Federal Democratic Republic of Ethiopia
Ministry of Health

Integrated Management of Newborn and Childhood Illness, Part 1

Blended Learning Module for the Health Extension Programme

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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 workplace 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

Ethiopian Federal Ministry of Health

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Contents

Continued in Part 2

Introduction to the *Integrated Management of Newborn and Childhood Illness* Module

The *IMNCI* Module, together with *Antenatal Care, Labour and Delivery Care* and *Postnatal Care*, provides a knowledge-base for many of the critical health services that Health Extension Workers and Health Extension Practitioners deliver for infants and children and their families. You will find that some of the concepts and competencies in the *IMNCI* Module are also covered in other Modules in the Level IV Health Extension Practitioner Programme. This is because IMNCI is based on international guidelines and protocols and therefore a Module on the IMNCI strategy needs to have all elements of the approach included.

Children who come to your health post are often suffering from more than one condition, making it impossible to give a single diagnosis. As you will see, IMNCI is an *integrated* strategy and is based upon the combined treatment of the major childhood illnesses and the correct implementation of prescribed care. The Module is divided into two parts. In Part 1, you will learn more about the integrated approach and how it applies to maternal, newborn and child health, the management of bacterial infection and jaundice and other illnesses such as cough or difficult breathing, diarrhoea and fever. You will also learn about the management of infants and children with malnutrition and anaemia. In Part 2, you will learn about services you can provide for children under five living with HIV, recommendations for feeding, immunization and related interventions, how to manage ear problems and other common childhood infections and how to counsel mothers and caregivers effectively. The Module ends with two study sessions that will help you consolidate your learning and understand how all the components of the IMNCI strategy work together, to ensure you look at a child holistically when assessing, classifying and identifying the appropriate treatment and follow-up care.

Study Session 1 An Introduction to the Integrated Management of Newborn and Childhood Illness (IMNCI)

Introduction

Every year about 9 million children in developing countries die before they reach their fifth birthday, many of them during the first year of life. Ethiopia has one of the highest under-five mortality rates with more than 321,000 children under the age of five dying every year. More than 70% of these child deaths are due to five diseases, namely pneumonia, diarrhoea, malaria, measles and malnutrition, and often to a combination of these conditions.

These diseases are also the reasons for seeking care for at least three out of four children who come to health facilities. As children usually present with more than one of these conditions, it was recognised that there was a need for an integrated approach in order to manage the child in a **holistic** manner (taking into account all of the child's problems including the major childhood illnesses in the assessment and treatment of illness). This led to the development of the **Integrated Management of Newborn and Childhood Illness** (**IMNCI**) strategy.

IMNCI is an integrated approach to child health that focuses on the wellbeing of the whole child. IMNCI aims to reduce death, illness and disability, and to promote improved growth and development among children under five years of age. IMNCI includes both preventive and curative elements that are implemented by families and communities as well as by health facilities. In summary, the IMNCI strategy includes three main components:

1 Improving case management skills of healthcare staff.

2 Improving the health systems.

3 Improving family and community health practices.

In health facilities, the IMNCI strategy:

- promotes the accurate identification of childhood illnesses in out-patient settings
- ensures appropriate combined treatment of all major illnesses
- strengthens the counselling of caregivers
- speeds up the referral of severely ill children.

In the home setting, IMNCI:

- promotes appropriate care-seeking behaviours
- helps to improve nutrition and preventative care, and
- supports the correct implementation of prescribed care.

The integrated case management process taught in this Module will help you to quickly consider all of a child's symptoms and not overlook any problems. You will learn how to determine if a child is severely ill and needs urgent referral. You will also learn how to treat a child's illness and how to counsel caregivers to treat a child at home for those infants and children who do not need to be referred urgently. This study session outlines the guidelines for counselling mothers and other caregivers, something which you will also look at in more detail in Study Session 14 of this Module.

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**. (SAQs 1.1, 1.2 and 1.3)

1.2 Define the importance and objectives of the IMNCI strategy. (SAQ 1.1)

1.3 Summarise the main steps of the IMNCI assessment. (SAQ 1.2)

1.4 Describe the general danger signs (GDS). (SAQs 1.1 and 1.3)

First, you are going to look into the importance of the IMNCI strategy and the diseases that are addressed by this strategy.

1.1 The IMNCI strategy

IMNCI is a strategy that integrates all available measures for health promotion, prevention and integrated management of childhood diseases through their early detection and effective treatment, and promotion of healthy habits within the family and community.

1.2 Importance and objectives of the IMNCI strategy

The importance of having an Integrated Management of Newborn and Childhood Illness strategy is that it enables a consistent and standardised approach that addresses the major causes of under-five morbidity and mortality which are responsible for more than 90% of the mortality in this age group in Ethiopia. As shown in Figure 1.1 below, the major causes of under-five mortality have been estimated as follows: pneumonia 28%, neonatal problems 25%, malaria 20%, diarrhoea 20%, measles 4%, AIDS 1% and other causes 2%. As you can also see in Figure 1.1, malnutrition is associated with nearly 60% of mortality in under-five children.

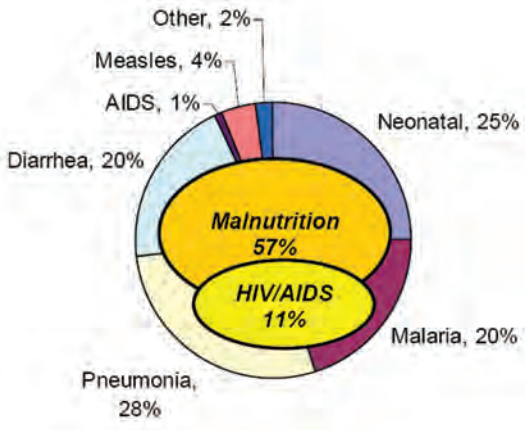


Figure 1.1 Major causes of under-five mortality in Ethiopia.

Source: *Child Health in Ethiopia, Background Document for the National Child Survival Conference, April 2004*, Family Health Department, Ministry of Health.

1.2.1 Objectives and advantages of IMNCI

The objectives of the IMNCI strategy are:

- to reduce mortality and morbidity associated with the major causes of disease in children less than five years of age, and
- to contribute to the healthy growth and development of children.

As you read in the introduction, the core of the IMNCI strategy is integrated case management of the most common childhood problems, with a focus on the most important causes of death. The clinical guidelines are designed for the management of sick children aged from birth up to five years. They include methods for assessing signs that indicate severe disease; assessing a child's nutrition, immunization and feeding; teaching parents how to care for a child at home; counselling parents to solve feeding problems; and advising parents about when to return to a health facility. The guidelines also include recommendations for checking the parents' understanding of the advice given and for showing them how to administer the first dose of treatment.

The IMNCI guidelines are designed for the management of sick children from birth up to five years old.

■ Why is IMNCI an important strategy for you to know as a Health Extension Practitioner?

□ IMNCI will enable you to help reduce the number of babies and children in your community who become ill or die. It will also help you to promote the healthy growth and development of babies and children in the community.

When correctly applied, IMNCI has the following advantages:

- Promotes the accurate identification of childhood illnesses in out-patient settings
- Ensures appropriate combined treatment of all major childhood illnesses
- Strengthens the counselling of mothers or caregivers
- Strengthens the provision of preventive services
- Speeds up the referral of severely ill children
- Aims to improve the quality of care of sick children at the referral level.

1.3 The IMNCI assessment

When you are assessing a sick child, a combination of individual signs leads to one or more **classifications**, rather than to a diagnosis. IMNCI classifications are action-oriented illness categories which enable a healthcare provider to determine if a child should be urgently referred to a health centre, if the child can be treated at the health post (e.g. with oral antibiotic, antimalarial, ORS, etc.), or if the child can be safely managed at home.

The IMNCI guidelines describe how you should care for a child who is brought to your health post with an illness, or for a scheduled follow-up visit to check the child's progress. The guidelines give instructions for how to routinely assess a child for general danger signs (or possible bacterial infection in a young infant), common illnesses, malnutrition and anaemia, and to look for other problems. In addition to treatment, the guidelines incorporate basic activities for illness prevention.

This module will help you learn to use the IMNCI guidelines in order to interview caregivers, accurately recognise clinical signs, choose appropriate treatments, and provide counselling and preventive care.

1.4 IMNCI case management

Case management can only be effective to the extent that families bring their sick children to a trained health worker such as you for care in a timely way. If a family waits to bring a child to a health facility until the child is extremely sick, or takes the child to an untrained provider, the child is more likely to die from the illness. Therefore, teaching families when to seek care for a sick child is an important part of the case management process and is a crucial part of your role as a Health Extension Practitioner.

The complete IMNCI case management process involves the elements listed in Box 1.1.

Box 1.1 The IMNCI case management process

Assessment

- **Assess** a child by checking first for general danger signs (or possible bacterial infection in a young infant), asking questions about common conditions, examining the child, and checking nutrition and immunization status. Assessment includes checking the child for other health problems.

Classification

- **Classify** a child's illnesses using a colour-coded classification system. Because many children have more than one condition, each illness is classified according to whether it requires:
  - urgent pre-referral treatment and referral (pink), or
  - specific medical treatment and advice (yellow), or
  - simple advice on home management (green).

Identify treatment and treat

- After classifying all conditions, **identify** specific treatments for the child. If a child requires urgent referral, give essential treatment before the patient is transferred. If a child needs treatment at home, develop an integrated treatment plan for the child and give the first dose of drugs in the clinic. If a child should be immunized, give immunizations.
- Provide practical **treatment** instructions, including teaching the caregiver how to give oral drugs, how to feed and give fluids during illness, and how to treat local infections at home. Ask the caregiver to return for follow-up on a specific date, and teach her how to recognise signs that indicate the child should return immediately to the health post.
- Assess feeding, including assessment of breastfeeding practices, and counsel to solve any feeding problems found. Then counsel the mother about her own health.

Follow-up care

- When a child is brought back to the health post as requested, give follow-up care and, if necessary, reassess the child for new problems.

