menstruation is highly variable and depends on a number of factors, including how much and how often the baby is fed, and whether the baby's feed is supplemented with formula milk. Ovulation is suppressed in the breastfeeding woman by a hormone released

from the pituitary gland in the woman's brain whenever the baby suckles. Half to three-quarters of women who breastfeed their babies exclusively, including during the night, will begin their first menstrual period within 36 weeks after the birth.

- What kinds of points might you make to a young mother who has given birth recently and is breastfeeding, who asks you when she can resume sexual intercourse?

- You could say that once her vaginal discharge (lochia) has more or less ceased and become pale yellow (after five to seven weeks) she can resume sexual intercourse if she feels physically and emotionally ready. You could also explain that breastfeeding makes it hard to predict when she will start ovulating again. And you could encourage her to think of family planning by explaining the risks of another pregnancy so soon after the birth, and the benefits of spacing babies by two years or more.

2.1.7 Breasts and initiation of lactation

Another important event that happens soon after the birth is the initiation of **lactation**, that is the production of colostrum and then milk by the breasts, and the release of these nutritious fluids when the baby suckles the mother's nipple. The breasts begin to develop the capacity to produce milk as pregnancy progresses, in response to hormones circulating in the mother's blood. For the first few days after the birth, the breasts secrete **colostrum** (a creamy yellow substance). Colostrum is rich in nutrients for the baby and also has maternal **antibodies** which protect the newborn from infection. Thus, it is very important that all babies are fed colostrum. In some parts of Ethiopia it is considered unhealthy to feed colostrum to newborns, but even if the mother is reluctant try to persuade her that it should not be thrown away.

Antibodies are special proteins that help to identify and destroy infectious agents.

Three days after delivery, in response to increased hormones from the pituitary gland in the brain, which stimulate milk production, the breasts become firm and milk supply begins. They rapidly become distended, hard and warm because of increased blood flow; this state of the breasts is called **engorgement** (Figure 2.2). It lasts about 24–48 hours and will resolve spontaneously. Thereafter, the breasts are not so hard and do not feel excessively warm, but they become firm and somewhat tender as they fill with milk between feeds, and they soften and reduce in size when emptied as the baby suckles milk. Ongoing milk production is stimulated by the suckling of the baby. The more the baby feeds, the more milk the breasts will produce.

Figure 2.2 About three days after the birth, the breasts become engorged as they fill with milk for the first time. (Photo: UNICEF Ethiopia)

You should advise new mothers that **early breastfeeding** (within one hour of the birth) and **exclusive breastfeeding** (no other foods or fluids to be given to the baby) for the first six months is the best nutritional start in life. Allow the baby to be put to the breast whenever it wants to feed from the first day onwards. Breastfeeding is neither easy nor automatic, and it takes a lot of time in every day and during the night. It requires much effort on the part of the mother to breastfeed her baby exclusively for six months. Producing plenty of rich breast milk requires a lot of extra energy. The mother will need more nutrients and fluids, so advise her to drink plenty of clean fluids and to try to eat at least one additional meal every day while she is breastfeeding. More detailed information on breastfeeding is given in Study Session 7.

Suppression of lactation in non-breastfeeding women

There are circumstances when the mother cannot or will not breastfeed, for example if the baby is born dead or dies in the first few weeks, or when the mother strongly prefers to feed her baby with formula milk from a bottle. To reduce the discomfort of prolonged breast engorgement, it is recommended to wrap a tight compression bandage around the woman's chest, covering the breasts, for the first two to three days after the birth. Care should be taken not to stimulate the breasts in any way that would encourage milk production. Ice packs can be applied to the breasts and pain-control tablets containing aspirin or paracetamol may be given to relieve the breast tenderness.

2.1.8 Excretion of excess body fluids

During the pregnancy, the woman's body contains more body fluids than in the non-pregnant state. Some of this additional water is held in her tissues, some in her increased volume of blood, and some in the uterus. This excess water is rapidly eliminated after the birth. The amniotic fluid drains away through the vagina. From the second day after the delivery, the urine volume will increase up to three litres per day for a few days, but within one week it returns to the normal pattern of urination. The bladder increases its capacity during the period in which excess body fluids are being eliminated, filling with between 1,000 to 1,500 ml of urine without discomfort.If urine is retained for long periods in the bladder, because the urethra is obstructed by swollen or bruised tissues after the birth, it increases the risk of urinary tract infections developing.

You learned about urinary tract infections (UTIs) in Study Session 18 of the *Antenatal Care* Module.

2.2 Important information for the first-time mother

2.2.1 Looking after the baby

New mothers (and often also new fathers) should be taught routine care of the baby, including bathing and keeping its body and clothes clean of its faeces and urine. Teach the parents what can be expected from the baby in terms of sleep, urination, bowel movements, feeding and crying. The baby should be kept warm, but not wrapped too tightly. It should be checked carefully and often to ensure that it is not too hot or too cold, and that it is feeding well and passing normal stools and urine frequently. More details of newborn baby care are given later in this Module in Study Sessions 6 to 8.

2.2.2 Rest and recovery for the mother

Pregnancy, labour, delivery and care of the newborn are strenuous and stressful; the mother needs sufficient rest to recover. She also needs

information about when it is safe for her to resume her normal activity. Tell her that she may resume some household activities within two or three days of the birth, as long as she experiences no pain or discomfort. The key to resuming normal activity is not to do too much one day so she feels completely exhausted the next day.

2.2.3 Birth control options

The mother and her partner should also be counselled about birth control options. She may not be ready to decide about a method, but she needs to know the options. Her decision will be based on a number of factors, including her motivation in using a particular method, how many children she has, and whether she is breastfeeding.

Many options are available, which we will mention only briefly; the details of the different methods are addressed in the Module on *Family Planning*.

- Natural methods involve looking at the nature of the cervical mucus (quality and quantity), which can work fairly well to indicate when the woman is ovulating, but are not a secure way to prevent pregnancy.
- Breastfeeding exclusively and on demand by the baby can give reasonably good protection from pregnancy for up to six months, if the woman's menstrual periods have not returned.
- Barrier methods of contraception create a barrier between the male sperm and the vagina or cervix. The most commonly used barrier method is male condoms, which are widely available.
- Hormonal methods of contraception include contraceptive pills, injectable contraception, and implants (a tiny rod containing slow-releasing hormones which is put under the skin).
- Intrauterine devices (IUDs) are devices put inside the uterus to prevent implantation of an embryo; they can be inserted at the end of the puerperium.
- Permanent methods of birth control include cutting and tying the fallopian tubes (which extend from the uterus on either side towards the ovary) in females, and cutting the tube transporting male sperm from the testacles to the penis (vasectomy).

■ Without looking back at the sections above, write a very brief note for yourself of the key points that you will make to the parents of a newborn, advising them about caring for their baby.

□ Now check your list against the information in Sections 2.2.1, 2.2.2 and 2.2.3.

2.3 In conclusion

In most women, the puerperium passes without problems and is a time of joy for the mother and other members of the family to be with the new baby. But it is important that mothers and their partners are informed of what normally happens during this period, and that you make sure there are no danger signs which can compromise the health of the mother or the newborn. We are going to turn to the abnormal puerperium in Study Session 3 of this Module. Remember that if you detect abnormalities during postnatal follow-up visits, refer the woman and baby quickly for further assessment and treatment to the next higher health facility.

Summary of Study Session 2

In Study Session 2, you have learned that:

1 The period of six weeks after childbirth is called the puerperium; this is when the physiological changes to the mother's body that occurred in pregnancy revert back to normal. The uterus, cervix, vagina and vulva reduce in size and the excess fluids retained during pregnancy are quickly eliminated in the mother's urine.

2 Postnatal mothers have a normal reddish, watery vaginal discharge after childbirth called lochia, which gradually reduces during the puerperium and changes colour to pale yellow.

3 The changes to the breasts that prepare them for breastfeeding occur throughout pregnancy; production of colostrum begins soon after the birth, followed at about three days by breast engorgement and production of true milk.

4 The colostrum released by the breasts during the first two to three days after delivery is rich in nutrients and maternal antibodies; it should always be fed to the newborn.

5 Breastfeeding should begin within the first hour after childbirth and continued exclusively, and on demand by the baby, for the first six months.

6 Mothers (and often fathers) need support to adjust to the demands of caring for a new baby, including support for beginning breastfeeding and keeping the baby warm and clean. Mothers need time for rest and recovery before resuming normal activities.

7 The various options for postnatal family planning should be discussed with both parents.

Self-Assessment Questions (SAQs) for Study Session 2

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 2.1 (tests Learning Outcome 2.1)

Which of the following statements is *false*? In each case (i) explain what is incorrect, and (ii) define the term that is in **bold**.

A A woman during the **puerperium** will not normally produce **lochia** after the birth.

B Initiation of **lactation** and production of **colostrum** follows soon after delivery of the baby.

C Breast **engorgement** is a sign that breastfeeding can be initiated.

D The **endometrium** can take seven weeks to heal after the birth.

SAQ 2.2 (tests Learning Outcomes 2.2 and 2.3)

You are seeing a woman who gave birth to her second child 14 days ago. She looks reasonably well, but she seems a bit worried. Briefly describe all the checks you would do to make sure that everything is OK and she is recovering normally.

Study Session 3 The Abnormal Puerperium

Introduction

As you learned in Study Session 2, the course of the puerperium goes smoothly in most women. The **puerperium** is the period of about six weeks after the birth, in which physiological adjustment to the non-pregnant state occurs. However, sometimes women will develop health problems which should come to your attention. You may handle some of these problems yourself, but you will need to refer others for further assessment and treatment at a hospital or health centre. Infections are among the most prominent puerperal complications and are a major cause of maternal mortality in Ethiopia. Fever is the main symptom and antibiotics are the main treatment. Prevention of infection by ensuring cleanliness and hygiene at delivery is obviously the best course of action.

The other common complications include late postpartum haemorrhage (PPH), urinary tract infections, hypertension and mental health problems. In this study session, you will learn about the common abnormalities that can occur in the course of the puerperium, and one uncommon but life-threatening complication – deep vein thrombosis (a blood clot inside the veins that blocks the blood flow).

The term 'postpartum' means 'after the birth and related to it'.

Learning Outcomes for Study Session 3

After studying this session, you should be able to:

3.1 Define and use correctly all of the key words printed in **bold**. (SAQ 3.1)

3.2 Describe the causes of late postpartum haemorrhage. (SAQ 3.1)

3.3 Discuss the common types of puerperal infections and their risk factors. (SAQ 3.2)

3.4 Identify the signs and the risk factors for deep vein thrombosis. (SAQ 3.3)

3.5 Define the clinical features of the common puerperal abnormalities, including postpartum mental health problems. (SAQs 3.1 and 3.4)

3.1 Postpartum haemorrhage

Study Sessions 3 and 11 of the *Labour and Delivery Care* Module explained that a life-threatening **postpartum haemorrhage** (**PPH**) involves losing at least 500 ml of blood from the uterus or vagina. The most critical period to develop a PPH is during the third and fourth stages of labour.

■ What are the third and fourth stages of labour?

□ The third stage is delivery of the placenta and fetal membranes; the fourth stage is the next four hours.

About 90% of deaths due to PPH take place within four hours of delivery. During the first four to six hours, you should make sure that the uterus remains well contracted (Figure 3.1) and that there is no heavy loss of blood. However, a woman can develop a haemorrhage at any time during the puerperium, generally in the first week after delivery, but even up to six

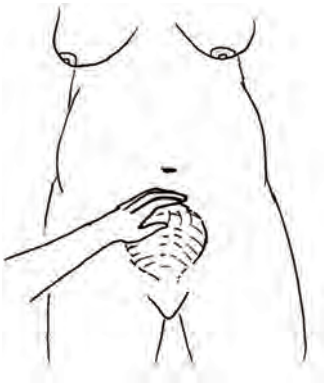

Figure 3.1 The uterus should be well contracted 4–6 hours after the birth.

weeks postpartum. This type of bleeding is referred to as secondary (late) postpartum haemorrhage.

The presence of anaemia or a heart condition can be life-threatening for the mother even if the loss of blood is less than 500 ml. A woman who is malnourished is also usually less able to cope with blood loss than a woman who is well nourished.

3.1.1 Causes of late postpartum haemorrhage

The bleeding is usually as a result of poor contraction of the uterus after the birth, which fails to close off the torn blood capillaries where the placenta has pulled away. If the uterus is unable to reduce in size as it should do normally, it may be because of infection, or retention of a piece of the placenta, which later tears loose from the wall of the uterus and causes a haemorrhage. Box 3.1 summarises the common causes of late PPH.

Box 3.1 Causes of late postpartum haemorrhage

- *Endometrial wall infection:* Endometritis is described in Section 3.2.1. When the site of placental implantation (the placental bed) is not yet healed, infection in the uterus can cause the blood capillaries in the placental bed to start bleeding again.
- *Poorly contracted uterus:* The uterus may not contract well because of infection, retained placental fragments, or an unknown reason. As a result, bleeding can start again.
- *Retained placenta:* Remnants of placental tissue or fetal membranes retained in the uterus are common causes of late PPH.
- *Sloughing of the placental bed:* There is a possibility that the healed placental bed peels away (sloughs) and opens the blood capillaries again.
- *Molar pregnancy*: Although it is uncommon for a woman to develop a molar pregnancy after delivery, its occurrence can have life-threatening complications; the rapidly growing mass of grape-like tissues in the uterus can cause profuse haemorrhaging.

If there is obvious excessive vaginal bleeding, or you suspect heavy bleeding may be happening internally, refer the mother urgently to the nearest hospital or to a health centre with a blood transfusion service.

3.1.2 Pre-referral management of PPH

You should remember that any amount of active (fresh or bright red) vaginal bleeding after 24 hours may be due to one of the causes listed in Box 3.1, or others not mentioned. Therefore, you should refer these women to a hospital regardless of the amount of bleeding. You should also remember that if the bleeding is severe, only a blood transfusion can save the life of the mother.

The more detailed management of PPH was taught in Study Session 11 of the *Labour and Delivery Care* Module and described in Study Session 22 of the *Antenatal Care* Module, as well as in your practical skills training.

- What did these study sessions tell you to do before referring a women with PPH?

- Put up an intravenous (IV) line, and start the woman on intravenous fluid therapy with Ringer's Lactate or Normal Saline, using a 1,000 ml (1 litre) bag and a flow rate set to run as fast as possible.

As a pre-referral treatment, you should also give her a second dose of misoprostol (400 micrograms orally or rectally), or oxytocin 10 IU (International Units) by intramuscular injection (Figure 3.2).

Figure 3.2 Inject 10 IU of oxytocin (or give 400 micrograms misoprostol) before referring a woman with PPH.

3.2 Puerperal sepsis and fever

Puerperal sepsis refers to any widespread bacterial infection of the reproductive tract in a woman following childbirth. Some women are more vulnerable to puerperal sepsis, for example those who are anaemic and/or malnourished. **Fever** (raised body temperature) in a mother during the postnatal period is a general danger sign. She suddenly feels chills with shivering, followed by feeling hot and sweating. Fever in the postpartum period may be due to puerperal sepsis, but it can also be caused by:

- Urinary tract infection
- Wound infection
- Mastitis or breast abscess
- Infections not related to the pregnancy or delivery, such as HIV, malaria, typhoid, tetanus, meningitis, pneumonia, etc.

All these infections are described in the *Communicable Diseases* Module.

In the majority of cases, postnatal maternal infection is preventable either by conducting a clean and safe delivery, by immunizing all pregnant women against tetanus, and by providing timely treatment of pre-existing infections. In malaria endemic areas, do not forget to give long lasting insecticide-treated bed nets (ITNs, Figure 3.3) during your home visit, if they were not given before, and advise mothers on how to regularly and continuously use them. Make sure the mother and newborn are sleeping under a net every night.

Figure 3.3 This mother has been given a new insecticide-treated net for her and her baby to sleep under. (Photo: UNICEF Ethiopia/Indrias Getachew)

3.2.1 Endometritis

Endometritis is an infectious process involving the inner wall of the uterus (the endometrium). It is commonly caused by bacteria ascending from the vagina, or bacteria transferred to the reproductive tract from the rectum and anus. Commonly known and avoidable risk factors contributing to the risk of endometritis include:

- *Long labour:* This risk can be managed by timely referral of women in prolonged labour.

PROM is the subject of Study Session 17 of the *Antenatal Care* Module.

- *Prolonged and premature rupture of fetal membranes (PROM):* The risk of infection is greatest if PROM has occurred long before the baby is delivered. You can reduce the risk by early referral.
- *Repeated vaginal examinations:* You can avoid this risk by not doing unnecessary internal examinations.
- *Poor standard of hygiene and cleanliness during delivery:* For example, insertion of an unclean hand into the vagina, or use of non-sterile instruments, can transmit infection.

STIs are described in Study Session 31 of the *Communicable Diseases* Module; UTIs are covered in Study Session 18 of the *Antenatal Care* Module.

- *Pre-existing infection:* Colonisation of the vagina and uterus from untreated sexually transmitted infections (STIs) or urinary tract infections (UTIs).
- *Retained placenta or fetal membranes:* The dead cells in these tisues favour the multiplication of bacteria.
- *Manual removal of the placenta*: If the umbilical cord tears (breaks) when you apply controlled cord traction to help delivery of the placenta, it may be retained and the woman may start to bleed profusely. In these circumstances, you will be forced to remove the placenta manually by inserting your fingers into the endometrial cavity, locating the placenta and removing it in pieces or in totality. In addition to the risk to the mother from the haemorrhage, there is also a risk of endometrial infection.
- *Anaemia***:** Whether it is due to blood loss during pregnancy, labour and delivery, or due to nutritional deficiency, anaemia is a well known risk factor for endometritis and other types of puerperal infection.
- *Traumatic delivery*: (e.g. assisted by forceps, or by Caesarean section)
- *Postpartum haemorrhage*.

Figure 3.4 Pain in the abdomen may be a sign of endometritis.

Signs of endometritis

A woman with endometritis typically has a fever of 38°C or higher, a rapid pulse and pain (tenderness) when you palpate the abdomen (Figure 3.4). Some women may also develop a yellowish, curd-like vaginal discharge which has a bad odour, whereas others have a little odourless discharge. In short, to assess the mother for uterine infection, ask if she has:

- History of fever or if she feels hot. Measure her temperature and she has a fever if it is equal to or greater than 38°C.
- Lower abdominal pain.
- Foul-smelling, curd-like discharge from her vagina.

If the mother has even *one* of the above findings, assume she has endometritis and refer her urgently to the nearest hospital or health centre.

If you suspect a woman in the puerperium may have endometritis when you do your early postnatal visits, it is important that you refer her quickly for further treatment. If she has low blood pressure (diastolic less than 60 mmHg), you may begin an IV infusion of Normal Saline. Keep her lying flat with her legs lifted up by putting pillows underneath her knees (shock position), before transporting her to a health facility.

■ Which of the risk factors for developing endometritis can you, personally, do most about?

□ Ensuring the highest standards of hygiene and cleanliness during delivery; and avoiding, where possible, repeated vaginal examinations of the mother.

3.2.2 Urinary tract infections

Another common cause of pain and fever in the puerperium is a urinary tract infection (UTI). A woman with a UTI complains of urine coming too frequently, a burning sensation when she passes urine, and the urge to urinate very often. When you gently press on her abdomen overlying the pelvis she will have pain. This woman needs referral for treatment with antibiotics.

UTI is common during pregnancy and the puerperium because of:

- urinary retention due to urinary tract obstruction in some women in late pregnancy;
- manipulation and trauma to the urethra during labour and delivery, which increases the risk of bacteria from the birth canal and rectum ascending into the bladder and from there to the kidneys.