All these steps are clearly presented in the IMNCI chart booklet and you need to refer to it throughout this Module. You should always use the chart booklet whenever you manage under-five children.

Whenever a sick baby or child under five comes to your health post you should use the IMNCI chart booklet to help you know how to assess, classify and treat the child.

The IMNCI guidelines address most, but not all, of the major reasons a sick child is brought to a health facility. A child returning with chronic problems or less common illnesses may require special care which is not described in this Module. For example, the guidelines do not describe the management of trauma or other acute emergencies due to accidents or injuries.

You are now going to look at the case management process in more detail.

1.4.1 The IMNCI case management process

You need to know the age of the child in order to select the appropriate chart and begin the assessment process. The IMNCI case management process is presented on two different sets of charts: one for managing **sick young infants** aged from birth up to two months and a separate one for managing **sick children** aged from two months up to five years. First decide which chart to use depending on the age of the child. **Up to five years** means the child has not yet had his or her fifth birthday. If the child is *not yet* two months of age, the child is considered a young infant. A child who is two months old would be in the group two months up to five years, not in the group birth up to two months. When you look the IMNCI chart booklet you will see the different charts for the two age groups.

Since management of the young infant aged from birth up to two months is somewhat different from the management of older infants and children, it is described on a different chart:

- Assess, classify and treat the sick young infant.

The case management process for sick children aged two months up to five years is presented on three charts:

- Assess and classify the sick child
- Treat the child
- Counsel the mother.

If this is the child's first visit for this episode of an illness or problem, then this is an **initial** visit. If the child was seen a few days before for the same illness, this is a **follow-up** visit. A follow-up visit has a different purpose from an initial visit. You will learn more about follow-up visits in all of the study sessions in this Module. Whether it is an initial or follow-up visit, the mother may well be feeling anxious and it is important that you put her at her ease. This will increase the likelihood of you being able to obtain important information about her child.

For each visit, when you see the mother, or the child's caregiver, with the sick child:

- Greet the mother appropriately and ask about the child
- Take the child's weight and temperature and record the measurements
- Ask the mother what the child's problems are
- Determine if this is an initial or follow-up visit for this problem.

- Which IMNCI process should you follow when a mother visits your health post with her sick child?

- There are two sets of charts, one for babies up to the age of two months and one set of three charts for babies and children from two months to five years. Therefore you should find out the age of the child from the mother or from a record chart if this is a follow-up visit and there is already information available to you. This will tell you which chart you should use to assess, classify and determine the correct treatment and follow-up care.

So you can provide the best advice, you need to know what the general danger signs are in sick infants and children. You are going to learn about these next.

1.5 General danger signs (GDS)

Since IMNCI takes a holistic approach to assessing, classifying and treating childhood illnesses it is important to look for general danger signs as well as symptoms and signs of specific childhood illnesses.

The general danger signs are signs of serious illness that are seen in children aged two months up to five years and will need immediate action to save the life of the child. There are five general danger signs and these are set out in Box 1.2 below (reproduced from the *IMNCI Assess and Classify Chart Booklet*, FMOH Ethiopia, June 2008). Make sure that any infant or child with any danger sign is referred after receiving urgent pre-referral treatment.

Box 1.2 Checking for general danger signs

For **ALL** sick children ask the mother about the child's problem, then
CHECK FOR GENERAL DANGER SIGNS

↓

CHECK FOR GENERAL DANGER SIGNS

ASK:	***LOOK:***
• Is the child able to drink or breastfeed? • Does the child vomit everything? • Has the child had convulsions?	• See if the child is lethargic or unconscious. • See if the child is convulsing now.

A child with any general danger sign needs *URGENT* attention; complete the assessment and any pre-referral treatment immediately so referral is not delayed

You should assess all sick children who come to your health post for general danger signs. Most children with a general danger sign need urgent referral to hospital.

As you can see in Box 1.2, there are key questions you need to ask and signs you need to look for.

A child with a general danger sign has a serious problem. Most children with a general danger sign need *urgent referral* to hospital. They may need lifesaving treatment with injectable antibiotics, oxygen or other treatments that may not be available in the health post. You should complete the rest of the assessment immediately and give urgent pre-referral treatments before sending

the patient to the next facility. You will learn more about this later in this study session.

You are first going to look in more detail how you check for general danger signs.

ASK: Is the child able to drink or breastfeed?

A child has the sign 'not able to drink or breastfeed' if the child is not able to suck or swallow when offered a drink or breastmilk.

When you ask the mother if the child is able to drink, make sure that she understands the question. If the mother replies that the child is not able to drink or breastfeed, ask her to describe what happens when she offers the child something to drink. For example, is the child able to take fluid into his mouth and swallow it?

If you are not sure about the mother's answer, ask her to offer the child breastmilk or a drink of clean water. Look to see if the child is swallowing the breastmilk or water.

A child who is breastfed may have difficulty sucking when his nose is blocked. If the child's nose is blocked, clear it. If the child can breastfeed after the nose is cleared, the child does not have the danger sign, 'not able to drink or breastfeed'.

ASK: Does the child vomit everything?

A child who is not able to hold anything down at all has the sign 'vomits everything'. A child who vomits everything will not be able to hold down food, fluids or oral drugs. A child who vomits several times but can hold down some fluids does not have this general danger sign.

When you ask the question, use words the mother understands. Give her time to answer. If the mother is not sure if the child is vomiting everything, help her to make her answer clear. For example, ask the mother how often the child vomits. Also ask if each time the child swallows food or fluids, does the child vomit? If you are not sure of the mother's answers, ask her to offer the child a drink. See if the child vomits.

ASK: Has the child had convulsions?

During a convulsion, the child's arms and legs stiffen because the muscles are contracting or if the child has repeated abnormal movements. The child may lose consciousness or not be able to respond to spoken directions. Ask the mother if the child has had convulsions during this current illness. Use words the mother understands. For example, the mother may know convulsions as 'fits' or 'spasms'. See also if the child is convulsing now.

LOOK to see if the child is lethargic or unconscious

A lethargic child is not awake and alert when he should be. The child is drowsy and does not show interest in what is happening around him. Often the lethargic child does not look at his mother or watch your face when you talk. The child may stare blankly and appear not to notice what is going on around him. An unconscious child cannot be wakened. He does not respond when he is touched, shaken or spoken to.

Ask the mother if the child seems unusually sleepy or if she cannot wake the child. Look to see if the child wakens when the mother talks or shakes the

child or when you clap your hands. However, if the child is sleeping and has cough or signs of difficult breathing, you must count the number of breaths first before you try to wake the child because it is easier to count the exact breathing rate when the child is calm.

When you have completed the above steps, you should record what you have found on the sick child case recording form. You must circle any general danger signs that are found, and check (✓) against the appropriate answer (yes or no) in the classify column. Case study 1.1 below illustrates the assessment process for general danger signs in practice.

Case Study 1.1 Fatuma's story

Fatuma is 18 months old. She weighs 11.5 kg. Her temperature is 37.5°C. The health worker asked, 'What are the child's problems?' The mother said 'Fatuma has been coughing for six days, and she is having trouble breathing'. This is the initial visit for this illness.

The health worker checked Fatuma for general danger signs. The mother said that Fatuma was able to drink. She had not been vomiting. She had not had convulsions during this illness. The health worker asked, 'Does Fatuma seem unusually sleepy?' The mother said, 'Yes'. The health worker clapped her hands. She asked the mother to shake the child. Fatuma opened her eyes, but did not look around. The health worker talked to Fatuma, but the child did not watch her face. Fatuma stared blankly and appeared not to notice what was going on around her.

The top part of the sick child case recording form for the above case is reproduced for you in Figure 1.2 below. You can see the relevant information from the case study has been recorded.

MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

Child's Name: *Fatuma* Age: *18 months* Weight: *11.5 kg* Temperature: *37.5°C*

ASK: What are the child's problems? *cough, trouble breathing* Initial Visit? ✓ Follow-up Visit? __

ASSESS (Circle all signs present)		CLASSIFY
CHECK FOR GENERAL DANGER SIGNS		General danger sign present? Yes ✓ No ___
NOT ABLE TO DRINK OR BREASTFEED	LETHARGIC OR UNCONSCIOUS	
VOMITS EVERYTHING		Remember to use danger sign when selecting classifications
CONVULSIONS	CONVULSING NOW	

Figure 1.2 Recording information about general danger signs. (Source: *Assess and Classify the Sick Child Module*, IMNCI Chart Booklet, FMOH, Ethiopia, June 2008)

If the child has a general danger sign you should complete the rest of the assessment process immediately. After checking the general danger signs, you should assess the child for cough/difficult breathing, diarrhoea, fever, ear problems, malnutrition, anaemia and HIV. The presence of any one of the general danger signs indicates a severe classification. A child with a general danger sign or a severe classification should be referred immediately to the health centre after giving appropriate pre-referral treatments.

For any child who has a general danger sign you must complete the rest of the assessment process immediately. The presence of a general danger sign indicates a severe classification and the need for urgent referral.

In Case Study 5.1, Fatuma has the general danger sign 'lethargic or unconscious' which is a severe problem. You would complete the rest of the IMNCI assessment and refer her urgently after giving the necessary pre-referral treatments for her classifications, including treatment to prevent low blood sugar. Since she is able to feed, you would ask the mother to breastfeed Fatuma or give her a coffee cup of milk or sugar-water solution. You will learn about the pre-referral treatments in the subsequent study sessions in this Module.

■ What action should you take if a child has one or more of the general danger signs?

□ From the materials you have read so far, you know that if a child has any one of the five general danger signs, that child must be considered seriously ill and therefore you should make an immediate referral to a health centre.

This study session has introduced you to the IMNCI case management process and outlined the importance of this in helping to reduce death, illness and disability for babies and children in your community. You have seen that you have an important role to play in this respect. The remaining study sessions in this module will explain to you how to assess and treat children and young infants with a range of conditions, including:

- cough/difficult breathing, diarrhoea, fever, ear problems, malnutrition and anemia, HIV, immunization status and other problems (all sick children)
- serious bacterial infection, diarrhoea, HIV infection, feeding problems or low weight, immunization status and other problems (young infants).

Summary of Study Session 1

In Study Session 1, you have learned that:

1 IMNCI aims to reduce death, illness and disability, and to promote improved growth and development among children under five years of age.

2 The IMNCI strategy addresses the major causes of under-five morbidity and mortality which are responsible for more than 90% of the mortality, namely pneumonia, neonatal problems, diarrhoea, malaria, measles and malnutrition.

3 The IMNCI case management process involves a stepwise approach consisting of the following elements: assessment, classification, treatment, counselling and follow-up.

4 All children aged two months up to five years should be checked first for the five general danger signs: inability to drink or breastfeed, vomiting everything, history of convulsions during the current illness, lethargy or unconsciousness and convulsions now.

5 A child with any general danger sign should be referred urgently after receiving urgent pre-referral treatment.

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 these questions. 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 Outcomes 1.1, 1.2 and 1.4)

Why is the IMNCI strategy so important for Ethiopia? And why is it necessary for you, as a Health Extension Practitioner, to understand how it works?

SAQ 1.2 (tests Learning Outcomes 1.1 and 1.3)

What are the four main steps you have to take each time a sick child is brought to you? Try to explain why each of these steps is essential and must not be missed out, using your own words.

SAQ 1.3 (tests Learning Outcomes 1.1 and 1.4)

Read Case Study 1.2 and then answer the questions that follow.

Case Study 1.2 Salem's story

Salem is 15 months old. She weighs 8.5 kg. Her temperature is 38°C. She lives in a high malaria risk area. The health worker asked, 'What are the child's problems?' The mother said, 'Salem has been coughing for four days, and she is not eating well'. This is Salem's initial visit for this problem. The health worker checked Salem for general danger signs. She asked, 'Is Salem able to drink or breastfeed?' The mother said, 'No. Salem does not want to breastfeed'. The health worker gave Salem some water. She was too weak to lift her head. She was not able to drink from a cup. Next she asked the mother, 'Is she vomiting?' The mother said, 'No'. Then she asked, 'Has she had convulsions?' The mother said, 'No'. The health worker looked to see if Salem was convulsing or lethargic or unconscious. She was not convulsing but was lethargic.

(a) Does Salem have any danger signs? If so, what are they?

(b) What do you need to do next and why?

Study Session 2 Maternal, Newborn and Child Health

Introduction

Health statistics show that world wide about 4 million newborn babies die each year; another 4 million babies each year are stillborn; most die in late pregnancy or labour and most newborn deaths occur in developing countries. The same statistics show that about two-thirds of deaths in the first year of life occur in the first month of life; of those who die in the first month, about two-thirds die in the first week of life and of those who die in the first week, two-thirds die in the first 24 hours of life. Eighty-five percent of newborn deaths are due to three main causes: infection, birth asphyxia, and complications of prematurity and low birth weight (LBW).

In addition to the direct causes of death, many newborns die because of their mother's poor health (see Box 2.1), or because of lack of access to essential care. Sometimes the family may live hours away from a referral facility or there may not be a skilled health worker in their community. The newborn child is extremely vulnerable unless he or she receives appropriate basic care, also called essential newborn care. When newborns don't receive this essential care, they quickly fall sick and too often they die. For premature or LBW babies, the danger is even greater.

Box 2.1 Newborn care starts before birth

As a Health Extension Practitioner you need knowledge and skills to give essential newborn care and to recognise and manage common newborn problems. It is also essential for you to understand that good newborn health depends on good maternal health and nutrition, especially during pregnancy, labour and postpartum, and you are well placed to help families adopt healthy practices.

In the *Antenatal Care*, *Labour and Delivery Care* and *Postnatal Care* Modules you have learned about focused antenatal care, the skills you need to provide safe and clean delivery and the content and timing of postnatal care. We believe that you have gained understanding that care for the newborn and care for the mother are always integrated and that it is important for you to know how to provide effective health services in a holistic way that takes into account the needs of both the mother and her newborn.

In this study session you are going to learn about the knowledge and skills you need to provide essential newborn care and your role in supporting the mother and her new baby. You have already covered some of the issues in the *Postnatal Care* Module; however newborn care is such a crucial part of your work as a Health Extension Practitioner that it is useful for you to revisit some of the key points, as well as learn new information that will help you carry out your role as effectively as possible.

Learning Outcomes for Study Session 2

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

2.1 Define and use correctly all of the key words printed in **bold**. (SAQs 2.1, 2.2 and 2.3)

2.2 Describe how to give essential newborn care. (SAQs 2.1 and 2.2)

2.3 Explain how to assess, classify and treat a young infant for birth asphyxia. (SAQs 2.1 and 2.2)

2.4 Explain how to assess and classify and treat low birth weight babies. (SAQs 2.2 and 2.3)

2.5 Describe how to provide postnatal follow-up care. (SAQ 2.3)

2.1 Essential newborn care

The majority of babies are born healthy and at term. The care they receive during the first hours, days and weeks of life can determine whether they remain healthy. All babies need basic care to support their survival and wellbeing. This basic care is called **essential newborn care** (**ENC**) and it includes immediate care at birth, care during the first day and up to 28 days.

Most babies breathe and cry at birth with no help. Remember that the baby has just come from the mother's uterus, an environment that was warm and quiet and where the amniotic fluid and walls of the uterus gently touched the baby. You too should be gentle with the baby and keep the baby warm. Skin-to-skin contact with the mother keeps her baby at the perfect temperature, so you should encourage and help the mother to keep the newborn baby warm in this way.

The care you give the baby and mother immediately after birth is simple but important. In this study session you will learn about the steps of immediate care which should be given to all babies at birth. You will look at how to assess, classify and treat newborns for birth asphyxia and low birth weight as well as how to monitor the mother's condition closely in the minutes and hours after the birth.

2.2 The eight steps of essential newborn care

Before you look at the eight steps of essential newborn care (ENC) you need to remember the importance of the 'three cleans' that you learned in Study Session 3 of the *Labour and Delivery Care* Module. These are clean hands, clean surface and clean equipment. Your equipment should include two clean dry towels, cord clamps, razor blade, cord tie, functional resuscitation equipment, vitamin K, syringe and needles, and tetracycline eye ointment.

Step 1 Deliver the baby onto the mother's abdomen or a dry warm surface close to the mother.

Continue to support and reassure the mother. Tell her the sex of the baby and congratulate her.

Step 2 Dry the baby's body with a dry warm towel as you try to stimulate breathing. Wrap the baby with another dry warm cloth and cover the head (Figure 2.1).

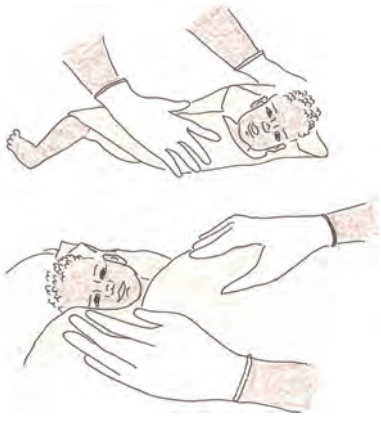


Figure 2.1 Drying and wrapping the newborn baby.

Dry the baby well, including the head, immediately and then discard the wet cloth. Wipe the baby's eyes. Rub up and down the baby's back, using a clean, warm cloth. Drying often provides sufficient stimulation for breathing to start

in mildly depressed newborn babies. Do your best not to remove the **vernix** (the creamy, white substance which may be on the skin) as it protects the skin and may help prevent infection. Then wrap the baby with another dry cloth and cover the head.

Step 3 Assess breathing and colour; if not breathing, gasping or there are less than 30 breaths per minute, then resuscitate.

You will remember that you learned how to manage a newborn baby with birth asphyxia in Study Session 7 of the *Labour and Delivery Care* Module.

As you dry the baby, assess its breathing. If a baby is breathing normally, both sides of the chest will rise and fall equally at around 30–60 times per minute. Thus, check if the baby is:

- Breathing normally
- Having trouble breathing
- Breathing less than 30 breaths per minute, or
- Not breathing at all.

Resuscitation of a baby who is not breathing must start within one minute of birth.

If the baby needs resuscitation, quickly clamp or tie and cut the cord, leaving a stump at least 10 cm long for now and then start resuscitation immediately. Functional resuscitation equipment should always be ready and close to the delivery area since you must start resuscitation within one minute of birth. It may sound as if you have a lot to do in one minute, but the steps described here are ones that you can take simultaneously. That is, while you are delivering the baby onto the mother's abdomen and drying the baby, you can assess breathing and colour and take urgent action if necessary.

Step 4 Tie the cord two fingers' length from the baby's abdomen and make another tie two fingers from the first one (Figure 2.2). Cut the cord between the first and second tie. If the baby needs resuscitation, cut the cord immediately. If not, wait for 7–3 minutes before cutting the cord.

1 Tie the cord securely in two places:
   - Tie the first one two fingers away from the baby's abdomen.
   - Tie the second one four fingers away from the baby's abdomen.
   - Make sure that tie is well secured; the thread you use to tie the cord must be clean.

2 Cut the cord between the ties:
   - Use a new razor blade, or a boiled one if it has been used before, or sterile scissors.
   - Use a small piece of cloth or gauze to cover the part of the cord you are cutting so no blood splashes on you or on others.
   - Be careful not to cut or injure the baby. Either cut away from the baby or place your hand between the cutting instrument and the baby.

3 Do not put anything on the cord stump.

Figure 2.2 Tying and cutting the cord.

Step 5 Place the baby in skin-to-skin contact with the mother, cover with a warm cloth and initiate breastfeeding.