3.2.3 Puerperal mastitis

Mastitis is painful inflammation of the breast due to bacterial infection (Figure 3.5). The bacteria most often causing mastitis, or a more serious breast abscess, are called *Staphylococcus aureus*. The main source of these bacteria is the suckling baby. Mastitis is more likely to develop during lactation than when the breast is not producing milk. Commonly, it results from milk remaining in the breast for long periods (incomplete emptying), because the baby is not suckling well, or from cracked nipples.

Figure 3.5 Pain in the breast may be a sign of mastitis.

■ How might cracked nipples be a risk factor for mastitis?

□ Pain from the cracked nipples may make the mother reluctant to breast feed, so her breasts remain engorged with milk; also, bacteria from the baby's mouth or from the mother's skin can get into the breast through the cracked nipples.

Neglected, resistant, or recurrent infections of the breast can lead to the development of an *abscess*, a collection of pus within the breast. **Pus** is a yellowish-white, sticky fluid formed in infected tissue, consisting of bacteria, white blood cells, cellular debris and dying tissue. Women with mastitis often experience pain, fever, chills and muscle aches over the body. The breast will look red, hot and is very painful to touch. When the examination reveals a tender, hard mass with overlying redness, a breast abscess is likely.

Refer women with mastitis or breast abscess.

If you make a diagnosis of mastitis or breast abscess, give pain relief with paracetamol, supporting the breast with brassieres or anything that can be wrapped around the chest, and refer the woman to the health centre and/or nearest hospital for antibiotic treatment.

When you counsel a woman with a breast infection, NEVER advise her to stop feeding the baby from the infected breast. Emptying the breast by letting the baby suckle the milk will help to reduce the problem and the pain. Therefore, encourage breastfeeding unless pus is coming through the nipple. However, breastfeeding is not advised if the cause of breast infection is

suspected to be tuberculosis (TB), which is characterized by long-standing evidence of infection with healing (scarring) and new infection in the same breast.

3.2.4 Wound infection

Wound infections in the puerperium usually affect torn tissues in the perineum, infection of an episiotomy (an incision made to widen the vaginal opening to let the baby pass through), or a surgical wound in the abdomen after a caesarean birth conducted at a health facility.

In general, wound infections become apparent on the third or fourth postpartum day and are diagnosed on the basis of erythema (reddening of the area of infection), and the tissue overlying the affected area thickens, gets warm and is painful to touch. It may drain yellowish pus from the wound site, and may occur with or without fever.

Figure 3.6 An infected wound in the perineum may be treated by bathing with warm salt water, or compresses to draw out the pus.

Treatment of perineal wound infections includes relieving pain with paracetamol, and bathing with warm water in which one teaspoon of salt has been dissolved for every litre of water. If there is pus coming from a wound on the perineum, further drainage of the pus can be achieved by compressing the area with a cloth soaked in warm salty water (Figure 3.6).

In the case of a woman who also has fever and chills, and you suspect there is pus which is not draining out of the wound, you should refer her to the next higher health facility so that she can be treated with antibiotics. If she has an abscess, it may need to be drained surgically. Most patients respond quickly to the antibiotics once the wound is drained. Antibiotics are generally continued until after the patient has no fever for 24–48 hours.

Abdominal wound infections are generally treated at a hospital, so refer such women to the next higher health facility.

3.3 Screening for postpartum hypertension

Diastolic blood pressure is measured when the heart relaxes between heartbeats.

The hallmark of pregnancy-induced hypertension is high blood pressure, usually a diastolic blood pressure more than 90 mmHg. You learned how to take the mother's blood pressure in the *Antenatal Care* Module, Study Session 9, and about hypertensive disorders of pregnancy in Study Session 19. Here we are concerned about hypertension that begins or returns in the puerperium. In order to screen for this you should ask the mother about the following symptoms:

- Severe headache, with or without visual disturbances (blurring of vision), and sometimes with nausea and vomiting.
- Convulsions/fits in the most severe cases (eclampsia). Make sure that you know the local terminology for a **convulsion**. It can be explained as an abnormal and uncontrollable rhythmic movement of the arms and legs, with or without losing consciousness.
- Swelling (oedema) of hands and feet, or especially the face.
- Severe pain in the upper part of the abdomen.

You should do a dipstick urine test (as you learned in Study Session 9 of the *Antenatal Care* Module). When urine is tested with a dipstick for the presence of protein, a woman with hypertension is likely to test positive. The positive values on the dipstick are graded from +1 up to +3 and more. If any *one* of the above findings is present, suspect pregnancy-induced hypertension and refer the woman urgently to the nearest health facility. Remember that

postpartum hypertension can develop in any woman, even one who had normal blood pressure and was symptom-free during pregnancy, labour and delivery.

3.4 Deep vein thrombosis (DVT)

Deep vein thrombosis (DVT) — a blood clot, almost always in one of the deep veins in the legs — is a rare complication during the puerperium. However, when it occurs it can be rapidly fatal if the clot breaks away from the vein in the leg and travels to the heart, lungs or brain, blocking vital blood vessels.

The chance of developing a DVT is more common during pregnancy than in the non-pregnant state, and the risk increases during the puerperium. Why deep veins in the legs develop clots (thrombosis) is not exactly known. However, the risk is much higher when the postnatal woman spends most of the time in bed and doesn't walk about much for several days after the birth. In most parts of Ethiopia, the local custom is for postnatal women to remain in bed, with no activity except a short walk to use the latrine. So it is important for you to identify the clinical features of DVT, make a diagnosis and refer her to a hospital as early as possible. Box 3.2 shows the common clinical features of DVT.

Box 3.2 Clinical features of deep vein thrombosis (DVT)

- *Pain in one leg only:* usually sudden onset, persistent and aching type of pain.
- *Tenderness:* the area is painful when you touch it.
- *Swelling:* the affected leg is swollen with greater than 2 cm difference in circumference compared to the other (healthy) leg. The swelling may be in the calf or the thigh.
- *Palpable cord:* you may feel a cord-like structure deep in the swollen leg.
- *Change in limb colour:* the affected leg appears a little bit red.
- *Calf pain*: she will feel pain when you try to do extreme extension at the ankle joint.

3.5 Psychiatric disorders in the postnatal period

Psychiatric disorders are relatively common after childbirth and may include postpartum 'blues', postpartum depression (PPD), and postpartum psychosis.

3.5.1 Postpartum 'blues' and postpartum depression

Hormone changes are thought to be the cause of **postpartum blues**, a mild, transient, self-limiting disorder (it resolves on its own), which commonly arises during the first few days after delivery, and lasts up to two weeks. It is characterized by bouts of sadness, crying, anxiety, irritation, restlessness, mood swings, headache, confusion, forgetfulness, and insomnia. It rarely has much effect on the woman's ability to function, or care for her baby. Providing loving support, care and education has been shown to have a positive effect on recovery (Figure 3.7).

Figure 3.7 Loving support can help women to recover from postpartum 'blues'.

Refer women who are seriously depressed after childbirth.

But if a women develops a serious **postpartum depression** (persistent sadness, low mood, difficulty in finding motivation to do anything), it will greatly affect her ability to complete the normal activities associated with daily living. Cases of depression need attention from trained mental health professionals for supportive care and reassurance, so refer the woman as soon as you can. The role of the patient's family is also very important in the course of treatment. Women with high levels of depression are less likely to initiate breastfeeding soon after the birth, and their babies are more likely to have episodes of illness such as diarrhoea.

■ Can you suggest why the baby might be affected in this way?

□ If breastfeeding is not commenced successfully the woman may bottle-feed the baby with formula milk, which carries a greater risk of infection to the baby from unclean bottles. A depressed mother may also not take notice of health education messages about preventing infection in her newborn.

If two or more of the following symptoms occur during the first two weeks of the puerperium, refer the mother:

- Inappropriate guilt or negative feelings towards herself
- Cries easily
- Decreased interest or pleasure
- Feels tired and agitated all the time
- Disturbed sleep, sleeping too much or sleeping too little
- Diminished ability to think or concentrate
- Marked loss of appetite.

There may also be episodes of *postpartum psychosis*, marked by delusions or hallucinations – seeing or believing things that are not real. We return to this more serious problem in Study Session 5. You will learn a lot more about mental health issues, including postnatal depression and psychosis, in the Module on *Non-Communicable Diseases, Emergency Care and Mental Health*.

Summary of Study Session 3

In Study Session 3, you have learned that:

1 Although the most critical period to develop postpartum haemorrhage is in the third and fourth stages of labour, you should continue being vigilant during the puerperium and counsel the mother to report any active vaginal bleeding.

2 The commonest causes of late PPH are endometritis, poor uterine contraction, retained placenta and sloughing of the placental bed.

3 Any amount of active vaginal bleeding after 24 hours of delivery should be taken as a serious complication and the woman should be referred.

4 The commonest types of puerperal infection are endometritis, mastitis, urinary tract infection and wound infection, all of which are usually accompanied by fever.

5 Risk factors for postnatal endometritis are prolonged labour, prolonged PROM, repeated vaginal examination, pre-existing lower reproductive tract infection, retained placenta, and traumatic delivery including caesarean section or forceps.

6 In a woman who develops puerperal mastitis, breastfeeding is encouraged.

7 Postpartum hypertension characterized by high blood pressure, oedema, visual disturbances and (in eclampsia) convulsions, can develop in a woman who had normal blood pressure and was symptom-free during pregnancy, labour and delivery.

8 Deep vein thrombosis is characterized by a painful and swollen leg, and more commonly occurs in women who remain in bed for several days after the birth.

9 Some women may develop mental health problems, the commonest of which is short-term, mild postpartum blues. Some women may develop serious depression which needs care and treatment at a higher level facility.

Self-Assessment Questions (SAQs) for Study Session 3

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 3.1 (tests Learning Outcomes 3.1, 3.2 and 3.5)

You are talking to one of your co-health workers about the complications that can occur in the course of the puerperium. She has only just started her health worker training and is curious about the following terms and what their key symptoms are. What might you say to her about each of the following?

(a) Late postpartum haemorrhage.
(b) Puerperal sepsis and fever.
(c) Mastitis.
(d) Postpartum hypertension.
(e) Postpartum depression.

SAQ 3.2 (tests Learning Outcome 3.3)

Complete the empty boxes in Table 3.1, referring to complications in the puerperium.

Table 3.1 Common complications in the puerperium.

Symptom	Sign	Possible diagnosis	Action
Vaginal bleeding on postpartum day seven	Uterus at the level mid-way between umbilicus and pelvis		
		Urinary traction infection (UTI)	Encourage fluid intake by mouth and refer
Pain over the breast and fever	Breast painful to touch, hot and red		
Pain in the perineum	Torn perineum with yellowish discharge, painful to touch		

SAQ 3.3 (tests Learning Outcome 3.4)

You are visiting a mother called Lakesh who had her baby seven days ago. The last time you saw her she was lying in bed. This time she gets up to greet you and you notice that she is limping. You ask her if she has hurt herself. She mentions a sudden ache in one of her legs. What would you suspect and what would you do about it?

SAQ 3.4 (tests Learning Outcome 3.5)

Another mother called Almaz is in the first postpartum week; she feels persistently guilty and negative towards herself, cries easily and feels tired and agitated. What might she be suffering from? What other symptoms would you ask her about, to confirm your diagnosis?

Study Session 4 Preparation for Postnatal Care

Introduction

In the majority of pregnancies prior to delivery, you will have already started communicating and discussing postnatal care with the mother and other family members. It is during these antenatal visits that you will be able to collect information about the mother, the family and their social conditions, and you will also be able to give them your address and tell them how they can contact you whenever they need your assistance. During the pregnancy you will also have encouraged all mothers to deliver their baby in the Health Post or higher health facility if possible, but in rural Ethiopia over 94% of women will deliver at home. In those cases, you will have advised the family members to call you immediately when labour starts.

You are aware of these considerations from the Modules on *Antenatal Care* and *Labour and Delivery Care*.

If you are present at the delivery, you already know that you should stay with the mother for at least the first six hours after the birth. However if she gave birth without you, visit her as soon as possible, ideally within a few hours and no later than the first day. Before you go to the mother for the first postnatal visit, prepare the equipment and drugs that are essential to provide effective postnatal care. In this study session, you will learn about the equipment, the schedule and aims of the postnatal visits, the detailed steps of necessary preparation before you go, and what you should do when you reach the new mother's home.

Learning Outcomes for Study Session 4

When you have studied this session, you should be able to:

4.1 Define and use correctly all of the key words printed in **bold**. (SAQ 4.1)

4.2 Explain why the home visit is a critical opportunity to provide postnatal care and describe the current barriers to universal facility-based postnatal care in Ethiopia. (SAQ 4.2)

4.3 Describe the recommended schedule for postnatal home visits in uncomplicated cases and in cases that need specialized care. (SAQ 4.1)

4.4 Describe the preparations, equipment and drugs you should take before you leave for a postnatal home visit. (SAQ 4.3)

4.5 Describe the key steps to follow while conducting a postnatal home visit, including ways to increase confidence among family members in your professionalism and ability. (SAQ 4.3)

4.6 Explain the importance of using effective counselling skills to deliver health messages on postnatal care and know how to check that mothers have understood. (SAQ 4.3)

4.1 Home visits: the best opportunity to provide postnatal care

The ideal way to provide maternal and child health services is through health care delivered by skilled personnel in a health facility. However in Ethiopia there are many challenges to achieving this goal, such as shortage of trained health workers and facilities, and difficulties of access for rural populations to facility-based health care – including postnatal care.

It may take many years to solve all these challenges. Therefore, while working hard to strengthen the health system and improve access to facility-based care in rural communities, your current role as a Health Extension Practitioner is to focus on home visits for the delivery of postnatal care.

4.1.1 Barriers to facility-based postnatal care

Before you introduce a postnatal care (PNC) service in your community, you should first know about the barriers and fully understand why home visits remain the optimum PNC service delivery method in rural communities. The most important barriers hindering facility-based postnatal care are:

Figure 4.1 Distance is a major barrier to women being able to access facility-based health care.

- *Social and cultural barriers:* The tradition of keeping mothers and newborn babies indoors for a few days after the birth in a period of seclusion, and certain community rituals during this period, hinders mothers from going to health facilities for PNC. You should gradually explore these barriers in your locality and work together with the community leaders to change these practices.
- *Geographic barriers:* Walking across mountains, crossing rivers without bridges during the rainy season, and lack of roads, are some of the geographical barriers that hinder mothers from accessing health facilities for PNC (Figure 4.1).
- *Physical access:* Even though some mothers would prefer to go to a health facility, the nearest health centre or hospital is not within a reachable distance on foot or with available transport.
- *Financial barriers:* In Ethiopia, health services for labour and delivery and postnatal health services are considered to be free of charge, but in reality families have to pay for transport for the woman to the health facility, and for consumables including drugs and surgical gloves. These extra costs remain a major barrier to facility-based care.
- *Quality barriers:* After reaching the health facility, the mother and newborn may not get the expected quality of PNC service because of lack of adequately trained health workers, or shortages of equipment or drugs. Poor quality services reduce confidence in other mothers in the community, who are less likely to make the effort of going to the health facility.

■ An important secondary target for your PNC visits is to explore some of the social and cultural barriers mentioned above and work with community leaders to try to change these. Study Session 1 of this Module described a number of ways in which you might do this. Thinking back to that, now write a short action list of things you would try to do.

□ There are many things you might have included. Go back to Study Session 1, Section 1.6, and compare your answers with the ideas put forward there.

4.1.2 Evidence that home visits improve the effectiveness of PNC

Unfortunately, there is not much evidence from research on home PNC visits in Ethiopia to serve as a model of best practice that can be replicated in every region of the country. However, there are experiences and evidence from South Asia that show significant results in improving PNC coverage and reducing the maternal and neonatal mortality rate within a short period of time, using a home-based approach. Of course, there will be cultural differences between countries, but the results are encouraging. For example, studies conducted in India, Bangladesh and Pakistan have shown that home visits can reduce deaths of newborns by 30–61% in developing countries where there is high mortality. In particular, home visits improved coverage of the key high-impact and cost-effective **neonatal interventions** such as:

- Early initiation of breastfeeding
- Skin-to-skin contact between newborns and their mothers (Figure 4.2).
- Delayed bathing of the newborn until at least 24 hours after the birth
- Attention to hygiene, such as hand washing with soap and water
- Hygienic care of the baby's umbilical cord stump.

Figure 4.2 Skin-to-skin contact between mother and newborn supports bonding and helps to regulate the baby's temperature.

We will refer to each of these interventions later in this study session, or later in this Module. For now, you should simply note that although we do not have comparable Ethiopian research, these South Asian findings provide sufficient evidence of the key elements needed for effective home-based postnatal care in Ethiopia.

4.2 Schedule for postnatal home visits

Currently, there is enough evidence and full consensus on key elements of essential postnatal care to improve the health and survival of newborns and mothers. However, it is still difficult to find evidence-based recommendations that can be taken as a standard for the optimal *timing* and *frequency* of postnatal care contacts. Different South Asian countries have evaluated different timings, but almost all of them have visited mothers at least two to three times in the first week after the birth. In all cases the first visit was within 24 hours after the delivery of the baby.

As you already know from Study Session 1 of this Module, the first 24 hours and the first seven days are the crucial times when most mothers and newborns die. Based on the available information from the experiences of other countries, and the feasibility of applying each option in Ethiopia, the World Health Organization has recommended a schedule of visits for postnatal care. For all normal deliveries with an outcome of a full term and normal birth weight baby, the recommended frequency of home visits should be as follows:

1 The first visit should take place within 24 hours of the birth; whenever feasible do the visit as early as possible.

2 The second visit is on the third day after the birth.

3 The third visit is on the seventh day after the birth.

4 The fourth visit is during the sixth week after the birth.

The Module on *Integrated Management of Newborn and Childhood Illness* will teach you specific details of these additional postnatal visits.

Additional visits are needed on the fifth and tenth day after the birth in special circumstances, for example in:

- **preterm babies**, i.e. those delivered before 37 weeks of gestation
- **low birth weight babies**, i.e. those weighing less than 2.5 kg
- all sick mothers and newborn babies
- HIV-positive mothers.

Family members should also send for you to come immediately if a mother or the baby has a problem at any time during the postnatal period. Some families may be reluctant to bother you, so it is important that you always reassure each family that contacting you is the right thing to do if they become worried about the health of the mother or the baby.

4.3 Preparations for a postnatal home visit

4.3.1 Personal hygiene

Figure 4.3 Your appearance should give the new mother confidence in your professionalism.

Before you attend for a home visit, make sure you have taken care of your own personal hygiene with particular emphasis to your hair, nails and clothes. This instruction may seem very basic and simple, but a poor appearance and lack of hygiene can have a negative effect on your relationship with the community and families and can also easily affect the credibility of your work. Always wear simple but very clean clothes when you go for a home visit to provide PNC (Figure 4.3).

■ Why else is it important to emphasize hygiene? Think back to what you learned in some of the earlier study sessions in this Module.

□ Scrupulous attention to cleanliness and hygiene during birth and postnatal visits helps to prevent postpartum infections. If you stress your own personal hygiene it will be easier to persuade the mother and her family of the importance of cleanliness if her next baby is a home birth.

4.3.2 Equipment

Put the items listed in Box 4.1 into your bag, which should be specially prepared to carry supplies during home visits.

Box 4.1 Equipment for a postnatal home visit

- Salter scale to weigh the baby
- Blood pressure measuring apparatus
- Stethoscope
- Thermometer
- Wrist watch or timer, to help you count the mother's pulse and the baby's respiration rate
- Soap for washing your hands
- A clean towel to dry your hands
- Vitamin A capsules
- Iron and folate tablets
- Tetracycline eye ointment
- Counselling card and screening card for PNC.
- Record book, referral form and pen.

You will be given the counselling and screening cards and referral forms for your area. There may be variations in the exact wording and appearance in different regions, but they all cover essentially the same points.

4.4 Key steps to follow while conducting a home visit

To creating a caring environment and to develop confidence in your ability among the family members, you should apply the following practices:

- Know and show that you respect the local beliefs, culture and norms during communication.
- Greet everyone using the local terms.
- Explain the reasons for the visit to the mother and family members, using simple words in local language.
- Allow enough time for general conversation and confidence building.
- Act with confidence, and speak confidently with a gentle tone and voice.
- Be respectful to every member of the family.

Ask about the well being of the mother and the baby and discover whether either of them have any health problems, or if there is any difficulty in making the adjustments to having a new baby in the family. Use the standard screening approach: ask, check, classify and take action. The most critical task is to use the screening cards to help you to identify any life-threatening conditions or general danger signs in postpartum mothers and newborns. You already learned how to do this in Study Sessions 1 and 3.

Using the counselling cards, counsel the mother about her own health and the baby's health and condition. Always check her understanding after counselling (see Section 4.5 below).

Complete the postnatal home visit form and make an appointment for the next visit. Thank everyone for making you welcome in their home.

4.5 Counselling mothers during the postnatal period

To standardize the counselling of mothers during home visits for PNC, you should use the counselling cards issued by your Regional Health Bureau. When counselling mothers, it is always important to use the following skills:

- *Ask and listen:* Find out what the mother is already doing for her child and herself by asking thoughtful questions and listening carefully to her answers. Then you will know what she is doing well, and what practices need to be changed.
- *Praise:* Praise the mother for something helpful she has done. It is likely that she is doing something helpful for herself and the newborn; for example, she may be eating a good diet, breastfeeding the baby exclusively, and keeping herself and her baby clean. Be sure that the praise is genuine, and only praise actions that are indeed good for her health and that of her baby.
- *Advise:* Limit your advice to what is relevant to the mother at this particular time. Too much advice, or advice given at the wrong time, can be overwhelming and the mother may ignore it. Use language that the mother will understand. If possible, use pictures, screening cards, or real objects to help explain clearly what you want her to do, know or understand.
- *Check understanding:* When you explain something to the mother, ask questions to find out what she understands and what needs further explanation (Figure 4.4). Avoid asking leading questions (that is, questions which suggest the right answer to her even if she does not understand); also avoid questions that can be answered with a simple yes or no, because they do not help you to check exactly what the mother has understood.

Figure 4.4 Check carefully that the mother has understood your health messages.

The critical maternal health issues that you should address during counselling in postnatal home visits are shown in Box 4.2.

Box 4.2 Health issues to counsel the mother on

- Identification of general danger signs
- Emotional support
- Support for maternal nutrition
- Establishing optimum breastfeeding
- Hygiene and infection prevention
- Support for family planning
- Special care for HIV-infected mothers
- Early care seeking for the mother and the newborn baby if problems arise
- Routine care of a normal baby.

You will learn about these issues in more detail in later study sessions in this Module.

■ You are on your second visit to a mother of a newborn baby delivered at home. She tells you the baby is crying a lot, that she has had little sleep, and is feeling sore and very run down. What do you do?

□ Obviously you need to find out more. Is the mother finding it difficult to feed the baby – might she have mastitis? Have mother or baby got an underlying infection, e.g. problems with the umbilical cord stump in the baby, or a perineum wound infection in the mother? Is she getting the extra nutrition she needs, and are her family and community supportive? If your initial questioning (and examination if necessary) satisfies you that there is nothing seriously wrong, then you can advise her accordingly. If you think there may be something more serious, you should consider referral.

Summary of Study Session 4

1 The major barriers to facility-based PNC are social and cultural, physical, geographic, quality and financial barriers. The home visit-based approach is the one that addresses all these barriers most effectively in rural communities.

2 The schedule of PNC home visits for uncomplicated mothers and newborns is: first visit within 24 hours of the birth, and visit again on day three and day seven, and during the sixth week.

3 For all sick mothers and newborns, HIV-positive mothers, preterm and low birth weight babies, you should also visit on day five and day ten.

4 When you conduct a home visit for PNC, always wear simple but very clean clothes, and pay attention to your personal hygiene.

5 Don't forget to pack the essential equipment and drugs necessary to provide PNC.

6 Be respectful to everyone in the home when you visit; act confidently and communicate clearly using local language and terminologies.

7 Use the cards and forms provided to ensure that you cover all aspects of screening and counselling, especially detecting danger signs in the mother and newborn.

8 When you counsel mothers, you should ask and listen, praise positive behaviours, limit advice to what she needs to know at each visit, and check that she has understood your messages.

Self-Assessment Questions (SAQs) for Study Session 4

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 4.1 (tests Learning Outcomes 4.1 and 4.3)

You are planning the postnatal care of a mother with a *preterm* baby who is also a *low birth weight* baby. Define these classifications. Then set out your planned schedule of care indicating how (and why) it differs from the schedule of care that you would plan for a normal weight, full term baby.

SAQ 4.2 (tests Learning Outcome 4.2)

In an ideal world, all Ethiopian mothers would go to a high quality health facility for their postnatal care. What are the main reasons why this is not currently feasible and why is the home visit therefore so important?

SAQ 4.3 (tests Learning Outcomes 4.4, 4.5 and 4.6)

You are planning a visit to Abrihet. She is a young mother who had her first baby 10 days ago. You have visited her before, but she is very shy and it is taking you time to get to know her and her family. You are getting ready to leave and wondering how you can gain everybody's confidence.

(a) While packing your bag, you think about checking whether you have everything you need for a postnatal visit and you write a quick reminder to yourself for next time. What did you write?

(b) Then you also write down a few further thoughts about things to remember when you meet Abrihet next time. What did you write?

Study Session 5 Routine Postnatal Care for the Mother

Introduction

Postnatal care (PNC) for the mother should respond to her special needs, starting within an hour after the delivery of the placenta and extending through the following six weeks. The care includes the prevention, early detection and treatment of complications, and the provision of counselling on breastfeeding, birth spacing, immunization and maternal nutrition. To standardize the PNC service, you are advised to use the screening, counselling and postnatal care cards. These cards ensure that you have covered all the essential steps in every home visit.

In this study session we are going to focus primarily on the routine checks you need to do to make sure the mother is recovering well after the birth, both physically and emotionally. We will also advise you on how you should counsel her on taking care of her health and recovery, maintaining her personal hygiene to reduce the risk of infection, and what she should eat – especially if she is breastfeeding.

Learning Outcomes for Study Session 5

When you have studied this session, you should be able to:

5.1 Define and use correctly all of the key words printed in **bold**. (SAQs 5.1 and 5.2)

5.2 Describe the physical checks you should do on the postnatal mother soon after the birth, and at subsequent postnatal visits, to ensure that she is recovering well. (SAQ 5.2)

5.3 Explain how you would counsel the mother on good nutrition in the postnatal period and what micronutrient supplementation you would give her. (SAQ 5.2)

5.4 Describe the types of support for the postnatal mother that you would encourage her partner and other family members to give her, including seeking care promptly if they detect possible danger signs. (SAQ 5.2)

5.1 Routine core postnatal care for the mother

The routine care provided to the mother during the postnatal period is mainly preventive measures targeted towards the early detection of the common causes of maternal morbidity and mortality in rural communities. During every postnatal visit, you should do the following routine activity, even when the mother does not complain of anything.

5.1.1 Check the mother's vital signs

Check the mother's **vital signs**, i.e. her temperature, pulse rate, and blood pressure, and make sure they are within the normal range. Straight after the birth, check her pulse and blood pressure at least once every hour, and her temperature at least once in the first six hours.

You learned how to check vital signs in Study Session 9 of the *Antenatal Care* Module.

- What should the normal vital signs be if the mother is recovering well from the birth?

- Her temperature should be close to 37°C; her pulse rate should be between 60 to 80 beats per minute when she is resting quietly; her *systolic* blood pressure (the top number, which measures the pressure when her heart contracts) should be 90–135 mmHg, while her *diastolic* blood pressure (the bottom number, which measures the pressure when her heart relaxes) should be 60 to 85 mmHg.

If her blood pressure is too low and falling, and her pulse rate is too fast and rising, she is going into shock. The most likely cause is a life-threatening haemorrhage. If there are no signs of bleeding from the vagina, she may be losing blood internally.

Refer a woman urgently who is showing signs of shock and/or postpartum haemorrhage.

5.1.2 Check if her uterus is contracting normally

Palpate (feel) her abdomen to check contraction of the uterus to make sure it is firm. Immediately after the birth, you should be able to feel it contracting near the mother's umbilicus (belly button), and it gradually moves lower in her pelvis over the next two weeks. Check her uterus every 15 minutes for the first two hours after birth and every 30 minutes for the third hour. If possible, check every hour for the following three hours. If the uterus is hard, leave it alone between checks. If it feels soft, rub the abdomen at the top of the uterus to help it to contract. Teach the mother to do this for herself (Figure 5.1).

Figure 5.1 The uterus can be encouraged to contract after the birth by rubbing the abdomen.

The drugs you gave the mother to help expel the placenta and prevent bleeding (e.g. misoprostol or oxytocin) will also help the uterus to contract. So will breastfeeding her baby. The mother may also need to urinate if her bladder is full, because this can prevent the uterus from contracting properly. Check the contraction of her uterus at every postnatal visit.

Figure 5.2 Washing the mother's genital area is part of core postnatal care at the first visit.

5.1.3 Clean the mother's belly, genitals and legs

Help the mother clean herself after the birth. Change any dirty bedding and wash blood off her body. Always wash your own hands first and put on surgical gloves before you touch the mother's genitals, just as you did before the birth. This will protect her from any bacteria that may be on your hands. Clean the mother's genitals very gently, using soap and very clean water and a clean cloth (Figure 5.2). Do not use alcohol or any other disinfectant that might irritate her delicate tissues. Wash downward, away from the vagina. Be careful not to bring anything up from the anus toward the vagina. Even a piece of stool that is too small to see can cause infection.

5.1.4 Check for heavy bleeding (haemorrhage)

After the birth, it is normal for a woman to bleed the same amount as a heavy monthly period. The blood should also look like monthly blood — old and dark, or pinkish. At first, the blood comes out in little spurts or gushes when the uterus contracts, or when the mother coughs, moves, or stands up, but the flow should reduce over the next two to three days and become the more watery reddish discharge known as lochia (Study Session 2).

Very heavy bleeding is dangerous. To check for heavy bleeding in the first six hours after birth check the mother's pads often — 500 ml (about two cups) of blood loss is too much. If she soaks one pad per hour, it is considered heavy bleeding. If the mother is bleeding heavily, and you cannot stop it, take her to the hospital. Watch for signs of shock. Remember that postpartum haemorrhage is a major cause of maternal mortality and it can happen at any time in the postnatal period – though it is most common in the first seven days.

5.1.5 Check the mother's genitals for tears and other problems

Use a gloved hand to gently examine the mother's genitals (Figure 5.3) for tears, blood clots, or a haematoma (bleeding under the skin). If the woman has a tear that needs to be sewn, apply pressure on it for 10 minutes with a clean cloth or pad and refer her to the health centre. If the tear is small, it can probably heal without being sewn, as long as it is kept very clean to prevent wound infection.

Figure 5.3 Gently open the vulva to examine the genitals for signs of injury.

Ask her to rest as much as possible and tell her she should not climb up or down steps or steep hills. Someone else should do the cooking and cleaning for the family for a few days. To speed healing, she should also eat plenty of healthy food, keep the genital area clean (washing it with water after using the latrine) and cover it with a clean cloth or pad.

Bleeding under the skin (haematoma) or pain in the vagina

Sometimes the uterus gets tight and hard and there does not seem to be much bleeding, yet the mother still feels dizzy and weak. If this happens, she may have bleeding under the skin in her vagina called a haematoma (Figure 5.4). The skin in this area is often swollen, dark in colour, tender and soft.

Figure 5.4 A haematoma is a painful collection of blood under the skin in the genital area.

Although a haematoma is painful, it is usually not serious unless it gets very large. If the haematoma is growing, press on the area with sterile gauze for 30 minutes or until it stops growing. If the mother has signs of shock, treat her for shock and take her to the nearest health facility so that the haematoma can be opened and the trapped blood can be let out.

Prolapsed cervix

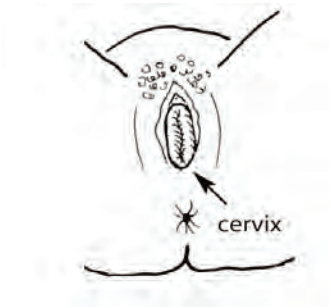

Figure 5.5 The prolapsed cervix can be seen at the opening of the vagina.

Check to see if the cervix has prolapsed (dropped down to the vaginal opening; Figure 5.5). This problem is not dangerous, and the cervix will usually go back up inside the mother in a few days. Help the mother to raise her hips so that they are higher than her head. Ask her to do squeezing exercises with the muscles of her vagina and pelvic floor at least four times a day.

If the cervix stays at the vaginal opening for more than two weeks, the mother should be referred. A cervix that stays prolapsed can cause problems if the woman has another child.

5.1.6 Help the mother to urinate

Figure 5.6 The mother can squat over a bowl to urinate if this is easier for her to manage.

A full bladder can cause bleeding and other problems. A mother's bladder will probably be full after the birth, but she may not feel the need to urinate. Ask her to urinate within the first two to three hours. If she is too tired to get up and walk, she can squat over a bowl on the bed or on the floor (Figure 5.6). She can also urinate into a towel or thick cloth while lying down. If she cannot urinate, it may help to pour clean, warm water over her genitals while she tries.

If the mother cannot urinate after four hours, and her bladder is not full, she may be dehydrated. Help her to drink fluids. If her bladder is full and she still cannot urinate, she needs to have a catheter inserted to drain her bladder. If you have been trained to do this, catheterise her as shown in Study Session 22 of the *Antenatal Care* Module and your practical skills training. Then refer her to the nearest health centre or hospital.

■ What is the single most important thing you should always do before examining a woman who has just given birth?

□ Always wash your hands thoroughly to minimize the chance of transferring any bacteria that may be on them. If you are examining her genital area, then after washing your hands put on surgical gloves.

5.2 Nutrition after childbirth

5.2.1 Eating and drinking in the first few hours

Figure 5.7 Encourage her to eat soon, within the first few hours, and to drink often.

Most mothers are ready to eat soon after the birth, and it is good for them to eat any kind of nutritious food they want. If a new mother is not hungry, she should at least have something to drink. Fruit juice or *atmit* tea is good because it gives energy (Figure 5.7). Many women want something warm to drink, like tea. Some juices, like orange juice, also have vitamin C, which can help healing. (But she should avoid soda pop like Coke, which is full of sugar and chemicals but has no nutrition.)

If the mother cannot (or will not) eat or drink within two to three hours after the birth:

- She may be ill. Check for bleeding, fever, a hypertensive disorder, or other signs of illness that may be taking away her appetite.
- She may be depressed (sad, angry, or without any feelings). Encourage her to talk about her feelings and needs. (Postpartum 'blues' were described in Study Session 3.)

- She may believe that certain foods are bad to eat after a birth. Gently explain to her that she must eat to recover from the birth and to be able to care for her baby.

5.2.2 Counselling on postnatal nutrition

After delivery, women's routine food intake should be increased to cover the energy cost of breastfeeding and for her to recover her normal energy and health. She should eat about 10% more than before she was pregnant if she is not moving around much or doing her usual work, and about 20% more if she is physically active. In practical terms, she is advised to take at least one or two additional meals every day. Nutritional counselling should include:

- Advising the mother to eat a variety of high protein, high energy foods (as much as the family can afford), such as meat, milk, fish, oils, nuts, seeds, cereals, beans and cheese, to keep her healthy and strong. Your nutritional advice should depend on what is available at home and on what they eat as their staple diet. The most important thing is to tell them that she needs to eat more than usual.
- Exploring whether there are important cultural taboos about eating foods which are really nutritionally healthy. For example, in some cultures it is considered bad to eat high-protein foods, spicy foods, or cold foods after a birth. Respectfully advise against these taboos and tell the woman that there is no nutritious food item that needs to be restricted.
- Talk to family members, particularly the partner and/or the mother-in-law, and encourage them to help ensure the woman eats enough of a wide variety of foods and avoids hard physical work.

Many rural families cannot afford to buy extra food for new mothers. Study Session 14 in the *Antenatal Care* Module gives advice on eating well with little money.

Advise the mother to take micronutrient supplementation regularly to prevent deficiency disorders and anaemia, as we describe next.

5.2.3 Preventing iodine deficiency

Adding iodine to salt is called iodination and using *iodised salt* in cooking is recommended in the postnatal period, especially in areas of the country where **goitre** is common as a result of too little iodine in the diet (Figure 5.8). Iodination of salt has been shown to be a highly effective means of preventing iodine deficiency. Giving iodised oil by mouth or injection can be used as an interim measure in endemic regions where provision of iodised salt may not be feasible. Encourage the mother to use iodised salt every day during the postnatal period, if it is available. Otherwise, a dose of iodised oil can be given to the mother soon after delivery if goitre is common locally.

Figure 5.8 Goitre is a swelling in the front of the neck, caused by enlargement of the thyroid gland.

5.2.4 Preventing vitamin A deficiency

Counsel the mother on prevention of vitamin A deficiency, which not only threatens her sight, but is a major cause of childhood blindness in babies fed by vitamin A-deficient mothers. Vitamin A in the diet increases resistance to infection and is especially important in producing nourishing breast milk.

■ Can you recall some foods that are rich in vitamin A? (You learned about this in the Modules on *Antenatal Care* and *Nutrition*.)

□ Yellow vegetables like carrots, yellow fruits like mangoes, and dark green leafy vegetables such as cabbage and spinach have a lot of vitamin A. So do liver, fish liver oil, milk, eggs and butter.

Remember that the maximum dose of vitamin A for pregnant women is 500,000 IU; beyond this dose is toxic

Part of routine postnatal care is to check if a vitamin A capsule has been given to the mother. The recommended dose for breastfeeding mothers is one 200,000 IU (International Units) vitamin A capsule once after delivery or within six weeks of delivery. Explain that vitamin A will help her to recover better and that the baby will receive the vitamin through her breast milk. Explain to her if she feels nauseated or has a headache after taking the capsule, it should pass in a couple of days.

5.2.5 Preventing iron and folate deficiency

Pre-existing anaemia can be aggravated by the effects of maternal blood loss and is one of the major contributors to maternal mortality in the postnatal period. Encourage mothers to eat foods rich in iron (e.g. dark green leafy vegetables, beans, peas and lentils, poultry and red meat, organ meats such as liver and kidney, and whole grain products), and foods which enhance iron absorption (fruits and vegetables rich in vitamin C). Tell her to take one tablet containing 60 mg of iron and 400 micrograms of folate (folic acid) every day for three months after the birth, and give her a three months' supply. (In some places you may have separate iron and folate tablets, but the dosage is the same.) Advise her to store the tablets safely where children cannot easily find them.

- ■ Good routine postnatal care for the mother includes counselling her about her nutritional needs. What will you advise her?
- □ That she needs to begin drinking and eating in the first few hours after the birth; that breastfeeding means she will need to eat more (especially high protein foods); if she is in an area where goitre is common, encouraging her to use iodised salt; explaining to her the value of vegetables and other foods which are rich in vitamin A, iron or folate.