The newborn loses heat in four ways (see Figure 2.3 below):

- **Evaporation**: when amniotic fluid evaporates from the skin.
- **Conduction**: when the baby is placed naked on a cooler surface, such as the floor, table, weighing scales, cold bed.
- **Convection**: when the baby is exposed to cool surrounding air or to a draught from open doors and windows or a fan.
- **Radiation**: when the baby is near cool objects, walls, tables, cabinets, without actually being in contact with them.

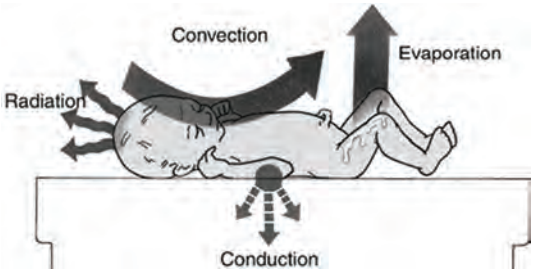


Figure 2.3 The newborn can lose heat in four ways. (Source: WHO, 1997, *Safe Motherhood: Thermal Protection of the Newborn, a Practical Guide*, accessed from http://whqlibdoc.who.int/hq/1997/WHO_RHT_MSM_97.2.pdf)

The warmth of the mother passes easily to the baby and helps stabilise the baby's temperature.

1 Put the baby on the mother's chest, between the breasts, for skin-to-skin warmth.
2 Cover both mother and baby together with a warm cloth or blanket.
3 Cover the baby's head.

The first skin-to-skin contact should last uninterrupted for at least one hour after birth or until after the first breastfeed. The baby should not be bathed at birth because a bath can cool the baby dangerously. After 24 hours, the baby can have the first sponge bath, if the temperature is stabilised.

If everything is normal, the mother should immediately start breastfeeding.

For optimal breastfeeding you should do the following:

1 Help the mother begin breastfeeding within the first hour of birth (Figure 2.4).
2 Help the mother at the first feed. Make sure the baby has a good position, attachment, and is sucking well. Do not limit the length of time the baby feeds; early and unlimited breastfeeding gives the newborn energy to stay warm, nutrition to grow, and antibodies to fight infection.

Figure 2.4 Initiating immediate breastfeeding.

The steps to keep the newborn warm are called the **warm chain**.

1 Warm the delivery room.
2 Immediate drying.
3 Skin-to-skin contact at birth.
4 Breastfeeding.
5 Bathing and weighing postponed.
6 Appropriate clothing/bedding.
7 Mother and baby together.
8 Warm transportation for a baby that needs referral.

Step 6 Give eye care (while the baby is held by its mother).

Shortly after breastfeeding and within one hour of being born, give the newborn eye care with an antimicrobial medication. Eye care protects the baby from serious eye infection which can result in blindness or even death.

The steps for giving the baby eye care are these:

First, wash your hands, and then using tetracycline 1% eye ointment:

1 Hold one eye open and apply a rice grain size of ointment along the inside of the lower eyelid. Make sure not to let the medicine dropper or tube touch the baby's eye or anything else (see Figure 2.5).

2 Repeat this step to put medication into the other eye.

3 Do not rinse out the eye medication.

4 Wash your hands again.

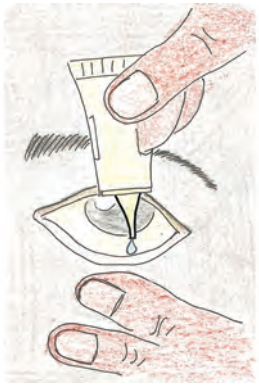


Figure 2.5 Putting tetracycline eye ointment into the eyes of the newborn baby.

Step 7 Give the baby vitamin K, 1 mg by intramuscular injection (IM) on the outside of the upper thigh (while the baby is held by its mother).

After following correct infection prevention steps, with the other hand stretch the skin on either side of the injection site and place the needle straight into the outside of the baby's upper thigh (perpendicular to the skin). Then press the plunger to inject the medicine. You will be learning more about safe injection techniques in your practical skills training sessions. There is also a study session on routes of injection in the *Immunization* Module.

Step 8 Weigh the baby.

Weigh the baby an hour after birth or after the first breastfeed. If the baby weighs less than 1,500 gm you must refer the mother and baby urgently.

Newborn babies who weigh less than 1,500 gm must be referred urgently to a hospital.

■ Why do you need to give essential newborn care?

□ At birth the newborn must adapt quickly to life outside the uterus. As a trained Health Extension Practitioner, you can take steps to ensure the baby is breathing well, kept warm and receives breastmilk from the mother.

2.3 Newborn danger signs

Although many babies will have a healthy birth and will breathe easily and begin feeding soon after being placed on the mother's breast, other babies will have a range of needs, some urgent, in order to ensure their safety and wellbeing.

It is very important that you check the newborn for the danger signs listed in Box 2.2 (on the next page), as the actions you take to help the newborn are crucial to ensure prompt and safe care. You also need to teach the mother to look for these signs in the newborn and advise her to seek care promptly if she observes any one of the danger signs.

Box 2.2 Newborn danger signs

Newborn danger signs; refer baby urgently if any of these is present:

- Breathing less than or equal to 30 or more than or equal to 60 breaths per minute, grunting, severe chest indrawing, blue tongue and lips, or gasping.
- Unable to suck or sucking poorly.
- Feels cold to touch or axillary temperature less than 35°C.
- Feels hot to touch or axillary temperature equal to or greater than 37.5°C.
- Red swollen eyelids and pus discharge from the eyes.
- Convulsion/fits/seizures.
- Jaundice/yellow skin (at age less than 24 hours or more than two weeks) involving soles of the feet and palms of the hands.
- Pallor.
- Bleeding.
- Repeated vomiting, swollen abdomen, no stool after 24 hours.

The axillary temperature is measured with a thermometer in the baby's armpit.

2.4 Birth asphyxia

As a Health Extension Practitioner you might be the only person present able to help the baby start breathing and prevent complications caused through lack of oxygen to the brain in the first few minutes after delivery. You therefore have an important role in the early moments and hours after birth. After completing this section you will understand the causes of birth asphyxia and be able to assess, classify and manage a newborn baby for birth asphyxia.

You may recall that you first learned about birth asphyxia in Study Session 7 of the *Labour and Delivery Care* Module. You should remember that birth asphyxia is when the baby receives too little oxygen because it does not begin or *sustain* adequate breathing at birth. Birth asphyxia can occur for many reasons. For example:

During pregnancy the mother may have:

- Hypertension (high blood pressure)
- Diabetes
- Infection
- Asthma.

During delivery complications may include:

- Preterm labour
- Prolonged or obstructed labour
- Cord coming down in front of the baby (prolapsed cord)
- Placenta covering, or partially covering, the cervix instead of being near the top of the uterus where it should be (placenta praevia)
- Detached placenta (placental abruption).

There are also other factors such as the baby being born preterm or post-term, the mother having had multiple gestations, or cord or placenta problems which prevent blood flow to the baby.

If you need to remind yourself about these problems, you should go back to Study Sessions 17–21 in the *Antenatal Care* Module, and Study Sessions 7–11 in the *Labour and Delivery Care* Module.

2.4.1 Assess and classify birth asphyxia

If you are attending a delivery or a baby is brought to you immediately after birth, you should assess for birth asphyxia. Assess the baby after drying and wrapping him or her with a dry cloth. To assess for birth asphyxia, you need to look and listen for breathing patterns.

Assess asphyxia

- No breathing: the newborn has not cried or there are no spontaneous movements of the chest.
- Gasping: the newborn attempts to make some effort to breathe with irregular and slow breathing movements.
- Breathing poorly: count breaths in one minute. The normal breathing rate of a newborn baby is 30–60 per minute. If the breathing rate is less than 30 per minute it is a sign of asphyxia.

Classify asphyxia

There are two possible classifications:

- Birth asphyxia
- No birth asphyxia.

It is critical that you treat birth asphyxia quickly; if you don't, the baby may die or may develop complications from which he or she never fully recovers. Table 2.1 (on the next page) sets out a summary of the signs of asphyxia and the treatment that should be given.

Table 2.1 Assessment, classification and management of birth asphyxia.

SIGNS	CLASSIFY AS	TREATMENT
If any of the following sign • Not breathing • Gasping • Is breathing poorly (less than 30 per minute)	Birth Asphyxia	• Cut the cord Start resuscitation • Position the newborn supine with neck slightly extended • Clear the mouth and nose with gauze or clean cloth or bulb syringe • Ventilate with appropriate size mask and self inflating bag • If the resuscitation is successful continue giving essential newborn care • If the baby remains weak or still has irregular breathing after 20 minutes of resuscitation refer urgently to hospital; continue to resuscitate the baby on the way • Stop resuscitation after 20 minutes if no response (no spontaneous breathing) • Monitor continuously for 6 hours • Follow-up care after 6–24hrs, days 3 and 7
• Strong cry • Breathing more than 30 per minutes	No Birth Asphyxia	• Cord care • Eye care • Vitamin K • Initiate skin-to-skin contact • Initiate breastfeeding • Advise mother when to return • Give OPVO and BCG vaccination • Follow-up care after 6 hrs, 3 days and 6 weeks

If you need to remind yourself about the detail of how to manage birth asphyxia you should revisit Study Session 7 of the *Labour and Delivery Care* Module.

If there is no birth asphyxia and the baby is crying strongly or breathing more than 30 breaths per minute you should continue with essential newborn care, as summarised in Figure 2.6.

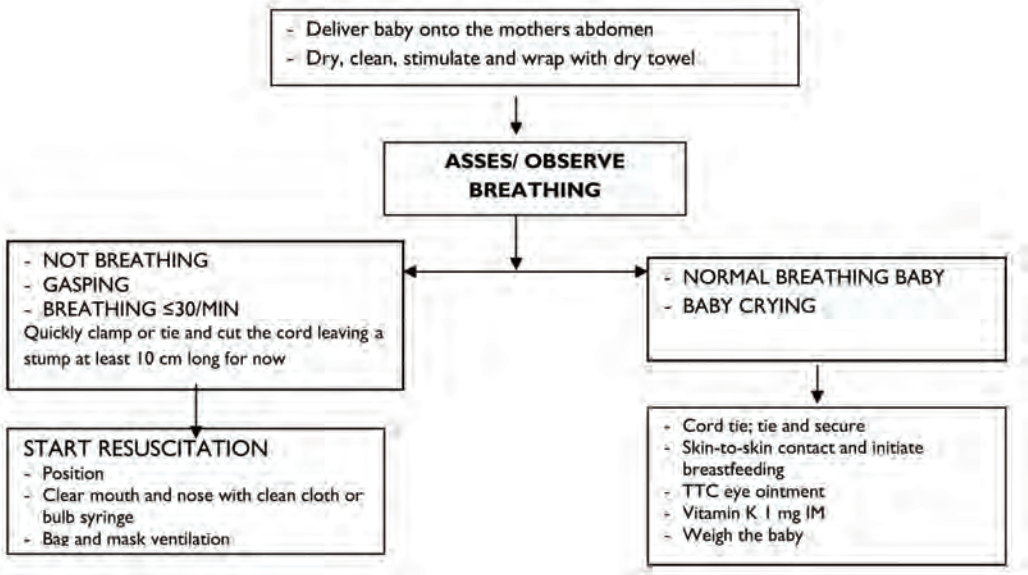


Figure 2.6 Steps of immediate newborn care.

2.5 Assess, classify and manage low birth weight babies

In this section you will learn about problems associated with **prematurity** (preterm, born before 37 weeks of pregnancy) and **low birth weight** (LBW) (a small for gestational age baby who did not grow well enough in the uterus during pregnancy) and how to manage these. This is important because LBW babies are more likely to have breathing and feeding problems and develop infection and die than babies with a birth weight of 2,500 gm or more. LBW babies who survive are likely to have more medical and developmental problems than normal term babies. Most communities believe that these babies are born to die. As a Health Extension Practitioner you have an important role to change this belief and help mothers and family members to provide the extra care the LBW baby needs. Box 2.3 sets out some of the common problems for premature or LBW babies.

■ What is low birth weight? What is very low birth weight?

□ Low birth weight is where a baby weighs less than 2,500 gm at birth. A very low birth weight baby is one who weighs less than 1,500 gm at birth. A LBW baby can be premature, or small for gestational age.

You learned the definition of LBW and very LBW in Study Session 8 of the *Postnatal Care* Module.

Box 2.3 Low birth weight babies: problems and explanations

Problems	Explanations
Breathing problems:	- Immature lungs - Hypothermia (baby too cold) - Infections
Low body temperature:	- Immature body temperature regulating system - Low body fat
Low blood sugar:	- Low energy store
Feeding problem:	- Inability to suck or coordinate breathing and swallowing - Small size - Low energy - Small stomach
Infections:	- Not well developed immune system
Jaundice:	- Not well developed liver to break down bilirubin (the substance found in blood that gives it red colour and helps in oxygen transport)
Bleeding problem:	- Not well developed clotting mechanisms.

2.5.1 Characteristics of premature babies

Premature babies have a number of characteristics depending on their gestational age:

- *Skin*: may be reddened. The skin may be thin so blood vessels are easily seen.
- *Lanugo*: there is a lot of fine hair all over the baby's body.
- *Limbs*: the limbs are thin and may be poorly flexed or floppy due to poor muscle tone.
- *Head size*: appears large in proportion to the body. The **fontanelles** (open spaces where skull bones join) are smooth and flat.
- *Chest*: no breast tissue before 34 weeks of pregnancy.
- *Sucking ability*: weak or absent.
- *Genitals*: in boys the testes may not be descended and the scrotum may be small; in girls the clitoris and labia minora may be large.
- *Soles of feet*: creases are located only in the anterior (front) of the sole, not all over, as in the term baby.

2.5.2 Assess birth weight and gestational age

If you are attending delivery or a baby is brought to you within seven days of birth, you must assess for birth weight and gestational age. You can do this in the following way:

Assess

You should ask the mother about the gestational age; that is, the duration of the pregnancy in weeks when the baby was born. Use the mother's word or recollection of the time of her last normal menstrual period (LNMP) if she can remember this, to estimate gestational age. If this is not possible you should use the baby's weight to do the classification.

Then weigh the baby; if you do not have the birth weight (weight taken within 24 hrs of birth), the weight taken in the first seven days of life may be used for the classification of birth weight.

Classify

There are three possible classifications:

- Very low birth weight and/or very preterm
- Low birth weight and/or preterm
- Normal weight and/or term.

2.5.3 Treatment for low birth weight babies

The death rate for LBW babies is very high. With simple care you can support and advise the family how to care for a LBW baby and improve greatly their chances of survival.

Table 2.2 describes the treatment that you should give a LBW baby and the advice that you should give the baby's mother.

Table 2.2 Assessment, classification and treatment of low birth weight babies.

SIGNS	CLASSIFY AS	TREATMENT
Weight < 1,500gm or Gestational age < 32 weeks	Very low birth weight and/or Very preterm	• Continue feeding with expressed breast milk • Continue Kangaroo Mother Care • Give Vitamin K 1mg IM on anterior mid thigh • Refer URGENTLY with mother to hospital
Weight 1,500 to <2,500 grams or Gestational age 32-37 weeks	Low birth weight and/or Preterm	• Kangaroo Mother Care (KMC) for babies less than 2,000 gm • Counsel on optimal breastfeeding • Counsel mother/family on prevention of infection • Give vitamin K 1mg IM on anterior mid thigh • Provide follow-up visits at age 6 hrs, 2 days & then every week for 6 weeks • Advise mother when to return immediately • Give OPVO and BCG vaccinations
Weight ≥ 2,500gm or Gestational age ≥ 37 weeks	Normal weight and/or Term	• Counsel on optimal breastfeeding • Counsel mother/family on prevention of infection • Provide three follow-up visits at age 6-24 hrs, days 3 and 7 • Give Vitamin K 1mg IM on anterior mid thigh • Give OPVO and BCG vaccinations • Advise mother when to return immediately

2.5.4 Kangaroo mother care (KMC)

Kangaroo mother care has three main components. KMC is also covered in Study Session 8 of the *Postnatal Care* Module; however as it is such an important aspect of newborn care we have also included it in this study session. You will also learn more about KMC in your practical skills sessions.

Figure 2.7 Kangaroo mother care.

1 *Continuous skin-to-skin contact between the baby's front and the mother's chest*: skin-to-skin contact starts at birth and is continued day and night. There may be brief interruptions such as when the baby is being bathed. The baby wears only a hat or cloth, to keep its head warm, and a nappy/diaper (see Figure 2.7).

2 *Exclusive breastfeeding*: the baby breastfeeds within one hour after birth and then every two to three hours (see Figure 2.8). The baby is unlikely to be able to suck the breast properly so you will need to support the mother to express milk so that she can also cup feed her baby.

Figure 2.8 Exclusively breastfeeding the baby is important.

3 *Support to the mother*: the mother can continue to do what she normally does while providing KMC, for example cook, clean and sleep. However she needs support from you as the health worker, as well as her family and others in the community; by keeping the baby skin-to-skin for short periods while the mother rests or takes care of other duties.

■ How does KMC help the baby and the mother?

□ KMC helps the baby in stabilising its temperature, making the breathing stable and regular, improving immunity, reducing infection and enabling it to feed better and gain weight faster. KMC helps the mother in becoming more attached to her baby emotionally; gives her confidence and ability to care for her small baby.

2.6 Newborn postnatal follow-up home visits

The postnatal period (the first six weeks after birth) is critical to the health and survival of a mother and her newborn. Sixty percent of maternal and 75% of newborn deaths occur during the first postpartum week. Lack of care in this period may result in death or disability as well as missed opportunities to promote healthy behaviour, affecting women, newborns and children. As around 94% of the mothers in your community deliver at home, it is important to provide three home visits for postnatal care for normal weight babies at the critical times and arrange for the mother to come to the health post at six weeks for the fourth visit. You will need to make one extra home visit for low birth weight babies.

During these visits your role as a Health Extension Practitioner is to undertake a range of tasks aimed at ensuring the health of the baby and mother, and to do what you can to support the mother's care of her new baby. The following section outlines your main tasks during the first six weeks after the baby's birth. You have learned this in more detail in the *Postnatal Care* Module.

2.6.1 Six to 24 hours' visit and evaluation

- Check for danger signs in the newborn and in the mother
- Counsel the mother/family to keep the newborn warm
- Counsel the mother/family on optimal breastfeeding
- Check the baby's umbilicus for bleeding
- Counsel the mother to keep umbilicus clean and dry and take infection prevention precautions
- Weigh the newborn, if not weighed at birth
- Immunize the newborn with oral polio vaccine (OPV) and BCG vaccine to protect against tuberculosis
- Give the newborn vitamin K, 1 mg (IM) if it has not been given before
- Give one capsule of 200,000 IU (International Units) vitamin A to the mother
- Counsel the lactating mother to take at least two more meals than usual every day.

Vaccination with OPV and BCG is taught in the *Immunization* Module.

2.6.2 Two days' visit to low birth weight/preterm, low body temperature babies

- Check for danger signs in the newborn
- Counsel and support optimal breastfeeding
- Follow-up of kangaroo mother care
- Follow-up of counselling to the mother given during previous visits
- Counsel mother/family to protect the newborn from infection
- Give one capsule of 200,000 IU vitamin A to the mother if not given before
- Immunize the newborn with OPV and BCG if not given before now.

2.6.3 Three days' visit

- Check for danger signs in the newborn
- Counsel and support optimal breastfeeding
- Follow-up of kangaroo mother care
- Follow-up of counselling given during previous visits
- Counsel mother/family to protect the newborn from infection
- Give one capsule of 200,000 IU vitamin A to the mother if not given before
- Immunize the newborn with OPV and BCG if not given before
- Counsel mother/father on healthy birth spacing, on return of fertility and postpartum family planning.