5.3 Emotional support for the mother

When you arrive at the house, the first thing you need to ensure is that the mother and baby are not isolated from other family members for cultural reasons. You may have solved this problem during earlier conversations with the family, but during every visit make sure that the mother has all the necessary social support and that family members are visiting her regularly. Together with the community leaders you should try to bring an end to the practice of seclusion, keeping the new mother and baby away from social relations, if it is still practiced in your community. Instead, advise and explain to the woman to always have someone near her for the first 24 hours and family members should be in regular contact every day during the first week to respond quickly to any danger signs in her condition.

Figure 5.9 Fathers can look after the newborn baby while mothers get some rest.

5.3.1 Fathers and other family members can help

Encourage the partner to be around the mother at least for the first week of the postnatal period to provide emotional support and to take care of her and the baby (Figure 5.9). In the Ethiopian context, caring for the new mother is usually the responsibility of the grandmother and/or the mother-in-law. As they have already gone through all of these experiences, they are good at providing physical and emotional support to the mother and her baby. They can free her from the routine domestic chores, and this should be encouraged.

5.3.2 When the mother isn't interested in her baby

Some mothers do not feel good about their new babies (Figure 5.10). There can be many reasons for this. The mother may be very tired, or she may be ill or bleeding. She may not have wanted a baby, or may be worried that she cannot take care of one. As you learned in Study Session 3, she may be very depressed: signs of this are if the woman seems sad, quiet, and has no interest in anything. Also watch for other signs of abnormal behaviour which are different from her usual way of behaving.

Figure 5.10 A mother who rejects her baby may be suffering from postnatal depression.

What to do if you are concerned about a mother's lack of interest in her baby:

- Check her carefully for signs of blood loss or infection, or a hypertensive disorder. She may be ill, rather than depressed or anxious.
- You might talk to the mother about her feelings, or you may feel it is better to leave her alone, and to watch and wait.
- If you know that she was seriously depressed after a past birth, talk to the family about giving her extra attention and support in the next few weeks. Usually this depression passes in time, but sometimes it takes a few weeks or even months, and you may need to refer her for additional assessment and treatment. If she demonstrates any of the signs of **postpartum psychosis** (Box 5.1), refer her urgently.
- Make sure someone in the family takes care of the new baby if the mother cannot or will not.

Box 5.1 Signs of postpartum psychosis

This condition is rare (affecting about one in 1,000 women), but it is very serious and the mother should be referred urgently for specialist treatment if she is experiencing any of the following symptoms:

- Hearing sounds or voices when no-one is there
- Seeing things that are not real
- Feeling as though her thoughts are not her own
- Feeling afraid that she might harm herself or her baby
- Rapid weight loss and refusal to eat
- Going without sleep for 48 hours or more.

Postpartum psychosis can be life-threatening, so treat it as an emergency. You will learn more about psychosis in the Module on *Non-Communicable Diseases, Emergency Care and Mental Health.*

5.4 Encouraging care-seeking behaviour

Encourage the mother, her partner and other family members to seek care immediately if they notice any of the danger symptoms, either in her physical or her emotional state. Delays are a very important cause of maternal and neonatal deaths in the early postnatal period and include:

- Delay in early recognition and decision making to seek help, due to wrong beliefs and cultural taboos. Families may also be afraid of the costs involved if they access the health system.
- Delay in getting transportation to the Health Post or higher level health facility, or getting a health worker to visit the house.
- Delay in receiving appropriate care once in the health facility, due to inadequate staffing or lack of equipment or supplies.

Empowering the mother and the family on early care seeking is fundamental in delivering optimum postnatal care. You should try to develop the capacity of the community to cope with any emergency condition that may occur during the postnatal period. Particularly, attention should be given in every village to designing an emergency evacuation system for mothers and newborns with life-threatening conditions.

Summary of Study Session 5

In Study Session 5 you have learned that:

1 The focus for postnatal maternal care is on early identification of the general danger signs through regular checks on the mother's temperature, pulse and blood pressure, physical examination for contraction of the uterus, bleeding, damage to the genital area, infection or hypertensive disorders, followed by prompt referral.

2 The core care that you need to provide to the postnatal mother includes measuring her vital signs at every visit, washing her genital area and checking for tears, blood clots, cervical prolapse and bleeding, helping her to urinate, eat and drink, and giving her micronutrient supplementation (vitamin A, iron and folic acid).

3 Counselling the mother, her partner and other family members during the postnatal period focuses on empowering them to recognize the general danger symptoms and seek appropriate care quickly, improve her nutrition to support breastfeeding and recovery, and give her emotional support and help with daily living.

4 Seclusion of mothers and babies in the postnatal period is not good for the mother's mental health and may leave her at risk of neglect, feeling isolated and depressed, and danger signs may be missed if no-one is with her.

Self-Assessment Questions (SAQs) for Study Session 5

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 5.1 (tests Learning Outcomes 5.1 and 5.2)

You arrived too late to deliver a baby which was born two hours before you got there. What do you do?

SAQ 5.2 (tests Learning Outcomes 5.1, 5.3 and 5.4)

Good nutrition and support for the postnatal mother are key aspects of good postnatal care. Complete Table 5.1 to show, for each problem in the first column:

- What you hope the mother or her family would do.
- What you would do to ensure the mother has all she needs.

Table 5.1 Care and support for new mothers.

Problem or potential for a problem if not addressed	**Actions the mother or her family can do to help her**	**Treatments or other actions that you can provide**
Goitre (caused by iodine deficiency)		
Not eating or drinking in the first few hours		
Lack of energy (maintaining energy when breastfeeding)		
Vitamin A deficiency		
Anaemia		
Seclusion of mother and baby		
Lack of interest in the baby		
Support for the mother		

Study Session 6 Routine Screening of Newborns for Life-Threatening Conditions

Introduction

In this study session, we return to the general danger signs that the newborn may be at risk, which were already outlined briefly in Study Session 1. This time we focus on assessment and classification of the danger signs in much more detail, and describe the actions that you need to take to prevent and treat common neonatal problems, particularly infections of the respiratory system, eyes and cord stump, and life-threatening conditions such as jaundice and tetanus. Involving the mother in this process is a key part of postnatal care. Her vigilance and willingness to contact you if she is concerned about her baby's condition can save her baby's life.

Learning Outcomes for Study Session 6

When you have studied this session, you should be able to:

6.1 Define and use correctly all of the key words printed in **bold**. (SAQs 6.1, 6.2 and 6.3)

6.2 State the important questions that you need to ask the mother in order to check her newborn baby's condition. (SAQ 6.3)

6.3 Identify the general danger signs in the newborn and describe the actions to be taken. (SAQ 6.2)

6.5 Describe how to prevent or reduce the risk of infection in newborns. (SAQ 6.3)

6.1 Your first actions before assessing a newborn

Before you start assessing a newborn baby, take off any rings, bracelets or other jewellery, and wash your hands thoroughly with clean water and soap for at least two minutes. This is one of the most important infection prevention actions you can do. Make sure you take your own soap and a clean towel to every postnatal visit, and follow the instructions in Figure 6.1.

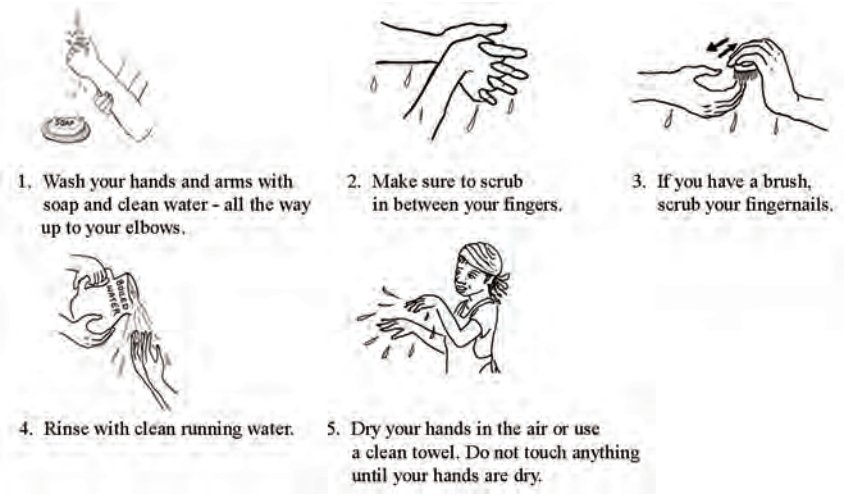

Figure 6.1 How to do a thorough hand wash before a postnatal assessment.

You should also show the mother how to wash her hands thoroughly and remind her to do it before she breastfeeds, dresses or undresses the baby, washes or bathes it, after changing its diaper and disposing of the waste, after she has changed her own pads to catch the bloody vaginal discharge, after using the latrine, and before or after preparing food.

While you are washing your hands, ask the mother to start breastfeeding. (We will teach you the details of correct breastfeeding in the next study session). This will help you to check if there is any problem in breastfeeding and it helps to keep the baby calm during the assessment period. If the baby cries while you are assessing him or her it may give you inaccurate results for the assessment findings. Therefore, always try to keep babies calm while assessing them.

6.2 Screening the newborn for general danger signs

During the first home visit, the most important task is to screen all newborn babies for the presence of **general danger signs in newborns** (Box 6.1). These were already briefly listed in Study Session 1. Remember always to be vigilant, observant and gentle while assessing and managing a newborn baby, especially during the first few days of life. And always be alert to the potential presence of the key danger signs during the whole of the time you are with the mother and newborn.

Feeding problems are covered in detail in Study Session 7.

Box 6.1 General danger signs in newborns

- History of difficulty feeding, or unable to feed now; ask the mother about the baby's feeding pattern.
- History of convulsion, or convulsing now; ask the mother, has the baby had any fits?
- Newborn seems lethargic or unconscious.
- Movement only when stimulated.
- Fast breathing.
- Severe lower chest in-drawing.
- Fever.
- Hypothermia (baby is cold to the touch).
- Baby developed yellowish discoloration before 24 hours of age; jaundice observed on the palms of the hands and soles of the feet.
- There is swelling of the eyes or eye discharge.
- Umbilicus is draining pus.
- More than 10 pustules (spots) are found on the skin.

6.2.1 How can you recognize a convulsion in a newborn?

A convulsion (fit) in a newborn baby may present as:

- Twitching of part of the body (e.g. a hand), one side of the body, or the whole body (a generalized fit).
- Extension (spasm) of part of the body (e.g. an arm) or the whole body.
- Abnormal movements (e.g. mouthing movements, turning the eyes to one side or cycling movements of the legs).
- Apnoea (long periods without breathing).

Apnoeia is pronounced 'app-nee-ah' and is a very dangerous sign. If you suspect that a newborn has had a convulsion, or you see signs of it during a visit, refer the mother and baby urgently to a higher level health facility.

It is often very difficult to recognise a convulsion in newborns because they usually do not have a generalised extension of the body and limbs, followed by jerking movements, as seen in convulsions in older children and adults. So it is very important to be alert for any unusual signs, even if they are not very obvious at first.

6.2.2 Is the newborn lethargic or unconscious?

An unconscious baby should be referred to a health facility immediately.

Look at the young newborn's movements. Does it move less than you would expect from a normally active baby? Does the baby only move when stimulated to do so (is it lethargic)? If the mother has had a previous baby, or if there are other experienced mothers in the house, ask them if they think this baby is lethargic. It is a danger sign if it doesn't seem to be moving or responding to stimuli normally.

6.2.3 Is the baby breathing too fast?

Urgently refer a newborn who appears to be in respiratory distress.

Count the baby's breaths in one minute. Is it breathing normally or too fast? **Fast breathing** is a respiration rate equal to or greater than 60 breaths per minute. The normal breathing in a newborn is 40–60 breaths per minute, which you should check twice for one minute each time. Look for severe **chest in-drawing**: this means that while the baby is breathing in, the area of its lower ribs on each side 'sucks' inwards deeply (Figure 6.2).

Figure 6.2 Chest in-drawing is a sign that a newborn is in respiratory distress.

6.2.4 Is the baby's temperature normal?

Measure the baby's temperature, preferably using a rectal thermometer inserted gently into the baby's rectum through the anus, or use a normal thermometer held closely under the baby's armpit (this is called the *axillary* temperature). Remember that the thermometer must be very clean before you use it. Wash it before and after use in clean water and then swab it with alcohol or another antiseptic solution. If you do not have a thermometer, use your hand to feel the baby's head and body for fever, or low body

temperature, by comparing how the baby feels with the temperature of your own or the mother's skin.

Refer a baby with a fever or hypothermia if its temperature does not return to normal quickly

Fever is defined as a temperature equal to or greater than 37.5ºC. If you suspect that the baby may be too hot because it has been kept too warm by the mother, cool the baby by unwrapping its blankets and measure the temperature again after 15 minutes. If the temperature does not return to normal quickly, or if it is above 37.5ºC, refer the baby immediately. A high temperature is a danger sign for infection, which must be treated quickly. There is more on neonatal infections in Section 6.4 of this study session.

Hypothermia is defined as a temperature of equal to or less than 35.5ºC, but this is dangerously low for a newborn. If the baby feels chilled, don't wait for its temperature to fall lower than 36.5ºC before taking fast action to warm it. Remove the clothes from its body and place it in skin-to-skin contact with the mother, between her breasts and inside her clothes (Figure 6.3). Wrap them both well with blankets, place a cap or shawl to cover the top and back of the baby's head, and if the baby is not wearing socks, wrap its feet (this is called Kangaroo Mother Care, as you will see in Study Session 8.). If the baby's temperature does not start rising towards normal within 30 minutes, or if it is below 35.5ºC, or the baby's lips are blue, refer the baby immediately.

Figure 6.3 Skin-to-skin contact with the mother is the best way to warm a chilled baby.

After assessing the newborn baby's vital signs as described above, the next step is to assess for danger signs of newborn illnesses.

6.3 Does the baby have jaundice?

Signs of jaundice are a yellow discoloration of the skin and of the sclera (white of the eye). However the sclera is often difficult to see in newborns, so the skin colour is used to detect jaundice. First, ask the mother if she noticed any yellowish discoloration of the baby's skin before it was 24 hours of age. Then look for yourself and also check if the palms of the baby's hands and the soles of its feet are yellow. **Jaundice** is caused by excess deposits of a yellow pigment called bilirubin (the condition is also called hyperbilirubinaemia, 'too much bilirubin'). It appears in the skin when too much *haemoglobin* (the oxygen-carrying protein) in the red blood cells is broken down, or when the liver is not functioning well and cannot deal with the bilirubin, or when the bile excretory duct is obstructed. (Bile is a substance produced by the bile gland which helps in the breakdown of bilirubin).

In untreated cases, the excess bilirubin will have serious effects on the newborn baby's brain and can be fatal; if left untreated, it can have long-term neurological complications (complications related to abnormalities in the central nervous system, for example partial paralysis, growth retardation or learning difficulties).

6.4 Infection in the newborn

Infection is common in newborn babies and neonatal infection is one of the major causes of their deaths.

■ Can you remember (e.g. from Study Session 1) why there is a higher risk of infection in newborns than in older children or adults?

□ A key reason is the immaturity of the newborn's immune system, which takes several months after birth to develop sufficiently to give much protection from infection.

This means that newborns are especially vulnerable to exposure to infectious agents during pregnancy, delivery and in the home after the birth. The most common risk factors for newborn infection are prolonged premature rupture of the fetal membranes (PROM), prolonged labour or obstructed labour, and pre-existing lower genital tract infection in the mother. We first consider eye infections in newborns.

PROM was the subject of Study Session 17 in the *Antenatal Care* Module; prolonged or obstructed labour was covered in Study Session 9 of the *Labour and Delivery Care* Module.

6.4.1 What are the signs of eye infection in newborns?

If a mother has the bacteria in her genital tract that cause sexually transmitted infections (particularly chlamydia or gonorrhoea), the germs can get into the baby's eyes during delivery and may cause blindness. Look for swelling of the eyelids, redness of the inside part of the eye, or discharge from the eye. You can give prophylaxis (preventive treatment) immediately the baby is born by using tetracycline or another approved eye ointment, as shown in Figure 6.4. But if the newborn develops an eye infection in the postnatal period, you should refer him or her to the hospital or health centre for specialised assessment and treatment.

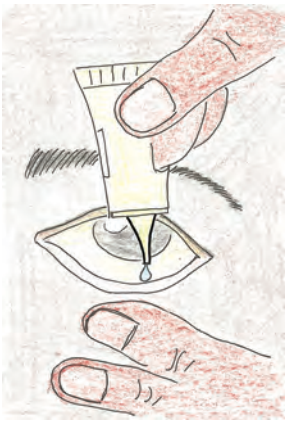

Figure 6.4 Routine eye care for newborns is to apply tetracycline ointment once immediately after the birth to prevent eye infections.

6.4.2 What are the signs of an infected umbilical cord stump?

Look at the umbilicus: is it red or draining pus? Infection of the umbilical cord stump presents with the following danger signs:

- An offensively smelling cord with a discharge of pus.
- A cord that remains wet and soft and is not drying properly.
- Redness of the skin around the base of the cord.

If any signs of an infected umbilical cord stump are present, refer the newborn to the hospital or health centre. Do not use antibiotic powder. Do not put aspirin or other home remedies on the cord.

With good preventative cord care, infection of the umbilical cord should not occur. Prevention consists of proper hand washing, good personal hygiene of the mother and the baby, using clean sterile thread to tie the cord and sterile instruments to cut it, and keeping the cord stump clean and dry.

6.4.3 What are the signs of skin infection?

The two common forms of skin infection in the newborn are:

If you find signs of impetigo or monilial rash you should refer the newborn to the hospital or health centre

- *Impetigo* caused by *Staphylococcus* bacteria in the skin, which presents as pus-filled blisters (**pustules**) usually seen around the umbilicus or in the nappy area. Are there many pustules? More than 10 is a general danger sign.
- *Monilial rash* is caused by a fungus (*Candida* or *Monilia* species). This almost always occurs in the nappy area and presents as red, slightly raised spots, and is most marked in the skin creases.

In contrast, a *nappy rash* due to irritation of the skin by stool and urine, usually affects the *exposed* areas of the skin and not the creases. Improved hygiene, washing the baby often with clean warm water and allowing the skin to dry completely, is usually enough to resolve nappy rash unless it becomes infected.

A *sweat rash*, due to excessive sweating, may look like a skin infection, but it is not. It presents as small, clear blisters on the forehead or a fine red rash on the neck and trunk. Reassure the mother that this is not a serious problem and advise her to wash the baby with warm water and prevent overheating.

Refer a baby with signs of tetanus urgently to the nearest hospital or health centre. On the way protect the baby from hypothermia and give breast milk.

6.4.4 What is neonatal tetanus?

Tetanus in the newborn is caused by bacteria (*Clostridium tetani*) that infect dead tissues such as the umbilical cord stump. Tetanus bacteria are present in soil and animal dung, which may infect the cord or other wounds, for example during some harmful traditional practices. These bacteria produce a powerful toxin (poison) that affects the nervous system. Suspect tetanus if you observe the following signs in the newborn;

- Increased muscle tone (spasm), especially of the jaw muscles and abdomen.
- Generalized muscle spasms and convulsions, often precipitated by stimulation such as handling or loud noises. The baby may arch backwards during a spasm (Figure 6.5).
- Most babies with tetanus will develop severe breathing difficulty and even with good medical care many will die.

Figure 6.5 The typical muscle spasms of a newborn with tetanus infection.