2.6.4 Seven days' visit

- Check for danger signs in the newborn
- Counsel and support optimal breastfeeding
- Counsel mother/father on healthy birth spacing, on return of fertility and postpartum family planning
- Follow-up of kangaroo mother care
- Follow-up of counselling given during previous visits
- Counsel mother/family to protect the newborn from infection
- Give one capsule of 200,000 IU vitamin A to the mother if not given before
- Immunize the newborn with OPV and BCG if not given before.

You have now covered the immediate newborn care that you will need to provide in your role as the Health Extension Practitioner. You have also seen how timing and home visits are crucial for both the immediate care and postnatal care. Your support for and advice to the mother and family of the newborn is very important and can make a big difference to the health of the mother and her new baby.

Summary of Study Session 2

In Study Session 2, you have learned that:

1 The majority of newborn deaths occur during the first week and first 24 hours.

2 Birth asphyxia and prematurity/low birth weight are two of the three major causes of newborn deaths (infections are the third cause and you will learn more about these in the next study session).

3 Basic care of the newborn is called essential newborn care and it includes immediate care at birth, care during the first day, and up to 28 days.

4 Birth asphyxia is when a baby does not begin or sustain adequate breathing at birth. There are a number of causes of birth asphyxia including prolonged labour, the cord or placenta problems, and premature birth.

5 If the newborn is not breathing, or is gasping, or is breathing poorly (less than 30 breaths per minute) you should classify as birth asphyxia and start resuscitation immediately. The first minutes are crucial moments to prevent brain damage.

6 LBW refers to a newborn who weighs less than 2,500 gm at birth and a very low birth weight baby is one who weighs less than 1,500 gm at birth. A LBW baby can be premature or small for gestational age. These babies need special care in order to have a better chance to live and be healthy.

7 Kangaroo mother care is a simple and safe way that mother and family can provide to help the low birth weight baby adjust to life outside the uterus. The three main components are continuous skin-to-skin contact, exclusive breastfeeding and family support to the mother.

8 It is important to check the newborn at every visit for general danger signs such as difficult breathing, low or high body temperature, difficulties in feeding and a range of possible infections.

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 Outcomes 2.1, 2.2 and 2.3)

Read Case Study 2.1 and answer the question below.

Case Study 2.1

You are called to Workitu's home because the delivery is delayed. You help Workitu and she delivers a baby girl. The baby is breathing less than 30 breaths per minute.

What do you do?

SAQ 2.2 (tests Learning Outcomes 2.1, 2.2, 2.3 and 2.4)

What do you think is the best kind of care for a low birth weight baby? Explain your answer.

SAQ 2.3 (tests Learning Outcomes 2.1, 2.3 and 2.5)

Why is it so important to visit the mother and baby at home during the six weeks after the baby's birth?

Study Session 3 Management of Bacterial Infection and Jaundice in the Newborn and Young Infants

Introduction

As a Health Extension Practitioner you will encounter young infants who need your care. Young infants' illness forms a major part of health problems for children under five years old in Ethiopia, and your skills in being able to assess, classify and treat young infants is a crucial aspect of your role. In this study session you will learn how to manage a sick young infant from birth up to two months old.

Young infants have special characteristics that must be considered when classifying their illness. They can become sick and die very quickly from serious bacterial infections. They frequently have only general signs, such as few movements, fever, or low body temperature. This study session will teach you how to assess, classify and treat a young infant. In particular, it focuses on how to assess and classify bacterial infection and jaundice in a young infant, when you need to refer a young infant for other urgent medical services and, as a Health Extension Practitioner, what **pre-referral treatment** (one dose of treatment) you can provide just before sending a young infant to a referral facility.

Learning Outcomes for Study Session 3

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

3.1 Define and use correctly all of the key words printed in **bold**. (SAQs 3.1 and 3.2)

3.2 Assess and classify a young infant for possible bacterial infection and jaundice. (SAQs 3.1and 3.2)

3.3 Determine if urgent referral of the young infant to hospital for medical treatment is needed. (SAQ 3.2)

3.4 Identify what pre-referral treatments are needed for young infants who need urgent referral. (SAQ 3.2)

3.5 Write a referral note. (SAQ 3.2)

3.6 Identify the range of treatment for young infants with local bacterial infection or jaundice who can be looked after at home. (SAQ 3.1)

3.7 Provide follow-up care for the young infant. (SAQ 3.1)

3.1 Assess and classify the young infant

A young infant can become sick and die *very quickly* from serious bacterial infections such as **pneumonia, sepsis** and **meningitis**. Therefore if a young infant is brought to you because they are, or appear to be, sick it is important that you assess the infant carefully.

Pneumonia is an infection of the lungs. Sepsis occurs when infection spreads to the bloodstream. Meningitis is an infection of the thin tissues that cover the brain and spinal cord.

3.1.1 Gaining the mother's trust

When you see the mother and her sick child you should begin by greeting the mother appropriately and ask her to sit with her child. You should ask the mother if this is the first visit or a follow-up visit (unless you know this already) and ask her what the young infant's problems are. You need to know her child's age so you can choose the right case management chart (which you will come to later in this study session). As you may recall from Study Session 1, children from birth up to two months will be assessed and classified by you according to the steps on the *young infant chart.*

You do not need to weigh the young infant or measure their temperature until later in the visit when you assess and classify the young infant's main symptoms. At the early stage in the visit, you do not need to undress or disturb the baby.

3.1.2 Good communication skills

An important reason for asking the mother a few simple questions at the beginning of the visit is to open good communication with her. This will help to reassure the mother that her baby will receive good care. When you treat the infant's illness later in the visit or during any follow-up visits, you will need to teach and advise the mother about caring for her sick infant at home. You will learn more about how to communicate with and counsel the mother effectively about home treatment in Study Session 14 in this Module. The key point is that it is important to establish good communication with the mother from the beginning of the visit.

Good communication involves using several skills. You should:

- *Listen carefully to what the mother tells you*. This will show her that you are taking her concerns seriously.
- *Use words the mother understands.* If she does not understand the questions you ask her, she cannot give the information you need to assess and classify the infant correctly.
- *Give the mother time to answer the questions.* For example, she may need time to decide if the sign you asked about is present.
- *Ask additional questions when the mother is not sure about her answer.* When you ask about a main symptom or related sign, the mother may not be sure if it is present. Ask her additional questions to help her give you clearer answers.

Because a young infant's illness can rapidly develop into serious life-threatening conditions, effective communication skills with the mother are crucial when assessing her young infant. In the next section you are going to look at the steps you need to follow when assessing a young infant.

3.2 Assessment

Depending on whether it is an initial visit or a follow-up visit, there is a sequence of steps that you need to follow to assess a young infant. The assessment steps described below must be done for *every* sick young infant. First, you are going to look at how to conduct an initial visit assessment.

3.2.1 Initial visit assessment

To assess a young infant you should:

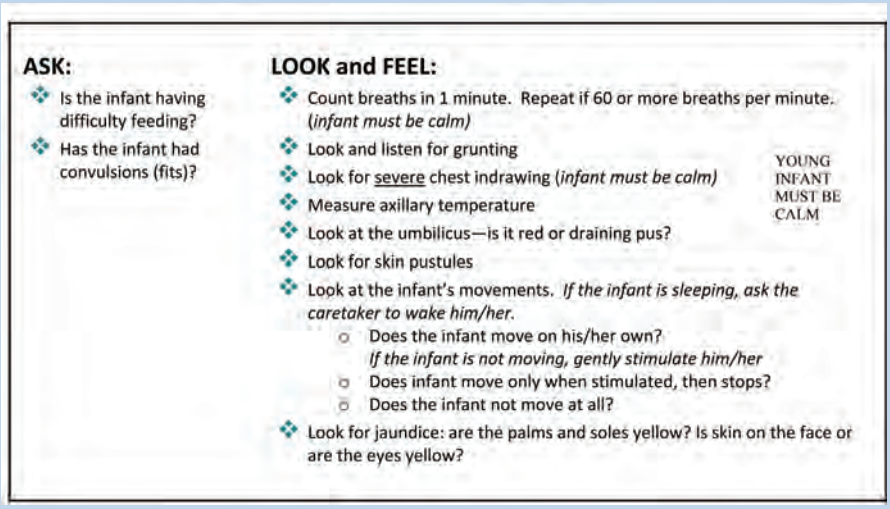
- Check for signs of possible bacterial infection and jaundice.
- Ask about diarrhoea. If the infant has diarrhoea, assess the related signs, including whether the young infant is dehydrated. Also classify whether the diarrhoea is persistent and whether dysentery is present (you will learn how to assess for dysentery in Study Session 5 of this Module).
- Check for feeding problems or low weight. This includes assessing breastfeeding (which you will learn in Study Session 5 of this Module).
- Check the young infant's immunization status (which you will learn in Study Session 12 of this Module).
- Assess any other problems, for example birth trauma and birth defects.

If it is clear that a young infant needs urgent referral, because you have classified serious bacterial infection or jaundice or another serious illness, there may not be time to do the breastfeeding assessment.

You need to be aware of the importance of assessing the signs in the order set out in Box 3.1 below, and to keep the young infant calm while you do the assessment. The young infant may be asleep while you assess the first three signs: that is, counting breathing, looking for chest in-drawing and grunting. When you assess the signs in relation to the umbilicus, temperature, skin pustules and jaundice, you will need to pick up the infant and then undress him, so that you can look at the skin all over his body and measure his temperature. By this time he will probably be awake so you can then observe his movements.

Box 3.1 sets out the steps you need to take to assess the young infant for bacterial infection and jaundice at the initial visit.

Box 3.1 How to check for possible bacterial infection and jaundice at an initial visit



You are now going to look at each of these steps in more detail, first in relation to assessing for bacterial infection.

3.3 Assess for bacterial infection

There are a number of questions you should ask, and signs that you should look for, to assess whether or not a young infant or child has bacterial infection. For example:

ASK: Is there any difficulty feeding?