6.4.5 How can you prevent infection in newborns?

The best way of preventing infection is to deliver a baby at the health facility using clean and sterile instruments by skilled personnel. But this is often impossible in rural Ethiopia, where most births take place at home; so your role in reducing neonatal infection is absolutely vital. There are many simple

ways in which infections can be prevented in newborns, and you should know a lot about them from the earlier study sessions in this Module:

1 Avoid overcrowding at home and keep normal newborns with their mothers whenever possible. Do not separate mothers and their newborns unless absolutely necessary.

2 Encourage breastfeeding. Breast milk contains antibodies, which help to protect the newborn from infections.

3 Try to persuade the mother not to wash the baby for the first 24 hours after birth. Vernix (the curd or cheese-like secretion covering the newborn's skin) has antibacterial properties and should be left to be absorbed by the baby's skin.

4 Always wash your hands thoroughly with soap before handling newborns. Hand washing is probably the most important method of preventing the spread of infection.

5 Help the mother with her personal hygiene and cleanliness and try and ensure that the room where mother and baby live is clean.

6 Always use sterile and clean instruments to cut the umbilical cord, and keep the stump clean and dry. Clean all instruments used for maternal and newborn care with alcohol before every examination.

7 Remember that routine prophylactic eye care immediately after delivery with antibiotic ointment (tetracycline) prevents eye infection, but you should use it only once.

8 Don't forget immunization: all pregnant women should be vaccinated with at least two doses (and preferably up to five doses) of tetanus toxoid to prevent neonatal tetanus.

6.5 Neonatal assessment check list for critical conditions

After asking the mother about any neonatal problems and doing the basic assessment and examination yourself, you can classify the newborn baby based on the following assessment check list (Table 6.1 on the next page).

After assessing the baby for critical conditions, remember to check again for any gross signs of congenital anomaly and/or gross signs of birth trauma (e.g. defects on the back, swelling of the head, excessive bruises), which can be a cause of acute blood loss leading to anaemia.

In Study Session 7 we will describe everything that you and the new mother need to know about breastfeeding. Checking that the baby is feeding well and that the mother is managing to breastfeed adequately is part of every postnatal visit. You should also weigh the baby at every visit to make sure that it is gaining weight normally. This is particularly important for babies who were not born at term (37 to 42 weeks of gestation), or whose birth weight was below the normal range (equal to or greater than 2,500 gm).

Preterm babies (born at 32 to 36 weeks gestation), **very preterm** babies (less than 32 weeks of gestation), and those who are **low birth weight** (1,500 to under 2,500 gms) or **very low birth weight** (less than 1,500 gms) may have serious additional problems because coordination of swallowing and breathing is not well established, so they cannot feed properly. You will learn all about special care for these tiny babies in Study Session 8.

Table 6.1 Neonatal assessment checklist: the 'Assess and Classify' chart.

Ask and check	Classify	Action taken
• History of difficulty feeding or unable to feed now • History of convulsion or convulsing now • Newborn is lethargic or unconscious • Movement only when stimulated • Fast breathing • Severe lower chest in-drawing • Fever • Hypothermia	If there is any *one* of the general danger signs, classify as: POSSIBLE SERIOUS INFECTION	Refer URGENTLY to hospital or health centre. Keep the newborn baby warm and give him or her breast milk on the way.
• Baby developed yellowish discoloration before 24 hours of age • Jaundice observed on the palms and soles • There is swelling of the eyes or eye discharge • Umbilicus is draining pus • More than 10 pustules are found on the skin	If there is any *one* of these danger signs, classify as: POSSIBLE INFECTION OR JAUNDICE	Refer URGENTLY to hospital or health centre Keep the newborn baby warm and give him or her breast milk on the way.
• None of the above	NORMAL BABY	Breastfeeding and care to prevent infection and keep the baby warm.

Summary of Study Session 6

In Study Session 6 you have learned that:

1 A key part of every postnatal visit is to assess the newborn for general danger signs, including: not feeding, convulsions, lethargy or abnormal body movements, fast breathing with chest in-drawing, jaundice, skin lesions including umbilical infection, eye discharge and neonatal tetanus.

2 Routine preparations before assessing the newborn are to wash your hands thoroughly and ask the mother to begin breastfeeding, so you can assess how well the baby feeds, and also to keep the baby calm during your assessment.

3 Asking the mother about her newborn baby's condition is an important source of information in making your assessment.

4 Make sure that you explain to her the ways in which she can help to prevent infection in her newborn, including hand washing, keeping the baby clean and the cord stump clean and dry, and avoiding overcrowding or unhygienic conditions where they are living.

5 According to the 'Assess and Classify Chart' (Table 6.1), the possible classifications are: Possible serious infection, possible infection or jaundice, or a normal baby. Classification helps you to make the proper decision about what action to take.

Self-Assessment Questions (SAQs) for Study Session 6

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 6.1 (tests Learning Outcomes 6.1 and 6.3)

First read Case Study 6.1 and then answer the questions that follow it.

Case Study 6.1 Postnatal assessment of a female newborn

A female baby was delivered by a 32 year-old mother at a gestational age of 39 weeks. You assess the baby at 28 hours after the birth. She has a birth weight of 3,000 gm and presented with a history of convulsion, no feeding at all and a body temperature of 38.5°C.

(a) How do you classify this baby based on her gestational age?
(b) How do you classify her according to her birth weight?
(c) List the general danger signs present in this newborn.
(d) What is your comment on the body temperature of this baby?
(e) What will be your final classification of this newborn baby and how should you manage her condition?

SAQ 6.2 (tests Learning Outcomes 6.1 and 6.3)

Now read Case Study 6.2 and answer the questions that follow it.

Case Study 6.2 Postnatal assessment of a male newborn

You assess an eight hour-old male newborn who was delivered by a 27 year-old first-time mother at a gestational age of 31 weeks. He had a birth weight of 1,300 gm, and presented with a respiratory rate of 72 breaths per minute and chest in-drawing. His body temperature is 34.5° C.

(a) How do you classify this baby's gestational age?
(b) How do you classify him according to his birth weight?
(c) Is the respiratory rate of 72 breaths per minute normal or not? What is the normal range of respiration?
(d) What about the temperature of this newborn? Is it normal?
(e) What should your management of this newborn be?

SAQ 6.3 (tests Learning Outcomes 6.1, 6.2 and 6.4)

Imagine it is your first visit to a new mother who had a normal birth. You are assessing that her newborn baby is OK, including checking for signs of infection.

- What would you ask her before commencing your examination of the baby?
- What would you be sure to look for/check when you examine the baby?

Use Table 6.1 below to help you to organise your answers.

Table 6.1 Assessing a newborn baby.

Questions to ask the mother	Things to look for/check in the newborn

Study Session 7
Breastfeeding, the Warm Chain Principle and Counselling HIV-Positive Mothers

Introduction

During the postnatal period, counselling the mother of a normal healthy newborn baby focuses on many issues, including those already covered in earlier study sessions, such as infection prevention, nutrition for the mother, and family planning. In this study session, we return in detail to two topics that have been touched on previously: how to begin and maintain optimum breastfeeding, and how to keep the baby warm using the 'warm chain principle'. The first part of this study session is about feeding the normal weight, healthy, full-term baby. Then we will look at the special counselling that HIV-positive mothers need about feeding babies who are full term and normal weight. Study Session 8 will cover the special care needed to feed and maintain the body temperature of preterm or low birth weight babies.

Learning Outcomes for Study Session 7

When you have studied this session, you should be able to:

7.1 Define and use correctly all of the key words printed in **bold**. (SAQ 7.2)

7.2 Explain the benefits of breast milk for the newborn and the advantages of exclusive breastfeeding for the mother and newborn. (SAQ 7.1)

7.3 Describe the steps in establishing optimum breastfeeding through good positioning of the mother and good attachment of the baby to the breast. (SAQ 7.2)

7.4 Describe how to counsel the mother who is HIV-positive on feeding options for her baby to reduce the risk of transmitting HIV through breast milk. (SAQ 7.1)

7.5 Describe how newborns lose heat and how to prevent hypothermia by using the 'warm chain principle'. (SAQ 7.3)

7.1 Counselling the mother on newborn feeding

It is always advisable to provide counselling about newborn feeding during the antenatal period and continue reinforcing it during the postnatal period. This teaching should focus on establishing and maintaining **optimum breastfeeding**. The criteria for achieving this are summarised in Box 7.1.

Box 7.1 Optimum breastfeeding criteria

- Initiation of breastfeeding within one hour after birth (**early breastfeeding**).
- Nothing is given to the baby other than breast milk for the first six months (**exclusive breastfeeding**).
- Colostrum is not thrown away. It is rich in protein and antibodies and is useful to the newborn; you should tell the mother to feed it to her newborn, because it is the first 'immunization' that her baby will get.

- The mother is sitting in a good position while breastfeeding.
- The baby has good attachment to the breast while breastfeeding.
- There is effective suckling.

When you arrive for a postnatal visit, ask the mother to put the baby to the breast to check for good positioning and good attachment (we describe how you do this below). If the baby was fed recently, wait for at least an hour before putting him or her back to the breast. This will allow you to observe how the baby is breastfeeding and identify if there are any breastfeeding problems, which you can help the mother to overcome. Before you leave the house, ensure the mother understands how to breastfeed her baby optimally.

7.1.1 Four signs of good positioning

To begin with, the mother should sit comfortably (see Figure 7.1a), maintaining the four signs of good positioning:

- with the newborn's head and body straight
- facing her breast, with baby's nose opposite her nipple
- with the newborn's body close to her body
- supporting the baby's whole body, not just the neck and shoulders.

If the mother has had a caesarean delivery, or her abdomen is sore for some other reason, she may be more comfortable supporting the baby as shown in Figure 7.1(b). It keeps the baby's weight off her abdomen. She can feed twins this way too, with one on each breast. At night, or if she is tired and needs to rest, she can feed the baby while lying down (Figure 7.1c), but only if she stays *awake.*

Figure 7.1 (a) This mother is in the correct sitting position for optimum breastfeeding. (b) This is a good position for breastfeeding when the mother has had abdominal surgery, or if she is feeding twins. (c) A baby can be fed lying down, but only if the mother is awake.

- Giving breastfeeding in the lying down position (Figure 7.1c) is not advisable unless the mother is awake. Can you suggest why not?

- If the mother is falling asleep she may roll onto the newborn, who may be unable to breathe and asphyxiate (die from lack of oxygen).

7.1.2 Four signs of good attachment

Once good positioning is established, show the mother how to help the newborn to attach to the nipple. She should:

- Touch her newborn's lips with her nipple
- Wait until her newborn's mouth is opening wide
- Move her newborn quickly onto her breast, aiming the newborn's lower lip well below the nipple. Then check for signs of good attachment (see Figure 7.2).

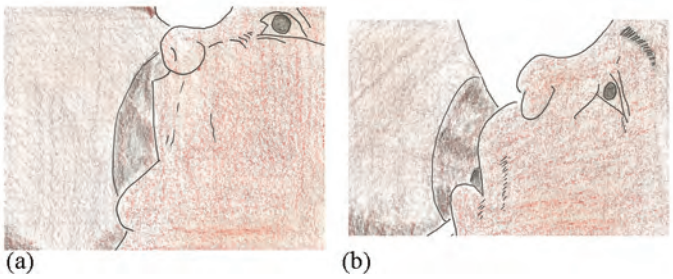

Figure 7.2 (a) This baby has a good mouthful of breast; (b) This baby does not have enough breast in its mouth.

The four signs of **good attachment** are:

- Mouth widely opened
- Lower lip turned upward
- Chin touching the breast
- More of the areola (the dark ring around the nipple) is seen *above* the baby's mouth than below it.

Advise the mother to empty one breast before switching to the other, so that the newborn gets the nutrient-rich hind milk (last milk), which is produced when the breast is almost empty.

7.1.3 Effective suckling

Good signs of effective suckling are if the newborn takes slow, regular and deep sucks, sometimes pausing. The mother should tell you that she is comfortable and pain free.

If you observe that the attachment and suckling are inadequate, ask the mother to try again and reassess how well the baby is feeding. If they still cannot establish optimum breastfeeding, then you should assume that the newborn has a feeding problem and/or the mother has breast problems that make attachment difficult. If so refer the baby and the mother to a health facility for further advice and care.

7.2 What are the benefits of breastfeeding?

Breastfeeding provides many benefits to both the newborn and mother. You should encourage mothers to breastfeed exclusively for at least the first six months by explaining the benefits to them.

7.2.1 Benefits to the newborn of breastfeeding

Breast milk is the ideal feed for full term newborns as it provides all the nutrients in the correct amount and proportion for normal growth and development until the age of six months. It is easily digested and absorbed. Also, breast milk is clean and warm, and avoids the dangers of feeding formula milk which comes as a powder and has to be made up with water and fed in a bottle.

- Can you suggest the sources of risk to the newborn from badly made formula milk?

- There is a risk of infection from making the milk with contaminated water, or if the bottles and teats are not properly sterilized. If the mother makes several feeds at one time, and she cannot keep them cold because she has no refrigeration facilities, bacteria may grow in the warm milk. Also, if she puts too little or too much milk powder in each bottle, the baby will suffer from malnourishment if the formula is too weak, or it will get an excessive load on its organs from too concentrated formula.

Breast milk contains many anti-infective factors, such as antibodies, living cells and molecules that help the baby's body to fight infection. It also encourages the growth of beneficial bacteria in the newborn's bowel. These properties of breast milk help to prevent diarrhoeal diseases, the major cause of death of newborns in poor communities.

Breast milk also decreases the risk of *allergy* in the newborn. Allergies are adverse reactions of the body against components of the diet, pollen from plants, animals and other harmless things that touch the body or get into it through the nose, mouth or eyes. Newborns are more at risk of allergies if there is a strong family history of allergy.

7.2.2 Benefits to the mother of breastfeeding

Breastfeeding is (almost) free – the mother needs additional food while she is breastfeeding, but the cost is much cheaper than buying formula feeds, bottles and teats. It is instantly available at all times, so the mother does not have the trouble of sterilizing bottles and teats, and preparing formula feeds many times every day. It is emotionally satisfying for the mother to successfully breastfeed her baby and the close contact helps to form a strong bond between mother and newborn.

The hormone (oxytocin) that triggers the milk to spurt from the breast by contracting the tiny muscles around the nipple, also makes the muscles in the uterus contract. So breastfeeding helps the uterus to return to its normal size.

■ What other benefit can you suggest results from the contractions of the myometrieum (the muscle layer in the uterus) during breastfeeding?

□ The contractions help to close the torn blood vessels where the placenta detached from the uterine wall, and this reduces the amount of normal vaginal bleeding during the puerperium, and decreases the risk of postpartum haemorrhage.

Breastfeeding helps the mother to lose excessive weight if she gained too much during the pregnancy. Pregnancy, not breastfeeding, alters the shape of a woman's breasts.

7.2.3 Breastfeeding and birth control

Exclusive breastfeeding (feeding only breast milk to the baby and no other fluids or foods) greatly reduces the chance of the mother becoming pregnant again if it is begun *early* (within an hour of the birth), and maintained for the recommended first six months. Explain to the mother and her partner that if a woman has sex and is not exclusively breastfeeding, she can become pregnant as soon as four weeks after delivery. Therefore, information on when to start a contraceptive method will vary depending on whether the woman is breastfeeding or not.

In Ethiopia it is recommended that you try to convince mothers to put their babies on exclusive breastfeeding for six months for many reasons, including that it will suppress her menstrual cycle, but only if she fulfills the following criteria:

1 The baby should be exclusively breastfed *on demand* (whenever the baby wants to be fed) a minimum of 8–12 times a day, including at least one feed during the night.

2 The interval between daytime feeds should not be more than four hours apart and night feeds should not be more than six hours apart.

3 If her menstrual periods return even while she is exclusively breastfeeding, she could easily become pregnant!

Emphasize that after six months, she will not be protected from becoming pregnant by breastfeeding alone. She should choose another family planning method. You will learn all about this in the Module on *Family Planning* in this curriculum. Table 7.1 summarises the benefits to the mother and the newborn of exclusive breastfeeding.

Table 7.1 The benefits of breast milk and breastfeeding.

Mother	**Newborn**
It is much cheaper than formula	It is fully nutritious
Always available (ready)	Easily digested and absorbed
Mental satisfaction	It is clean and warm
Reduced bleeding	It contains anti-infective substances
Can be used as birth control	Prevents diarrhoeal disease
Helps lose excessive weight	Decreases allergy risk
Increases bonding with the newborn	Increases bonding with the mother

7.3 Counselling the HIV-positive mother about feeding her baby

HIV-testing and counselling and PMTCT is covered in detail in the *Communicable Diseases* Module, and also in the *Antenatal Care* Module.

Mothers who are HIV-positive and their babies need special care before, during and after labour and delivery. Therefore, if the mother is counselled and HIV-tested before or during pregnancy, and she knows that she is HIV-positive, you should try to convince her to deliver her baby in a health facility. That way she and her baby will get special care from health professionals with special training in delivering babies from HIV-positive mothers, and preventing maternal to child transmission (PMTCT of HIV).

In the postnatal period, she may need to take antiretroviral (ARV) drugs prescribed for her by the HIV clinic, and your support is vital in helping her to keep to her drug regimen. Maintain confidentiality about her status and conduct frequent visits to this woman as she may require a lot of psycho-social support immediately after the delivery. If it is available link her with the community social support group. Always make sure her partner is counselled and HIV-tested and also involved in the whole care process.

7.3.1 Breast milk or formula?

In this study session our focus is on the risk of HIV being transmitted from the mother to her newborn baby in her breast milk, and how you can support and counsel her about feeding options. If 20 HIV-positive mothers breastfeed their HIV-negative babies exclusively for the first six months, on average one to three of the babies will become infected with HIV through its mother's breast milk. So the mother has a difficult choice to make. She has to balance the risk to her baby from HIV transmission during breastfeeding, against the risk of *not* breastfeeding and losing all the benefits described above. Formula feeding also exposes the baby to increased risk of infection from unsterilized bottles and malnutrition from incorrectly made feeds.

7.3.2 Replacement feeding and the AFASS criteria

Exclusive breastfeeding is NOT recommended for the babies of HIV-positive women, since the only way to protect the baby completely from HIV transmission from its mother is to feed it on formula milk. This is known as **replacement feeding**. However, many families cannot afford to buy milk formula to feed the baby, and bottle feeding may be socially unacceptable in some communities. With all these issues in mind the World Health Organisation (WHO) has set the following criteria (known as the **AFASS criteria**), which need to be met before counselling an HIV-positive mother to use formula milk:

- *Acceptable:* Replacement feeding for breast milk is acceptable by the mother, the family and others who are close to the family.
- *Feasible:* The mother has access to clean and safe water for cleaning the feeding bottles, teats, measuring cup and spoon, and diluting the formula milk if it comes as a powder.

- *Affordable:* The family can afford to buy enough formula milk or animal milk to feed the baby adequately.
- *Sustainable:* The mother is able to prepare feeds for the child as frequently as recommended and as the baby demands.
- *Safe:* The formula milk should be safe and nutritious for the health of the baby.

The AFASS criteria are illustrated in Figure 7.4. When replacement feeding fulfils the AFASS criteria, avoidance of all breastfeeding by HIV-positive mothers is recommended.

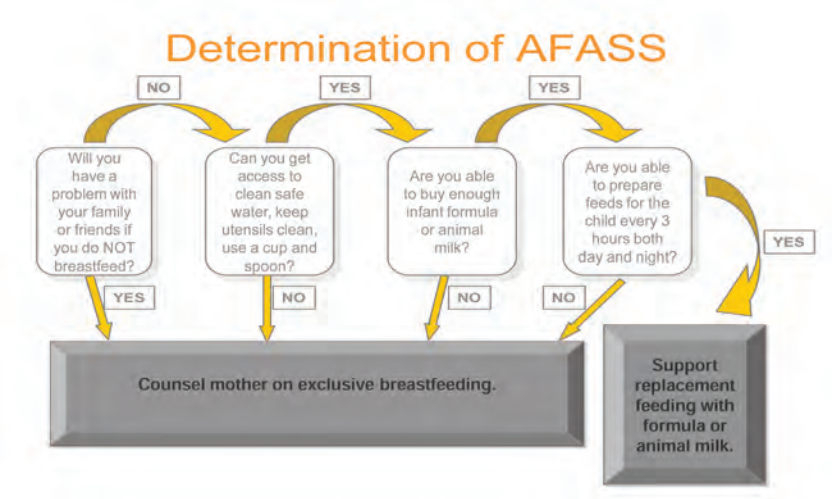

Figure 7.4 The AFASS criteria help you to counsel HIV-positive mothers about feeding options for their newborns. (Source: Ethiopian Federal Ministry of Health, based on WHO, 2010, *Guidelines on HIV and Infant Feeding*)

7.3.3 Reducing the HIV risk from breastfeeding

If replacement feeding is rejected by the HIV-positive mother, for whatever reasons, there are some things that she can do to reduce the risk of HIV transmission during breastfeeding. Counsel her to:

- Keep the intervals between breast feeds as short as possible (no longer than three hours) to avoid accumulation of the virus in her breast milk.
- If she develops a bacterial infection (mastitis) of the breast, or she has a cracked nipple, stop feeding from the infected breast and seek urgent treatment.
- Check the infant's mouth for sores and seek treatment if necessary.
- Make a transition to replacement feeding if her circumstances change and she can meet the AFASS criteria.

At six months, if replacement feeding is still not acceptable, feasible, affordable, sustainable and safe, counsel her to continue breastfeeding, but with additional complementary foods. All breastfeeding should stop once a nutritionally adequate and safe diet without breast milk can be provided.

7.4 Keeping the baby warm

Newborn babies cool down or heat up much quicker than older children or adults because they cannot regulate their body temperature as easily. They are particularly vulnerable to **hypothermia**, which means excessive cooling of the baby, so the body temperature falls below 35.5°C measured in the baby's armpit (or use a rectal thermometer). If this low temperature continues even for a short time, it will cause the baby's body systems to stop functioning properly and this is life-threatening. Hypothermia is a major cause of morbidity and mortality in a newborn baby, particularly **pre-term babies** (born before 36 weeks of gestation) and those with **low birth weight** (below 2,500 gm). Study Session 8 will teach you all about the problems and management of these early or tiny babies.

Hypothermia is usually caused more by the mother's lack of knowledge rather than lack of covers and clothes to keep the baby warm. So make sure you explain to the mother the importance of keeping the baby warm all the time to ensure that a normal body temperature of above 36.5°C and below 37.5°C can be maintained.

7.4.1 How to take the newborn's temperature

Place the thermometer in the newborn's armpit (or rectum if you have a rectal thermometer) for two to three minutes, then read the temperature according to the type of thermometer you have. (You learned how to use different types of thermometer in Study Session 9 of the *Antenatal Care* Module.)
Thermometers should be stored dry when not in use. Before and after you take anyone's temperature, the thermometer should be cleaned with antiseptic to prevent carrying infection from one person to another. It is important to notice when the temperature is even a little bit lower than normal, *before* it reaches as low as 35.5°C.

7.4.2 When are newborns at greatest risk of hypothermia?

Newborns that have particular problems in producing enough heat in their bodies, or who lose too much heat because of poor care by the mother, are at the greatest risk.

Newborns who may not *produce* enough heat include those who are:

- Preterm
- Underweight for gestational age
- Wasted (thin)
- Infected
- Hypoxic (starved of oxygen during labour and delivery).

Newborns that *lose* too much heat include those who are:

- Wet after washing, or left in wet clothes
- Have not been fed enough
- Exposed to a cold environment, not enough clothes or covers, especially when they are sleeping
- Naked when they are breastfed
- Fed close to a cold window, in a draught of cold air.

7.4.3 How do newborns lose heat?

The mechanisms of how the newborn loses heat are summarised in Figure 7.5, and described below.

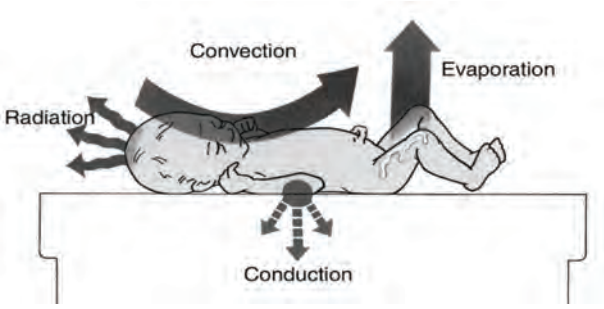

Figure 7.5 Mechanisms of heat loss from a newborn baby's skin. (Source: WHO, 1997, *Safe Motherhood: Thermal Protection of the Newborn, a Practical Guide*, accessed from http://whqlibdoc.who.int/hq/1997/WHO_RHT_MSM_97.2.pdf)

Convection. This is the loss of heat from the newborn's skin to the surrounding air. Newborns lose a lot of heat by convection when exposed to cold air or draughts.

Conduction. This is the loss of heat when the newborn lies on a cold surface. Newborns lose heat by conduction when placed naked on a cold table, weighing scale or are wrapped in a cold blanket or towel.

Evaporation. This is the loss of heat from a newborn's wet skin to the surrounding air. Newborns lose heat by evaporation after delivery or after a bath. Even a newborn in a wet nappy can lose heat by evaporation.

Radiation. This is the loss of heat from a newborn's skin to distant cold objects, such as a cold window or wall etc.

Finally, knowing that the newborn can lose heat by the four mechanisms described above, you should counsel the mother to avoid exposing the baby to drafts. Counsel her that before she removes the baby's clothes for a bath, close all doors and windows; cover the wet baby and dry him or her quickly.

Stop reading for a moment and think of your own experience in your community. Have you seen situations when mothers were in danger of letting their baby lose heat in any of the ways described above?

7.4.4 The warm chain principle in postnatal care

The mother should understand that keeping the baby warm is not a one-time job; it is rather a continuous job which means adhering to the warm chain principle. A **warm chain** is a system of keeping a baby warm immediately after delivery, wherever it occurs (at a health facility or the mother's home), during transportation and while feeding and caring for the baby. The components of the warm chain are listed in Box 7.2 (on the next page).

Box 7.2 Components of the warm chain

- Drying and wrapping the baby immediately at birth.
- Keeping the baby warm during any procedure, including resuscitation.
- Keeping the immediate newborn in skin-to-skin contact with the mother.
- Early initiation of breastfeeding within one hour of the birth; the warm milk and contact with the mother's body helps to keep the newborn baby warm.
- Postponing bathing the newborn for the first 24 hours.
- Keeping the baby warm during transportation.
- Dressing the baby in appropriate clothing and bedding at all times.

The warm chain principle has to be maintained for all babies, but special care should be taken to keep preterm and low birth weight babies warm, as you will see in the next study session.

Summary of Study Session 7

In Study Session 7 you have learned that:

1 You have an important role in the postnatal period in counselling the mother on breastfeeding and how to keep the baby warm.

2 You should teach the mother about the different positions for optimum breastfeeding and the signs of good attachment.

3 There are many benefits of breast milk and breastfeeding for the mother and her newborn, compared to formula milk, including reduced risk of gastrointestinal infection in the baby, and faster contraction of the uterus.

4 HIV-positive mothers should be counselled to avoid breastfeeding completely if they can provide replacement feeding with formula milk which fulfils the AFASS criteria: acceptable, feasible, affordable, sustainable and safe.

5 Newborns can lose heat rapidly through conduction, convection, evaporation and radiation; the warm chain principle tells you how to keep the baby warm at all times.

Self-Assessment Questions (SAQs) for Study Session 7

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 7.1 (tests Learning Outcome 7.2 and 7.4)

You are wondering what to say to an HIV-positive mother who is particularly keen on breastfeeding. How would you advise her?

SAQ 7.2 (tests Learning Outcome 7.2)

Which of the following definitions is *incorrect*? In each case, give the correct definition.

A Exclusive breastfeeding is only feeding one baby at a time.
B Good positioning for breastfeeding is when the mother is sitting comfortably.
C Good attachment means the baby has 'a good mouthful of breast'.
D Early breastfeeding requires the mother to get up around dawn for the first feed.
E The principle of the warm chain means that you pay attention to keeping the baby warm at all times, so as to avoid hypothermia.

SAQ 7.3 (tests Learning Outcome 7.5)

You are visiting a new mother and you notice that the baby feels very cold. You are worried about hypothermia. What do you do?

Study Session 8 Special Care for Preterm and Low Birth Weight Babies

Introduction

In this study session you will learn about the extra and special attention needed by preterm and low birth weight babies. We will explain the many reasons why they need special care, and how to give it, and also how to counsel mothers and other family members on looking after them. The focus is on managing the problems of feeding preterm and low birth weight babies, and of keeping them warm. In particular, you will learn about a relatively recent and highly successful method of maintaining the body heat of early or tiny babies, known as Kangaroo Mother Care.

Learning Outcomes for Study Session 8

When you have studied this session, you should be able to:

8.1 Define and use correctly all of the key words printed in **bold**. (SAQ 8.2)

8.2 Explain why preterm or low birth weight babies need special care, and list the common complications they may develop. (SAQ 8.1)

8.3 Classify preterm and low birth weight babies on the basis of gestational age and birth weight, and in each case identify the appropriate management strategy (SAQ 8.2)

8.4 Describe how you would counsel the mother on feeding a preterm or low birth weight baby. (SAQ 8.3)

8.5 Describe how to protect preterm and low birth weight babies from hypothermia, including counselling the mother and other family members on Kangaroo Mother Care. (SAQ 8.4)

8.1 Why do preterm or low birth weight babies need special care?

Preterm and low birth weight babies are at increased risk of dying from hypothermia, infection, breathing problems and immaturity of their vital organs. As a result they may be unable to adapt to life outside the uterus. The key reasons why they need special care are summarized in Box 8.1.

Box 8.1 Characteristics of preterm and low birth weight babies

- Parts of their nervous system are not yet well developed.
- They have little fat under the skin; especially their brown fat is low. Brown fat is very important to generate heat for the newborn baby; it is found mainly over the shoulders, back, kidneys, neck and armpits.
- They lie very still so they can't generate heat by moving much.
- They have a high ratio of surface area to body weight compared to that of a child or adult, so they lose heat quickly from their skin.
- They have immature lungs so they have breathing problems.

- They don't have much immunity so they will be extra vulnerable to infection.
- The veins in their brain are thin and immature and are prone to bleeding.
- They may be too weak to feed well.

An example of why preterm and low birth weight babies need special care is that they have a very poor resistance to fight infectious disease, because their immune system is not yet well developed. Therefore, on top of what is required for all babies, you and the mother need to be meticulous about hygiene and other infection prevention measures (described in Study Session 6). Everyone who handles the baby should wash their hands very thoroughly first and handle the baby very carefully. You can easily damage the soft and thin immature skin of the preterm or low birth weight baby, creating an entry point for infection.

8.2 Classification of preterm and low birth weight babies

The lower the birth weight and gestational age of the newborn, the higher the risk of complications and death and the more special care he or she needs. The special care they will need should take into account the classification of early and tiny babies, as described below.

8.2.1 Classification on birth weight

In relation to birth weight, most preterm babies are low birth weight or very low birth weight, as classified below:

Low birth weight: Babies born with birth weight between 1,500–2,499 gm. These babies can usually be managed safely at home with some extra care and support.

Very low birth weight: Babies born with birth weight less than 1,500 gm. A life-threatening problem in such tiny babies is that suckling, swallowing and breathing are not well coordinated, so they require special attention in order to feed them adequately and safely. They also have great difficulty in maintaining their body temperature, so they are at increased risk of hypothermia. These babies need advanced life support and should be referred immediately to a hospital with special care facilities for very tiny babies. However, at the present time, such facility-based care may not be accessible to rural families in some parts of Ethiopia.

8.2.2 Classification on gestational age

A **premature baby** is a baby born before 37 completed weeks of pregnancy. Based on the gestational age, preterm babies are further classified as follows:

Preterm baby: Babies born between the gestational ages of 32–36 weeks of gestation, as calculated from the mother's last normal menstrual period (LNMP date). These babies can usually be managed safely at home with some extra care and support, which you will learn later in this study session.

Very preterm baby: Babies born between the gestational ages of 28–31 weeks as calculated from the LNMP date. Like very low birth weight babies

and for the same reasons, they have problems in feeding and maintaining their body temperature. If possible, they should be referred urgently for specialist care at a hospital.

Table 8.1 summarises the classifications we have just described, and the actions you should take.

Table 8.1 Classification of newborn babies according to birth weight and gestational age.

Birth weight and gestational age	Classification	Action
Weight less than 1,500 gm	Very low birth weight	Refer URGENTLY to a hospital, making sure to keep the baby warm on the journey
Gestational age less than 32 weeks	Very preterm	Keep the newborn baby warm and refer it soon.
Weight 1,500 to 2,500 gm	Low birth weight	If there is no other problem: counsel on optimal breast feeding, prevention of infection and keeping the baby warm
Gestational age 32–36 weeks	Preterm	As above for low birth weight babies
Weight equal to or above 2,500 gm; gestational age equal to or above 37 weeks	Normal weight and full term	As above for low birth weight and preterm babies

8.3 Counselling on how to feed preterm and low birth weight babies

The breast milk produced by the mothers of preterm babies is even more nutritious than the milk produced by mothers whose babies were born at full term. Therefore, a preterm mother's milk is the best milk for the preterm or low birth weight baby and it should not be discarded, as no other milk can replace its benefits.

8.3.1 Breastfeeding and cup feeding

During the first week of the baby's life, the mother needs extra support from you and from the family to encourage her to initiate exclusive breastfeeding and maintain it until her tiny baby is able to suckle without any problem. Babies born between 34–36 weeks of gestation can usually suckle breast milk adequately, but very preterm babies may have difficulty breastfeeding. Breastfeeding a very preterm baby is a challenge. The frequency of feeding should be every two hours, including through the night.

If babies born before 34 weeks cannot suckle adequately, they can be fed *expressed* breast milk using a small very clean cup. (We describe how to do this in the next section.) Tiny or early babies who are able to suckle breast milk may also need feeding with additional expressed breast milk from a cup occasionally, to make sure they are getting enough nourishment. All babies who are on cup feeding have to be given around 60 ml/kg/day (that is 60 ml of breast milk for every kilogram of the baby's weight every day) and increase this by 20 ml/kg/day as the baby demands more feeding.

Extremely preterm babies born before 32 weeks of gestation may not be able to breastfeed at all and need to be started on intravenous fluids. This is one of the reasons why all babies less than 32 weeks of gestation should be referred to health facilities immediately.

8.3.2 Tips to help a mother breastfeed a preterm or low birth weight baby

Figure 8.1 Offer the whole breast to encourage the baby to breastfeed.

Express a few drops of milk on the baby's lip to help the baby start nursing. Offer the whole breast, not just the nipple, so the baby can get a good mouthful (Figure 8.1). Give the baby short rests during a breastfeed; suckling is hard work for a preterm or tiny baby.

If the baby coughs, gags, or spits up milk when starting to breastfeed, the milk may be spurting out too fast for the little baby. Teach the mother to take the baby off the breast if this happens. Hold the baby against her chest until the baby can breathe well again. Then put it back to the breast after the first gush of milk has passed.

If the preterm baby does not have enough energy to suck for long, or its sucking reflex is not strong enough, teach the mother how to express her breast milk by hand and then feed it to the baby from a cup.

8.3.3 Expressing breast milk

Expressing breast milk can take 20–30 minutes or longer to start with, but it gets quicker with practice. First tell the mother to wash her hands and her breasts with soap and water, and dry them with a very clean towel. Then prepare a cleaned and boiled cup or jar with a wide opening. If she is unable to boil the whole container, pour some boiling water into it and leave it there until just before she is ready to put milk into it; then pour the water away. This will keep the milk safe from bacteria.

The mother should sit comfortably and lean slightly towards the container. Show her how to hold the breast in a 'C-hold' (her hand is shaped like a big letter C; Figure 8.2a). Press the thumb and fingers back toward the chest wall (Figure 8.1b), then role the thumb forward as if taking a thumb print, so that milk is expressed from all areas of the breast. Express the milk from one breast for at least three to four minutes until the flow slows and then shift to the other breast. Thinking about feeding her baby while she expresses her milk may help the milk to flow out more easily.

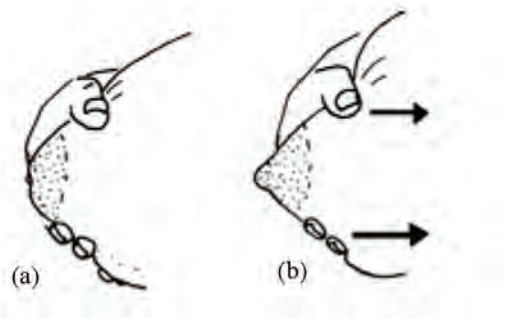

Figure 8.2 Expressing breast milk (a) Hold the breast in a C-shaped grip; (b) roll the fingers and thumb backwards and then forwards so milk spurts from the nipple into a sterilised container.

Expressed breast milk that cannot be kept cool, or that is stored for more than six hours, should be thrown away

Breast milk can be saved at room temperature for up to six hours if the room is not very hot and the milk is stored in a sterilized container. Or it can be

stored for longer in a refrigerator, if the mother has one. Wherever it is stored the milk must be warmed to body temperature before it is fed to the baby. To warm up the stored breast milk, put the container to stand for a while in a bowl of warm water. Never boil breast milk! Boiling destroys nutrients and antibodies.

8.3.4 Show mothers how to cup feed the baby

Show the mother and other family members how to hold the baby closely sitting a little upright. Hold a small very clean cup half-filled with expressed breast milk to the baby's lower lip (Figure 8.3). When the baby becomes awake and opens its mouth, keep the cup at the baby's lips letting the baby take the milk slowly. Give the baby time to swallow and rest between sips. When the baby takes enough and refuses any more, put the baby up to the shoulder and 'burp' her or him by rubbing the baby's back to expel air that may have been swallowed with the milk.

■ What are the special tips and skills about breastfeeding that you may need to explain or teach the mother of a preterm baby?

□ You should tell her about the importance of always using her own breast milk to feed the baby; putting a few drops of milk onto the baby's lip to encourage it to start suckling; how to express her breast milk and store it safely; and how to cup feed the baby.

Figure 8.3 Cup feeding a tiny baby takes care and patience.

8.4 Special care to keep preterm and low birth weight babies warm

Preterm and low birth weight babies have great difficulty in maintaining their body temperature. They very easily lose heat, and hypothermia is life-threatening in their delicate condition. You should always follow the *warm chain principle* for any baby, whatever its weight or age, as you learned in Study Session 7, but in addition, early and tiny babies should get the following special care:

- Immediately after the birth, put the baby in skin-to-skin contact with the mother, followed by Kangaroo Mother Care, which is described below.
- Extra blankets or any extra local cloth made of cotton are needed to cover both the mother and the baby. An important thing to remember (which is often forgotten) is that the baby's *head* needs to be well covered. This is because more than 90% of the heat loss is through the head if it is left uncovered.
- There should be an extra heat source in the room where the preterm baby is looked after.
- Delay bathing for at least 48 hours after delivery, and always use warm water.
- Initiate breastfeeding or cup feeding as early as possible and feed the baby at least every two hours.