Ask the mother this question. Any difficulty mentioned by the mother is important. She may need counselling or specific help with any problems she is experiencing when feeding her baby. If the mother says that the young infant is not able to feed, assess breastfeeding or watch her try to feed the young infant with a cup to see what she means by this. Any young infant who is not able to feed may have a serious infection or other life-threatening problem.

ASK: Has the infant had convulsions?

Convulsions can be generalised or **focal** (an abnormal body movement that is limited to one or two parts of the body, such as twitching of the mouth and eyes, arms or legs). Focal convulsions can be faint and can easily be missed. They can present with twitching of the fingers, toes or mouth or rolling of the eyes.

LOOK: Count the breaths in one minute. Repeat the count if the infant's breathing is fast

You must count the breaths the young infant takes in one minute to decide if the infant has fast breathing. Sixty breaths per minute or more is the cut-off used to identify fast breathing in a young infant. The child must be quiet and calm when you look at and listen to his breathing. Tell the mother you are going to count her infant's breathing. Remind her to keep her infant calm. If the infant is sleeping, do not wake him.

To count the number of breaths in one minute:

1 Use a watch with a second hand or a digital watch, look at the infant's chest and count the number of breaths in 60 seconds.

2 Look for breathing movement anywhere on the child's chest or abdomen. You can usually see breathing movements even in an infant who is dressed. If you cannot see this movement easily, ask the mother to lift the infant's shirt. If the infant starts to cry, ask the mother to calm the infant before you start counting.

If you are not sure about the number of breaths you counted (for example, if the infant was actively moving and it was difficult to watch the chest, or if the infant was upset or crying), repeat the count.

If the first count is 60 breaths or more, repeat the count. This is important because the breathing rate of a young infant is often irregular. A young infant will occasionally stop breathing for a few seconds, followed by a period of faster breathing. If the second count is also 60 breaths or more, the young infant has fast breathing.

LOOK for severe chest in-drawing

If you did not lift the infant's shirt when you counted the infant's breaths, ask the mother to lift it now.

Look for chest in-drawing when the infant breathes *in*. Look at the lower chest wall (lower ribs). The infant has **chest in-drawing** if the lower chest wall goes *in* when the infant breathes *in*. Chest in-drawing occurs when the effort the infant needs to breathe in is much greater than normal. In normal breathing, the whole chest wall (upper and lower) and the abdomen move *out* when the infant breathes *in*. When chest in-drawing is present, the lower chest wall goes *in* when the infant breathes *in*. Chest in-drawing is also known as **subcostal in-drawing** or **subcostal retraction**.

If you are not sure that chest in-drawing is present, look at the infant again. If the infant's body is bent at the waist, it is hard to see the lower chest wall move. Ask the mother to change the infant's position so he is lying flat in her lap. If you still don't see the lower chest wall go *in* when the infant breathes *in* the infant does not have chest in-drawing.

For chest in-drawing to be present, it must be clearly visible and present all the time. If you only see chest in-drawing when the infant is crying or feeding, the infant does not have chest in-drawing.

If *only* the soft tissue between the ribs goes in when the child breathes in (also called **intercostal in-drawing** or **intercostal retraction**), the infant does *not* have chest in-drawing.

Mild chest in-drawing is normal in a young infant because the chest wall is soft. Severe chest in-drawing is very deep and easy to see. Severe chest in-drawing is a sign of pneumonia and is serious in a young infant.

■ How do you decide whether a two-week-old infant has a mild or severe chest in-drawing?

□ If you look carefully at the young infant's bare chest and see the lower chest wall going in when the infant breathes in, and the infant is calm, you will know this is severe chest in-drawing. It is more than the mild chest in-drawing you might see simply because the chest wall is soft in a young infant.

LOOK and LISTEN for grunting

Grunting is the soft, short sounds a young infant makes when breathing out. Grunting occurs when an infant is having trouble breathing.

LOOK at the umbilicus — is it red or draining pus?

There may be some redness of the end of/around the umbilicus or the umbilicus may be draining pus (Figure 3.1). The cord usually drops from the umbilicus by one week of age.

Figure 3.1 Baby with umbilical infection. (Source: *National IMNCI Guideline*)

Feel and measure

Measure the **axillary** (underarm) temperature (or feel for fever or low body temperature). Fever (where the *axillary* temperature is 37.5°C or more) is uncommon in the first two months of life. If a young infant has a fever, this may mean the infant has a serious bacterial infection. A fever may be the *only* sign of a serious bacterial infection. Young infants can also respond to infection by developing **hypothermia** (dropping of body temperature to below 35.5°C). **Low body temperature** is defined as body temperature between 35.5 and 36.4°C.

If you do not have a thermometer, feel the infant's stomach or axilla (underarm) and determine if it feels hot or unusually cool.

LOOK for skin pustules

Examine the skin on the entire body. Skin pustules are red spots or blisters which contain pus.

LOOK at the young infant's movements. Are they fewer than normal?

Young infants often sleep most of the time, and this is not a sign of illness. Even when awake, a healthy young infant will usually not watch the mother and a health worker while they talk, as an older infant or young child would. If a young infant does not wake up during the assessment, ask the mother to wake him.

A young infant who is awake will normally move his arms or legs or turn his head several times in a minute if you watch him closely. You should observe the infant's movements while you do the assessment. Look and see if the young infant moves when gently shaken by the mother, or when you clap your hands or gently stimulate the young infant. If the young infant moves only when stimulated, or does not move even when stimulated, this is a sign that the young infant could have an infection.

3.4 Assess for jaundice

When you assess for jaundice, you look to see whether the child has yellow discolouration in the eyes and skin (for example, look at the infant's palms and soles to see if they are yellow).

Jaundice is yellow discolouration of skin. Almost all newborns may have '**physiological jaundice**' during the first week of life due to several physiological changes taking place after birth. Physiological jaundice usually appears between 48 and 72 hours of age; maximum intensity is seen on the fourth or fifth day (the seventh day in preterm newborns) and disappears by 14 days. It does not extend to the palms and soles, and does not need any treatment. However, if jaundice appears on the first day, persists beyond 14 days and extends to the young infant's palms and soles of the feet, it indicates **pathological jaundice**, which could lead to brain damage.

To look for jaundice, you should press the infant's forehead with your fingers to blanch the skin, then remove your fingers and look for yellow discolouration under natural light. If there is yellow discolouration, the infant has jaundice. Look at the eyes of the infant for yellowish discolouration as well. To assess for severity, repeat the process with the infant's palms and soles too.

- How would you look for jaundice in a newborn baby?
- As you read, there are several ways you could do this, for example looking for signs on the infant's forehead by pressing the skin there, and also looking at the infant's eyes, palms and soles to see if there is any discolouration.

3.5 Classify bacterial infection and jaundice

If you have assessed a young infant as having bacterial infection and/or jaundice, you will need to classify the level of seriousness so you know whether to make an urgent referral for relevant medical treatment, or whether you can provide the right treatment yourself.

As you have learned in the study session on immediate newborn care, most classification tables have three rows. Classifications are colour-coded into pink, yellow or green. The colour of the row tells you if the young infant or the child has a serious illness. You can then quickly choose the appropriate treatment.

- A classification in the pink row means that the young infant needs urgent attention and referral or admission for in-patient care. This is a severe classification.
- A classification in the yellow row means that the young infant needs an appropriate antibiotic or other treatment. The treatment includes you teaching the mother how to give the oral drugs or to treat local infections at home and advising her about caring for the young infant at home and when she should return for a follow-up visit.
- A classification in the green row means the young infant is unlikely to have serious bacterial infection and will therefore not need specific medical treatment such as antibiotics. You will need to teach the mother how to care for her young infant at home. For example, you might advise her on feeding her sick young infant or giving fluid for diarrhoea (you will find out more about how to advise and counsel the mother on treating her child at home in Study Session 14 in Part 2 of this Module).

■ When you are making the postnatal home visit on the third day, you find that the baby has a respiratory rate of 70 breaths per minute and an axillary temperature of 35°C. What other signs should you look for? How would you classify the baby's illness?

□ You should ask whether the young infant is feeding poorly, check for severe chest in-drawing, look to see if the baby moves only when stimulated and check for jaundice. Even if the young infant has only two of these signs you would classify the case as possible serious bacterial infection or very severe disease.

In Table 3.1 (on the next page), you can see how bacterial infection and jaundice are classified according to particular signs in the young infant. The most urgent actions that need to be taken are in italics (in the third column).

Table 3.1 Classification and treatment of bacterial infection and jaundice.

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT
• Not feeding well or • Convulsions/convulsing now or • Fast breathing (60 breaths per minute or more) or • Severe chest in-drawing or • Grunting or • Fever (37.5°C or above or feels hot) or • Low body temperature (less than 35.5°C or feels cold) or • Movement only when stimulated or no movement even when stimulated	*POSSIBLE SERIOUS BACTERIAL INFECTION Or VERY SEVERE DISEASE*	► *Give first dose of intramuscular Gentamycine and oral Amoxacilline* ► *Treat to prevent low blood sugar* ► *Warm the young infant by skin-to-skin contact if temperature less than 36.5°C (or feels cold to touch) while arranging referral* ► *Advise mother how to keep the young infant warm on the way to the hospital* ► *Refer URGENTLY to hospital*
• Red umbilicus or draining pus or • Skin pustules	*LOCAL BACTERIAL INFECTION*	► *Refer URGENTLY to hospital* ► Teach mother to treat local infections at home. ► Advise mother to return for follow-up visit with the young infant in 2 days.
• None of the signs of possible serious bacterial infection or local bacterial infection	*SEVERE DISEASE, or LOCAL INFECTION UNLIKELY*	► Advise mother to give home care for the young infant.
• Temperature between 35.5–36.4°C (both values inclusive)	*LOW BODY TEMPERATURE*	► *Treat to prevent low blood sugar* ► *Warm the young infant using skin- to-skin contact for one hour and reassess. If temperature remains same or worse, refer.* ► Advise mother to return for follow up visit with young infant in 2 days.
• Palms and/or soles yellow or • Skin or eyes yellow, age <24 hours or age 14 days or more	*SEVERE JAUNDICE*	► *Treat to prevent low blood sugar* ► *Warm the young infant by skin- to-skin contact if temperature less than 36.5°C (or feels cold to touch) while arranging referral* ► *Advise mother how to keep the young infant warm on the way to the hospital* ► *Refer URGENTLY to hospital.*
• Only skin or eyes yellow	*JAUNDICE*	► Advise mother to give home care for the young infant ► Advise mother when to return for follow-up visit with young infant in 2 days

3.6 Identify appropriate treatment

You are now going to learn how to identify and give pre-referral treatment when a young infant has signs of possible serious bacterial infection and how to treat the young infant who does not need referral. You will also look at how to treat for jaundice.