- What else might you check in terms of ensuring that the baby is kept warm?

- You will remember from Study Session 7 that it is important that the baby is not in a draft – so check that doors and windows are closed.

8.5 Kangaroo Mother Care

Kangaroo Mother Care (KMC), called after the way that kangaroos look after their young, has been shown to be an extremely effective method of caring for preterm and low birth weight babies. It involves holding a newborn in skin-to-skin contact, day and night, prone and upright on the chest of the mother, or another responsible person if the mother is unable to do it all the time.

Evidence from using KMC to support preterm and low birth weight babies shows that it results in greater stability of the baby's heart rate and breathing, lower rates of infection and better weight gain. In the mother it results in increased breast milk supply, and she is more likely to succeed in exclusive breastfeeding.

8.5.1 KMC procedures

After you have explained about the KMC procedures to the mother (or another KMC provider) you should follow the steps in Box 8.1:

Box 8.1 Preparations for Kangaroo Mother Care

- Make sure the room is clean and warm.
- Provide privacy to the mother so she can open her clothing at the front, exposing her breasts.
- Request the mother to sit or recline comfortably.
- Undress the baby gently, except for cap, nappy (diaper) and socks.
- Place the baby lying flat, facing the mother's chest in an upright and extended posture, between the mother's breasts, in skin-to-skin contact.
- Turn the baby's head to one side to keep the airways clear. Keep the baby in this position for 24 hours every day except for brief breaks.
- Cover the baby with the mother's shawl, or gown; wrap the baby-mother together with an added blanket, and put a cap on the baby's head.
- Breastfeed the baby frequently, at least 8–12 times a day.

Figure 8.4 The mother and baby can sleep together in KMC.

Reassure the mother that babies can receive most of the necessary daily care, including breastfeeding, while in KMC. The baby is removed from the skin-to-skin contact only for changing the diaper, general body hygiene and cord care, and to assess the baby during your postnatal visit. It is only for the first three to five days after the birth that the mother may need to lie in bed. Once the baby's condition is stable, the mother can walk and do her routine work while the baby is in KMC, and they can sleep together in KMC at night (Figure 8.4).

8.5.2 Checking the baby is OK in KMC

At every postnatal visit you should:

- Count the baby's respiratory rate and make sure there is no fast breathing.
- Observe that the baby is breastfeeding optimally.
- Measure the baby's temperature in the armpit and make sure it is normal.
- If everything is OK, reassure the family but tell them to send for you immediately if there is any problem.

8.5.3 Counselling the family on the benefits of KMC

KMC may seem an unusual way of caring for the baby, so it is very important that you allow time for counselling the mother, the father and the family about what it entails, as well as about its benefits. She (and they) will need to be convinced and willing to undertake KMC for several days continuously. And the father and other members of the family will need to be ready to provide the necessary emotional and physical support to the mother while she is giving KMC.

So, what are the benefits of KMC?

- *Breastfeeding:* KMC increases breastfeeding rates as well as increasing the duration of breastfeeding.
- *Thermal control:* Prolonged skin-to-skin contact between the mother and her preterm/low birth weight newborn provides effective temperature control with a reduced risk of hypothermia.
- *Early weight gain*: Tiny babies gain more weight on KMC than on conventional postnatal care.
- *Less morbidity*: Babies receiving KMC have more regular breathing and are less likely to stop breathing. It also protects her baby against infection.

Of course it may not be possible for all mothers to take on KMC. You will need to satisfy yourself that the mother does not have any complications or medical illness which would mean that she is not strong enough to manage it on her own. If that is the case you should explore whether the father or another close member of the family might share the KMC with the mother, or give KMC exclusively if the mother is ill.

Finally, mothers who have successfully managed to give KMC have increased confidence and a deep satisfaction that they are able to do something so special for their tiny baby.

8.5.4 How long should KMC continue?

When the mother and baby are comfortable with the process, KMC should continue for as long as possible, or until the gestational age reaches term (40 weeks) or the baby's weight reaches 2,500 gm. But if the baby weighs more than 1,800 gm and its temperature is stable, there are no respiratory problems and the baby is feeding well, it can be safely weaned from KMC before 40 weeks. And when the baby has had enough of being in KMC, it starts to communicate with the mother in its own ways, by wriggling, by moving a lot, pulling their limbs out of the wrapping and by crying until they are removed from the wrapping.

Finally, if you follow all these guidelines and help your families with preterm or low birth weight babies to care for them as described in this study session, you are sure to save some young lives. And what could be better than that!

Summary of Study Session 8

In Study Session 8, you have learned that:

1 Preterm and low birth weight babies are particularly vulnerable to die of infections, breathing problems and hypothermia because of their immaturity.

2 It is important to classify preterm and low birth weight newborns immediately after birth according to their gestational age and their birth weight, and refer those who are very preterm or very low birth weight.

3 You can effectively counsel the mother on breastfeeding the preterm and low birth weight baby, including feeding every two hours, and how to express breast milk and cup feed if the baby is not yet developed enough to suckle effectively.

4 You can teach the mother and her family how to use kangaroo mother care (KMC) and explain the advantages to them, which include increased breastfeeding, better control of the baby's body temperature, early weight gain, better respiration and lower infection rates.

5 KMC continues day and night until the preterm baby reaches 40 weeks of gestational age and/or the low birth weight baby reaches at least 1,800 gm. Mothers will need extra support to cope with the demands of KMC.

Self-Assessment Questions (SAQs) for Study Session 8

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 8.1 (tests Learning Outcome 8.2)

What are the main characteristics of preterm and low birth weight babies which mean they need special care?

SAQ 8.2 (tests Learning Outcome 8.1 and 8.3)

Fill in the gaps in Table 8.2 on the next page.

Table 8.2 Classification of newborn babies according to birth weight and gestational age, and actions to take.

Birth weight and gestational age	**Classification**	**Action**
Weight less than 1,500 gm		
	Very preterm	
	Low birth weight	
Gestational age 32–36 weeks		If there is no other problem counsel on optimal breast feeding, prevention of infection and keeping the baby warm
	Normal weight and full term	

SAQ 8.3 (tests Learning Outcome 8.4)

You make the first antenatal visit at 12 hours after the birth to the mother of a baby that weighs 2,000 gm. It seems able to suckle but not for long, and the mother is worried if it is getting enough breast milk. How would you advise her?

SAQ 8.4 (tests Learning Outcome 8.5)

(a) What are the key things *not* to do with a preterm baby in order to protect it from hypothermia?

(b) And what are the advantages of Kangaroo Mother Care in relation to hypothermia?

Study Session 9 Making a Referral for Postnatal Care

Introduction

As you reach the end of this Module, you will have to come to realize just how vital your role is in providing effective postnatal care. Health Extension Practitioners (HEPs) like you not only promote the health of mothers and newborn babies in your community, but you save lives too. The postnatal care you provide is part of the **continuum of maternal and child health care**.

The continuum of care begins even before the women in your community become pregnant; it then continues through the antenatal care you give them during their pregnancy and the skill and support you bring to their labour and delivery. It merges seamlessly into your role in the postnatal period. Of course the continuum does not stop there: later you will study the Module on the *Integrated Management of Newborn and Childhood Illness*, which teaches you how to preserve and protect the health of infants and older children. So you can see this continuum as an ongoing process of giving support at all stages of from birth through to childhood, including support to their mothers.

One final teaching point remains to be covered in this Module – making the **referral link**. Knowing *how* to refer mothers and newborns for specialist attention and treatment is as crucially important for the success of postnatal care as knowing *when* to refer. Early detection of life-threatening conditions is critical, but following up your diagnosis with a successful referral of mother and baby to a health facility for advanced treatment and life support is just as crucially important.

Learning Outcomes for Study Session 9

When you have studied this session, you should be able to:

9.1 Define and use correctly all of the key words printed in **bold**. (SAQ 9.1)

9.2 Explain why an effective referral link has to be a 'two-way street' between the health facility and the Health Extension Practitioner, and give examples of ways in which you can support this link. (SAQ 9.1)

9.3 Describe how you make sure that referrals happen effectively when you refer critical cases, and give reasons why referrals may fail to be managed correctly. (SAQ 9.2)

9.4 List the information that should be included in a clear and complete referral note. (SAQ 9.2)

9.1 Effective referral

Whether or not a sick mother or sick newborn can reach a fully functional health facility in time can literally be the difference between life and death. It helps a great deal if:

- You have taken care to develop and establish strong links with the health facilities that you use (and the health workers in them), so that referrals can be dealt with quickly and efficiently.
- You have mobilized the community to be alert to the need for psychosocial, financial and practical support in cases where critically sick mothers and newborns must reach the health facility urgently.
- You have convinced the mother and family to trust your judgement *before* the emergency happens, so they are ready to follow your advice if an emergency occurs.
- You are active in following up and checking that the mother and baby get to the health facility. The traditional way of telling the mother or the caregivers to go to the health facility, or just writing a referral note and doing nothing else, is never a sufficient solution.

9.2 The referral link: a two-way street

The referral link between a higher-level health facility and you, the Health Extension Practitioner (HEP) at the Health Post, is a two-way street (Figure 9.1). For this system to be fully functional, you have to know the health workers in the nearby health centre or hospital, and they should know all the HEPs at the Health Posts in their catchment area.

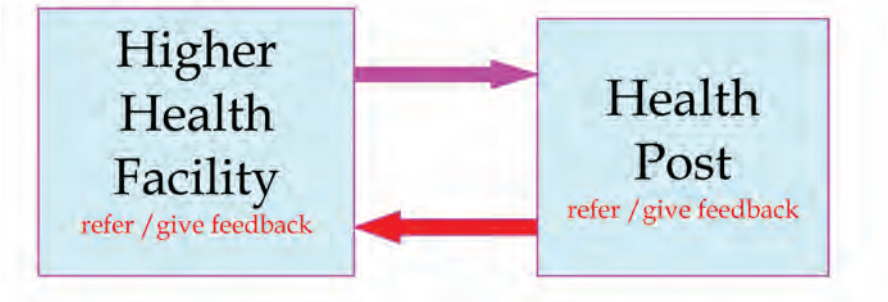

Figure 9.1 The referral link: a two-way street.

■ Why do you think it is important to know the health workers at the higher-level facilities?

□ One reason is that it is so much easier to write an effective referral note to people you know than to people you don't. Another reason is that if they know you, they will be more able to trust your judgment and act quickly on it when you refer a mother or baby to them.

9.2.1 Receiving feedback

Of course, it is not just a case of referring the mother/baby to the health facility and that is the end of it. For example, if you refer a sick mother, the health facility staff should write a note to you when the mother is discharged back to the village, giving you feedback about what happened to her while she was in their care, and giving you instructions on how to manage her

health problem in the future. That way you can continue to care for the mother and newborn in the most optimum way possible.

9.2.2 Knowing about local health facilities

To be really effective in your referrals you will need a list of *all* the health centres and any hospitals in your catchment area, together with information about the services each of them offers. This is so that if, for example, you deliver a very low birth weight baby, you immediately know which health facility has the right capacity, equipment and trained staff to give emergency care to very tiny babies. This information enables you to refer the mother and baby quickly to the right place.

■ What could happen if you don't have information about the services offered at a higher-level health facility?

□ The main risk is of sending a sick mother or baby on a difficult and expensive journey, only for them to discover that the health facility does not have the appropriate care services. This could be disastrous because it means so much precious time will have already been lost on the road.

To sum up, for there to be the best chance of a positive outcome, all health workers in the community need to know *how* to refer their patients and exactly *where* to refer them so they can receive appropriate services to meet their needs.

9.3 What prevents referrals from happening effectively?

There are many reasons why a referral doesn't happen at all, or does not happen in time, including the following:

- Lack of proper counselling to the mother, father and other caregivers, so they don't realize how serious the problem is.
- Far distance and lack of means of transportation to the health facility.
- The family has not saved the financial resources to make the journey.
- Health facilities are not attractive to some patients. Often they don't have proper supplies of essential medicines and equipment, or they lack the correctly trained person for the service required. Hence, due to the poor reputation of some health facilities, parents may be reluctant to go to them.

■ Is there anything you can do to help reduce the chances of a failed referral?

□ You might look back to Study Session 13 in the *Antenatal Care* Module and the discussion about Focused Antenatal Care (FANC). Remember that emergency care planning is a key part of the counselling you should have conducted with every expectant mother and her family before the birth. They should have saved money for the journey and arranged transport.

In addition to the antenatal counselling you have done with pregnant mothers and families, you will also have been mobilizing community involvement to support them in the postnatal period. Study Session 1 of this Module discussed how to do this effectively. Remember that it is in the emergency situation that you can really see your work with the community bearing fruit.

■ Think of an example of how you might turn to the community for help with a postnatal emergency.

□ You may have thought of many different examples. Here is just one. The family is not financially prepared and doesn't have a plan for transport. You persuade someone locally who has a vehicle to take the mother and newborn to the health facility, because it is a matter of life and death. Based on your earlier involvement with the community you are able to get agreement in advance from the kebele leaders that money will be found from a community fund to pay for the transport if the family cannot afford it. You thank the community leaders for their support and recognition that emergencies can often be successfully treated in a higher health facility, provided that the patient arrives in good time.

9.4 How to make referrals happen

Writing a referral note and telling people to go to the health facility is not the problem. As we have discussed already, the problem is getting them to the appropriate facility where they will receive the right care. What else helps to make a referral happen effectively?

9.4.1 Good documentation

During pregnancy, every mother should be advised to get prepared for birth, including what to do if emergency problems occur either in the baby or herself. You should have the standard counselling card from your Region to help you convince the mother and other caregivers to agree to a referral if necessary. In other words, if you tell them she or the baby needs specialist help and treatment from a higher-level health facility, they should be ready to trust your judgement and go.

You should also have a well prepared format to write referral notes to the health facility. You learned how to do this in the *Antenatal Care* Module, Study Session 13.

■ What information should a referral note contain?

□ It should cover the following:

- Date of the referral and time
- Name of the health facility you are sending the patient to
- Name, date of birth, ID number (if known) and address of the patient
- Relevant medical history of the patient
- Your findings from physical examinations and tests
- Your suspected diagnosis
- Any treatment you have given to the patient
- Your reason for referring the patient
- Your name, date and signature
- Your address, so the health facility can communicate back to you.

9.4.2 Transport and the emergency evacuation plan

Ideally, each village or community will have an emergency evacuation system in place that will automatically be triggered by a health crisis. That way it should be possible to ensure ready transport to enable critically sick mothers or babies to get to the health facility in time.

- Quickly write down two actions that you would take when you have a mother or baby who needs to get to a health facility for specialist care.

- You would write the referral note; and support the family in mobilizing the necessary human and financial resources to transport mother and baby to the nearest appropriate health facility.

Once you have ensured that mother and baby have transport, check that there is adequate support for any other children or frail dependents who remain at home while the mother and any other caregivers are away.

If possible, aim to accompany the critically sick mother or baby to the health facility. If you cannot go with them, make sure that a responsible adult accompanies them instead. Remember to ask this person to contact you as soon as he or she gets back to the village, so that you know that the patient reached the health facility safely. She or he can also tell you how the mother or baby is being treated. If you do not hear anything within a day or two, visit the home to check whether they have returned from the health facility, and how they are progressing.

If the mother may need a blood transfusion, send one or two healthy adults with her who could act as blood donors.

9.4.3 Making sure the health facility knows how to communicate with you

Health workers in the nearby health facilities should map and know the names of the kebeles and the HEPs (or other health workers) in the Health Posts surrounding their health facility. Check that they have all the information they need about you, especially where to find you and how best to contact you. If you find that they fail to communicate all the information you need when they discharge a patient back into your care, contact them and ask them for *written* feedback, setting out the diagnosis, what they have done so far and what needs to be followed up by you. Impress them with your professionalism and make sure that they see you as a valued member of the health workforce in the community.

In other words, for the whole health system to be effective, health workers in the higher-level health facilities and the health workers in the community need to work hand in hand as a single team. If everybody's efforts are coordinated, there is a better chance of achieving the main goal – saving the lives of mothers and newborns.

And finally, we all want to see continuous improvement in the whole system of health care. One way of achieving this is through regular performance review. Bringing together everybody involved to discuss how you can better harmonize and coordinate your activities can make the continuum of care successful for all concerned.

Summary of Study Session 9

In Study Session 9, you have learned that:

1 Referral is a two-way street. Referrals are from the health workers in the community to the higher-level health facility, and also the other way round. The two directions are highly interdependent and equally relevant for the overall success of postnatal care.

2 The referral link should involve feedback in both directions about what has already happened to the patient (diagnosis, treatment and other health

management issues), as well as how the patient should be followed up and supported in the future.

3 Just telling people to go to the health facility or writing a referral note is a small part of the referral process, and is unlikely to be effective without careful advance preparation and follow up.

4 What really matters is your counselling skill in persuading and convincing the family on the importance of the referral, and your role working in the community to alleviate the barriers that can prevent mothers and newborns from reaching the health facility in good time.

5 Establishing an effective link and effective coordination between all members of maternal and newborn health services is the key to achieving the goal of a continuum of care. This starts from the household, involves you working in the community, and connects all the way up to the higher-level health facilities and advanced treatment centres, before patients return back to your care and their family in the community.

Self-Assessment Questions (SAQs) for Study Session 9

SAQ 9.1 (tests Learning Outcomes 9.1 and 9.2)

Write short definitions of the following terms and explain why they are important in how you approach the provision of postnatal care:

- Continuum of maternal and child health care
- Referral link.

SAQ 9.2 (tests Learning Outcomes 9.3 and 9.4)

You are making a referral of a very preterm baby and its mother, who already has three older children. You are extremely worried about the baby. Write a checklist for yourself of all the things you need to remember to do.

Notes on the Self-Assessment Questions (SAQs) for *Postnatal Care*

Study Session 1

SAQ 1.1

(a) Correct: neonate is a newborn baby.

(b) Partially correct: it is the care given to the baby *and* the mother immediately after birth *and* for the first 6 weeks of life.

(c) Correct: the neonatal mortality rate is newborn deaths in the first 28 days, per 1,000 live births.

(d) Correct: the early neonatal period is from birth to the first seven days.

(e) Partially correct: it is the number of mothers who die during birth and as a result of complications immediately following childbirth. In Ethiopia the MMR is very high with around 673 deaths per 100,000 live births. Note that whereas the neonatal mortality rate is measured per 1,000 live births, the MMR is measured per 100,000 live births.

(f) Wrong: it is the number of deaths in the first week of life per 1,000 live births. This is also very high in Ethiopia, with around 39 deaths per 1,000 live births.

(g) Correct: the neonatal period is from birth to the 28th day.

(h) Wrong: it is the process in which our lungs absorb oxygen and release waste carbon dioxide. It occurs from the moment of birth.

(i) Correct: in more detail what happens is that the liver fails to remove a protein called bilirubin, which is released in the process of breaking down 'old' red blood cells. A sign of neonatal jaundice (i.e. a build-up of bilirubin) is when the skin appears yellow, especially on the baby's palms and soles.

SAQ 1.2

There are many points you could make to the Finance Minister. Here are some of the key ones:

- Ethiopia has some of the highest rates of maternal mortality and early neonatal mortality in the world (you could quote him the actual figures).
- The period of greatest risk (i.e. just after delivery and in the first seven days of life and up to 28 days) is also when there is the lowest coverage of maternal and child health care in Ethiopia.
- High quality postnatal care has to happen in the first few hours or it is too late, but also that effective postnatal intervention has the potential to reduce the neonatal mortality by 10–27%. This will help Ethiopia meet the Millennium Development Goals to reduce maternal and child deaths.
- We already know the main causes of death in the postnatal period (you could give him the list) and we broadly know what to do about them – it is mainly a question of a trained health worker being there to do it.
- You might also point out that to be really effective, postnatal care needs also to involve the community (getting them engaged in the whole process, facilitating behaviour-change from harmful traditional practices, etc.), and explain to him how you will be doing this, e.g. talking to key 'gatekeepers' and enlisting the help of the Traditional Birth Attendants (TBAs) in the community.

SAQ 1.3

Danger signs in the postnatal mother:

Key signs to look for include dehydration, a poorly contracted uterus, fresh bleeding, a drop in blood pressure and a rising pulse. Longer term dangers to be aware of include blood clots and depression.

Danger signs in the newborn:

Immediate things to check: is the baby breastfeeding properly, is the skin colour normal or yellowish, is there any fever, is the baby cold or too warm to the touch, is the breathing normal, is there any bleeding, has the baby got swollen or red eyelids? You would also check if the baby is preterm so as to know if it is at increased risk for some complications. You probably got most of these. If not, or if you can't remember what they indicate, re-read Section 1.5.2 'Evaluating the newborn baby'.

Study Session 2

SAQ 2.1

A *False:* all postnatal women will have watery, coloured vaginal discharge (**lochia**) for around five weeks after the birth. This is about the same time as the **puerperium** – which is the postnatal period of physiological changes occurring during the five to six weeks after childbirth.

B True: initiation of **lactation** – i.e. the production of **colostrum** (a creamy yellow nutrient rich 'first milk' which also contains the mother's antibodies), follows automatically soon after delivery of the baby and then true milk begins after about three days.

C Not quite true: breast **engorgement** is a *response* to the initiation of the milk supply and usually happens about three days after the delivery. Mothers are encouraged to *initiate* breastfeeding within one hour of the birth.

D *False:* the **endometrium** (which is the inner lining of the uterus) heals rapidly and by the seventh day is normally restored except at the placental site.

SAQ 2.2

There are many checks that you could do – here are some of the key ones:

- By palpating below the women's umbilicus, you can see if the uterus has shrunk at the normal rate.
- Ask her whether she has a lot of vaginal discharge and what colour it is.
- By doing a vaginal examination, check that the cervical opening has shrunk to less than one finger width.
- Examine whether the swelling of the vagina and vulva is going down or has nearly gone.
- If the perineum was cut or torn during the birth, make sure it is healing properly, and if so encourage the mother to start exercising her perineum muscles.
- Check if she has difficulty breastfeeding, or (if she has decided not to breastfeed) that she is managing to reduce her milk production.
- Check that the baby is neither too hot nor too cold, is feeding well and passing stools regularly.

- Ask, tactfully, if the mother feels any pressure from her partner to resume sexual intercourse before she feels ready to do so.
- Try and assess whether she may be taking on too much work too soon.
- With the physical checks there are key signs which will tell you whether the puerperium is progressing normally, and if it is, you can reassure your worried mother. What she feels able to say to the more personal questions will be more difficult to assess. You will have to use all your sensitivity and tact in order to judge whether something else may be going wrong.

Study Session 3

SAQ 3.1

(a) **Late postpartum haemorrhage** (PPH) is heavy vaginal bleeding during the first week and up to six weeks after delivery. PPH can be life threatening and must be referred immediately. Most common causes include infection (endometritis) of the inner wall of the uterus, failure of the uterus to contract properly, sloughing (peeling away) of the placental bed, or bits of the placenta remaining in the uterus. A less common cause is molar pregnancy.

(b) **Puerperal sepsis** is a widespread bacterial infection of the reproductive tract following childbirth. It can mostly be prevented by good hygiene during delivery. Fever indicates the possibility of sepsis, but it could also be due to urinary tract infection or infected wounds, HIV, malaria, typhoid, tetanus, meningitis, pneumonia, etc.

(c) A hot red painful breast indicates **mastitis,** an inflammation of the breast due to bacterial infection. Women lactating are at a higher risk of **puerperal mastitis** if the baby does not suckle well and the breast is not emptied of milk. An abscess is another risk from breast infection, when pus collects in the infected tissue.

(d) **Postpartum hypertension** is excessively high blood pressure in the postnatal period. Key symptoms are severe headache, convulsions (eclampsia), swelling, severe abdominal pain, and protein in the urine. It is life-threatening and must be referred immediately.

(e) **Postpartum depression** is more serious than **postpartum blues**. The 'blues' are a mild sense of sadness, anxiety or confusion that many women experience after giving birth and which normally passes. Women with postpartum depression (persistent sadness and low mood with little motivation) should be referred.

SAQ 3.2

The completed Table 3.1 will look as follows:

Table 3.1 Common complications in the puerperium.

Symptom	Sign	Possible diagnosis	Action
Vaginal bleeding on postpartum day seven	Uterus at the level mid-way between umbilicus and pelvis	Endometritis	Start an IV infusion and refer
Urinary frequency and urgency	Pain in the pelvis overlying the bladder	Urinary tract infection (UTI)	Encourage fluid intake by mouth and refer
Pain over the breast and fever	Breast painful to touch, hot and red	Mastitis, possibly breast abscess	Give a pain killer and refer
Pain in the perineum	Torn perineum with yellowish discharge, painful to touch	Infected wound	Salt bath, warm compresses, paracetamol for pain relief and possibly refer for antibiotics

SAQ 3.3

You should immediately remember that the risk of deep vein thrombosis (DVT) is higher if the postnatal woman spends most of her time in bed, as Lakesh has been doing. You would quickly check if any or all of the clinical features of DVT as set out in Box 3.2 also applied. If the signs lead you to suspect that Lakesh has a DVT, you would refer her to a higher-level health facility as quickly as possible.

SAQ 3.4

The likely diagnosis for Almaz's condition is postpartum depression. To check your diagnosis, you would ask her about the following symptoms:

- Decreased interest or pleasure
- Disturbed sleep, sleeping too much or sleeping too little
- Diminished ability to think or concentrate
- Marked loss of appetite.

Study Session 4

SAQ 4.1

A preterm baby is one delivered before 37 weeks of gestation. A low birth weight baby is defined as one weighing less than 2,500 gm. Ideally, given that this baby is preterm, you would hope that the family would have alerted you in time to be present at the birth. If not then you need to get there as quickly as possible within the first 24 hours. After that: you will need to plan your visits for the third, fifth, seventh and tenth days after the birth and then during the sixth week after birth. The visits on the fifth and tenth days are additional to the kind of schedule you would have for a normal delivery, and this reflects the greater risks of the early neonatal period (the first seven days) if the baby is premature or low weight.

SAQ 4.2

The main barriers to facility-based postnatal care are set out in Section 4.1.1. Check your answers with the points made there. Did you think of any other barriers, perhaps from your own experience? If so, that's good.

Home visits are so critical in the postnatal period because of the huge difference that home visits can make to the overall survival rates of newborns. Studies of the South Asian experience have indicated reductions in mortality of between 30% and 61% through home visits. The kind of interventions are set out in Section 4.1.2.

SAQ 4.3

Here are some things you might have written down:

Equipment bag

Things I must remember to check have not run out – Vitamin A capsules, iron tablets, tetracycline ointment etc. and soap!

Clean towel? Wrist watch? Enough counselling and screening cards? Record book, pen and referral forms?

All the usual equipment that stay in the bag: scales, stethoscope, blood pressure apparatus, thermometer, etc.

And I had better remember to check if I look clean and neat myself!

But how am I going to get Abrihet to feel more comfortable? These are just a few of the questions I might ask myself:

> 'Perhaps I am not using enough local terms, so maybe her family thinks I don't respect their customs. I wonder if I sound too bold and pushy – must remember to be gentle and to give plenty of time for more general conversation so she begins to relax. It's so difficult as there is so much to do, that I am often in too much of a rush. I know she listens to me but perhaps I am overwhelming her with too much advice. I'll try a bit more praise and do more listening myself this time and maybe that will help'.

Study Session 5

SAQ 5.1

- Check that the mother's temperature, pulse rate and blood pressure (her *vital signs*) are normal.
- Palpate her abdomen to check that the uterus is contracting. Do this again 30 minutes later and then every hour for the next three hours.
- Monitor very carefully how much she is bleeding – if she is soaking more than one pad an hour and you can't stop it, take her to the nearest health facility. Make sure you check for any signs of shock and start pre-referral IV fluid therapy if her blood pressure is low and falling and her pulse rate is fast and rising.
- Gently help her to clean herself – belly, legs and genitals (using soap and very clean water). Check the genitals for any tears, injuries or bleeding under the skin (*haematoma*), or a *prolapsed cervix* (the cervix has dropped to the vaginal opening)
- Help her to urinate.
- Make sure she starts drinking to rehydrate her, and if possible encourage her to eat some food.

SAQ 5.2 (tests Learning Outcomes 5.1, 5.3 and 5.4)

Table 5.1 Care and support for new mothers (completed).

Problem or potential problem	**Actions the mother or her family can do to help her**	**Treatments or other actions that you can provide**
Goitre (caused by iodine deficiency)	Use iodised salt in cooking.	A dose of iodised oil after delivery, if goitre is common locally.
Not eating or drinking in the first few hours	The woman should try and remember that she must drink and eat for her own health and the health of her baby.	Check for bleeding, fever or other signs of illness which may be an underlying problem; encourage the woman to talk about how she is feeling.
Lack of energy (maintaining energy when breastfeeding)	Eat one to two more meals a day of high protein foods (meat, milk, oils, nuts, etc) if possible.	Check if there are taboos about foods, talk to family members about ensuring the woman eats enough and avoids hard work.
Vitamin A deficiency	Increase intake of high vitamin A, vegetables and fruits, e.g. carrots, mangoes, cabbage and spinach; also eat liver, fish liver oil, milk, eggs and butter.	One 200,000 IU vitamin A capsule taken after delivery or within six weeks of delivery; explain the importance of foods rich in vitamin A.
Anaemia	Increase intake of vegetables and fruits rich in iron and folate.	Give her enough tablets (60 mg iron and 400 micrograms folate) to take one every day for three months.

Seclusion of mother and baby.	Family members stay with the mother and newborn to offer support, despite the cultural norms.	Explain why the woman needs someone near her, especially in the first seven days, when there is the highest risk; a quick response is needed if something goes wrong.
Lack of interest in the baby	Family to give extra attention and support, and have someone care for the new baby if necessary.	Check for illness, blood loss or infection. Talk to her. Check if she is hearing voices, or 'seeing things'. If the latter, refer her for psychiatric help.
Support for the mother	Partner, grandmother and/or mother-in-law to take over some routine domestic jobs.	Make sure partner and family know the danger signs and the importance of avoiding delay in getting the mother to a health facility.

Study Session 6

SAQ 6.1

(a) At 39 weeks of gestation, this baby is classified as a normal term baby.
(b) The birth weight is 3,000 gm, which is classified as a normal birth weight.
(c) The general danger signs are no feeding, history of convulsions, and high temperature.
(d) The temperature (38.5°C) is abnormal and the newborn has a fever. The normal temperature of a newborn is above 36.5 to below 37.5°C.
(e) This baby has three major danger signs (no feeding, convulsion and fever) and is classified as a possible infection. Your management of this baby should be an urgent referral to a hospital or health centre, with advice to keep her warm and feed breast milk on the way.

SAQ 6.2

(A) As the baby was born at 31 weeks of gestation, he is classified as a very preterm baby.
(B) The birth weight is 1,300 gm, so he is classified as very low birth weight.
(C) His respiration rate of 72 breaths per minute breathing is abnormal. This newborn has fast breathing. The normal breathing rate of the newborn is 40–60 breaths per minute.
(D) The temperature (34.5°C) is abnormally low; the newborn has hypothermia. The normal temperature of the newborn is above 36.5°C to below 37.5°C.
(E) As he is a very preterm and very low birth weight baby, with two major danger signs (fast breathing and hypothermia), he is classified as possible infection. The management should be an urgent referral to a hospital or health centre, with advice to keep him warm and feed breast milk on the way.

SAQ 6.3

Table 6.1 Assessing a newborn baby (completed).

Questions to ask the mother	Things to look for/check in the newborn
Is the mother remembering to wash her hands before breastfeeding, and keeping the baby and herself clean?	Do the mother and baby look clean and well? Is the room clean and well kept?
Has she noticed any unusual movements, spasms, of an arm or the whole body?	If yes, observe carefully to see if the baby may be suffering from convulsions.
Is her baby breathing steadily and without effort?	If the mother is worried, check for chest in-drawing (the baby's chest sucking inwards deeply at the lower ribs); also check for any signs of convulsions.
Is the mother taking care to keep the umbilical cord stump clean and dry? Has she noticed any 'smelliness' from the umbilical cord?	See if there is discharge, or redness of the skin around the base of the cord. Remind the mother about the importance of keeping it clean and dry.
Has she noticed any redness or discharge from the baby's eyes?	Was tetracycline (or another approved eye ointment) applied at birth?
Does the baby seem too hot, or too cool?	If the baby seems hot take it's temperature (with a sterile and clean thermometer), but also check if she has it too well wrapped up. If it is cold, check for hypothermia.
Does the mother have any problems with breastfeeding?	If yes, check the mother for cracked nipples, or heat in the breast (mastitis or an abscess). If reluctant to breastfeed, remind her how important breast milk is as nourishment for her baby and protecting it from infection.
Does the baby have any signs of a rash?	If yes, is it just nappy rash or sweat rash, or are there any pustules (pus filled blisters)? If so, are there more than 10?
Did she or the baby go through any harmful traditional practices following the birth?	If yes, check the baby for any signs of tetanus (e.g. muscle spasms) and ask if the mother has been immunized against tetanus.
Does she feel well generally? Is she coping with looking after a new baby?	Is the mother getting enough support and is the baby getting all the care it needs?

Study Session 7

SAQ 7.1

There are many ways in which you might have made notes on this difficult situation. You would have sympathised with the mother's wish to breastfeed and probably pointed out the benefits for the baby (e.g. protection from infection, correct nutrients, reduction in risk of allergy), and the benefits for the mother (breast milk is cheaper, breastfeeding helps the uterus to contract, it is useful for birth control, etc). But you would also have told her of the risk of transmitting HIV to the baby via breastfeeding.

When you discuss formula feed as the alternative you would have explained the critical importance of clean water, and proper sterilization of the bottles and teats, as well as the need to measure everything accurately so the baby gets the correct nourishment.

Then you would go through the AFASS criteria and the questions in Figure 7.4. If she answered 'yes' to them all, you would encourage her to use formula or animal milk, and also counselled her about birth control. If she answered 'no' and she really wants to breastfeed, you would have explained how she can reduce the risk of HIV transmission by feeding at very short intervals (no longer than three hours), and stop feeding from a breast that has a cracked nipple. You should have reminded her to check the baby's mouth for sores, and seek urgent treatment for herself and her baby if either of them feels ill.

SAQ 7.2

A *False:* Exclusive breastfeeding is giving nothing to the baby other than breast milk for the first six months.

B True. But look back to Section 7.1.1 and check you are clear about how to maintain the mother in good positioning.

C True: Look back to Section 7.1.2 and check you remember precisely the four signs of good attachment.

D *False:* Early breastfeeding is initiation of breastfeeding within one hour after birth.

E True: The warm chain principle means taking action to keep the baby warm at all times.

SAQ 7.3

- Place the baby in skin-to-skin contact with the mother, wrap them both in warm blankets, put a cap or shawl on the baby's head and put its socks on or wrap its feet.
- Take the baby's temperature and if it is less than 37.5^{o}C take it again after half an hour. If its temperature is not beginning to rise fairly soon, refer the baby urgently.
- While you are waiting to see if the baby is getting warmer, check for a simple explanation for why the baby is cold. Ask the mother if the baby has been recently wet, or has not been recently fed, or whether she feeds it naked. Check if the room has open windows or the baby is in a cold draft of air.
- Explain to the mother how newborns lose heat (the key ways are summarised in Section 7.4.3) and tell her why it is important always to keep the baby warm.
- Talk her through the components of the 'warm chain'. If you can't remember this look again at Box 7.2.

Study Session 8

SAQ 8.1

The main points that mean preterm and low birth weight babies need special care are:

- The immaturity of their immune system and therefore vulnerability to infections;
- The risk of complications in the function of their immature nervous system and lungs;

- Their vulnerability to hypothermia, because they have little fat protection, and a high ratio of surface area to body weight, and inability to generate much heat for themselves;
- Potential difficulties in breastfeeding, so lack of nourishment can lead to further weakness and even less protection against infection and heat loss;
- Their vulnerability to careless handing, for example causing damage to their delicate skin, which creates further entry points for infection.

SAQ 8.2

Refer back to Table 8.1 in Section 8.2.1 and compare it with the entries you wrote in Table 8.2.

SAQ 8.3

At 2,000 gm this baby has a low birth weight, but it does appear to be able to suckle. However, if the mother thinks it is not getting enough milk because it quickly tires when it suckles, you could suggest additional feeding of *expressed* breast milk. You will need to explain first how to express her milk and how to store it safely (re-read Section 8.3.3 if you can't remember), and then show her how to cup feed the baby (Section 8.3.4).

SAQ 8.4

To prevent heat loss in a premature or low birth weight baby, you should *not*:

- bathe the baby until at least 48 hours after delivery;
- leave the baby without a hat (90% of heat is lost through the head if uncovered);
- leave the baby in a room with the doors or windows open;
- forget to provide an extra heat source in the room where the baby is kept;
- undress it completely to change the diaper.

(b) The advantages of KMC are:

- the baby is kept in skin-to-skin contact day and night, which provides effective warmth and temperature control;
- the baby is only removed from skin-to-skin contact for specific purposes (changing its diaper, checking if the cord stump is drying normally), so there is little danger of it being left in a room that is too cold;
- the baby feeds better and gains weight more rapidly (so it develops more body fat to help keep it warm);
- the advantages of KMC can be provided by other members of the family if the mother is unwell or needs a break.

Study Session 9

SAQ 9.1

The **continuum of maternal and child health care** is a way of thinking that reminds us that postnatal care is simply one phase within the context of your overall care of the people in the community where you work. So it is a reminder that the advice and care you offer *prior* to pregnancy may be just as important as the interventions or referrals you make after delivery, and that your care of the baby will continue through to

childhood. Every stage and phase is as important as every other one in the continuum.

The **referral link** is best thought of as a two-way street between you and the higher health facility and back from the higher health facility to you. It suggests that the best care is when both of you are sharing and exchanging information. It works best when you take the trouble to get to know the health workers in the facilities in your area (and they know you), and when you also know precisely which facilities offer which types of health services.

SAQ 9.2

Your list probably looks something like the one below, but it may well have had some further additions:

- Make sure that the mother and baby are wrapped up warmly (refer also to Sections 8.5 and 8.6 of Study Session 8).
- Tell the mother (and family) that it is imperative that she and the baby go to a health facility. If you meet with resistance remind them of the seriousness of the risks to the baby without specialist care.
- Check which health facilities offer specialist care for preterm babies and decide which one (if there is a choice) is the most easily and quickly accessible.
- Check if the family can arrange transport. If not send one of them to a kebele leader to see if the community will help, including financial help if necessary (see Section 9.3.2).
- While waiting for transport, write the referral note (if you can't remember what it should include, see Section 9.3.1).
- Check that there are family members who will look after the older children.
- Check that there is no other impending emergency or care need, and if not, try to accompany the mother and baby to the health facility, or send a responsible adult with them.
- If you cannot go yourself, remember to ask whoever is accompanying them to make contact with you on their return to confirm how the mother and baby are progressing.