3.6.1 Possible serious bacterial infection or very severe disease

A young infant with signs of possible serious bacterial infection may be at a high risk of dying.

An infant may have pneumonia, sepsis or meningitis, and it can be difficult to distinguish between these infections. It is not necessary for you to make this distinction, however, since your responsibility for a young infant with any sign of possible serious bacterial infection is to refer the young infant to hospital as a matter of urgency. Before referral, there are several things you can do to minimise the risk to the young infant's health. For example:

- Give a first dose of intramuscular and oral antibiotics.
- Treat to prevent low blood sugar; this can be done by:
  - the mother breastfeeding the child
  - if the young infant is unable to breastfeed, offering expressed breastmilk or a breastmilk substitute
  - offering sugar water if neither of the above options is available.
  - The young infant should have 30–50 ml of milk or sugar water before departure for medical treatment.

To make sugar water:
Dissolve four level teaspoons of sugar (20 gm) in a 200 ml cup of clean water.

- Keep the young infant warm. Advising the mother to keep her sick young infant warm is very important. Young infants have difficulty in maintaining their body temperature. Low temperature alone can kill young infants.

Malaria is unusual in young infants, so you don't need to give any treatment for possible severe malaria.

3.6.2 Local bacterial infection

Young infants with local bacterial infection usually have an infected umbilicus or a skin infection. The young infant needs to be referred to the health centre to get an appropriate oral antibiotic which can be administered by the mother for five days. The mother should therefore treat the local infection at home and give home care to her child and then return for a follow-up visit to the health post within two days to be certain the infection is improving. Bacterial infections can progress rapidly in young infants, so it is important that the mother understands she must return for you to check her young infant's progress. You will learn in Study Session 14 of this Module how to teach mothers to treat local infections at home.

3.6.3 Severe disease or local infection unlikely

A young infant who is unlikely to have either severe disease or local infection does not require any specific treatment. Advise the mother to give home care for her young infant.

3.6.4 Low body temperature

In the absence of signs of possible serious bacterial infection and severe jaundice, if the axillary temperature of a young infant is between 35.5 and 36.4°C, the baby is probably not be sick enough to be referred. Low body temperature in such a case may be due to environmental factors and may not be due to infection. Such an infant should be warmed using kangaroo mother care (skin-to-skin contact) for one hour. First you should treat the young infant to prevent low blood sugar in one of the ways outlined above. You should reassess the young infant after one hour for signs of possible serious bacterial infection and record the infant's temperature again.

3.6.5 Severe jaundice

A sick young infant with jaundice may have physiological jaundice. As you read earlier in this study session, this kind of jaundice can become worse, so you need to follow this up. You should give the mother advice on home care for the young infant, and ask her to return for a follow-up visit in two days so you can re-assess the level of jaundice present in the child.

A sick young infant with severe jaundice is at risk of suffering from **bilirubin** (a yellowish bile pigment that is an intermediate product of the breakdown of haemoglobin in the liver) which can cause brain damage. Therefore, you would need to refer a young infant with severe jaundice to an appropriate health facility for investigation and appropriate treatment. Before you arrange for the young infant to be referred to hospital you should ensure that he is treated to prevent low blood sugar, and that he is kept warm, both while referral is being arranged and on the way to the hospital.

- Robel is a sick young infant with the classification *possible serious bacterial infection or very severe disease* and you decide that he needs urgent referral. What would you do before the mother takes Robel to the health centre?

- The two main points to advise the mother are for her to breastfeed Robel or to give him expressed breastmilk to prevent low blood sugar, and to keep him warm to prevent low body temperature.

You are now going to do an activity which will help you to review the steps for assessing and classifying sick young infants and give you an opportunity to practise entering information about a young infant on a recording form**.**

Activity 3.1 Assessing, classifying and recording information

A copy of a recording form has been reproduced in Box 3.2 (on the next page). Look at this form now. You will notice that the information which is required on the form is similar to that set out in the chart booklet in your health post. As you can see, details such as age, weight and temperature have been entered for the young infant Shashie, whose case is set out below (Case Study 3.1). Read Shashie's case study now, and then look at how the recording form has been completed.

Case Study 3.1 Shashie's story

Shashie is five weeks old. Her weight is 4 kg. Her axillary temperature is 37°C. Her mother brought her to the clinic because she has a rash. The health worker assesses for signs of possible bacterial infection. Shashie's mother says that she hasn't seen any convulsions. Shashie's breathing rate is 55 per minute. She has no chest in-drawing, and no grunting. Her umbilicus is normal. The health worker examines Shashie's entire body and finds a red rash with just a few skin pustules on her buttocks. Shashie is awake, and her movements are normal. She does not have diarrhoea.

When asked if Shashie has any difficulty feeding, the mother says no. She says that Shashie breastfeeds 9–10 times in 24 hours and drinks no other fluids. The mother empties one breast before switching to the other and says that she breastfeeds Shashie more frequently during and after illness.

Box 3.2 Recording form for Shashie

MANAGEMENT OF THE SICK YOUNG INFANT AGE BIRTH UP TO 2 MONTHS

Name: Shashie Age: 5 weeks Sex: Female Weight: 4kg
Temperature: 37°C
ASK: What are the infant's problems? Rash Initial visit? √ Follow-up Visit? ___

ASSESS (Circle all signs present)	*CLASSIFY*
ASSSESS FOR BIRTH ASPHYXIA (immediately after birth) • Not breathing • Is breathing poorly (less than 30 per minute) • Gasping	
ASSESS FOR BIRTH WEIGHT AND GESTATIONAL AGE (the first 7 days of life) • Ask gestational age; <32 wks, 32-37wks, ≥ 37wks • Weigh the baby: <1500g, 1500-2500g, ≥2500g	
CHECK FOR POSSIBLE BACTERIAL INFECTION and JAUNDICE • Has the infant had convulsions? • Is there feeding difficulty? • Count the breaths in one minute. 55 breaths per minute • Repeat if elevated _____ Fast breathing? • Look for severe chest in-drawing. • Look and listen for grunting. • Look at umbilicus. Is it red or draining pus? • Fever (temperature 37.5°C or feels hot) or body temperature below 35.5°C (or feels cool) or body temperature between 35.5-36.4°C. • Look for skin pustules. • Look at young infant's movements. Does the infant move only when stimulated? Does the infant not move even when stimulated? • Look for jaundice? • Are the palms and soles yellow? • Is skin on the face or eyes yellow?	*Local Bacterial Infection*

Now look at Case Study 3.2 (on the next page). Imagine you are the Health Extension Practitioner in this case and complete the recording form provided in Box 3.3 for Ababu.

1 Label the recording form with the young infant's name.

2 From the case information, write the infant's age, weight; temperature and problem and check the box for an 'initial visit'.

3 Record the assessment results on the form.

4 Classify the infant for possible bacterial infection.

Case Study 3.2 Ababu's story

Ababu is a three-week-old infant. His weight is 3.6 kg. His axillary temperature is 36.5ºC. He is brought to the health post because he is having difficulty breathing. You first check him for signs of possible bacterial infection. His mother says that Ababu has not had convulsions. You count 74 breaths per minute and repeat the count. The second count is 70 breaths per minute. He has mild chest in-drawing. He has no grunting, the umbilicus is normal and there are no skin pustules. Ababu is calm and awake, and his movements are normal. He does not have diarrhoea.

Box 3.3 Ababu's record form

Name: _____ Age: _____ Sex: _____ Weight: _____ Temperature:_____

ASK: What are the infant's problems? Initial visit? Follow-up Visit?

ASSESS *(Circle all signs present)* **CLASSIFY**

ASSSESS FOR BIRTH ASPHYXIA *(immediately after birth)* • Not breathing • Is breathing poorly (less than 30 per minute) • Gasping	
ASSESS FOR BIRTH WEIGHT AND GESTATIONAL AGE *(the first 7 days of life)* Ask gestational age; <32 wks, 32-37wks, ≥ 37wks Weigh the baby; <1500g, 1500-2500g, ≥2500g	
CHECK FOR POSSIBLE BACTERIAL INFECTION and JAUNDICE • Has the infant had convulsions? • Is there feeding difficulty? • Count the breaths in one minute. ____ breaths per minute • Repeat if elevated _____ Fast breathing? • Look for severe chest in-drawing. • Look and listen for grunting. • Look at umbilicus. Is it red or draining pus? • Fever (temperature 37.5°C or feels hot) or body temperature below 35.5°C (or feels cool) or body temperature between 35.5–36.4°C. • Look for skin pustules. • Look at young infant's movements. Does the infant move only when stimulated? Does the infant not move even when stimulated? • Look for jaundice? • Are the palms and soles yellow? • Is skin on the face or eyes yellow?	*Possible serious bacterial infection or very severe disease*

Comment

You should have recorded all of the information provided in the Case Study 3.2 on the recording form in Box 3.3. If you were not sure about how to do this you should talk to your Tutor at your next Study Support Meeting.

You are now going to look at the procedures you might follow if a young infant needs to be referred to hospital.

3.7 Referral

The procedures used for referring a young infant to hospital are the same as those for referring an older infant or young child. You need to prepare a referral note and explain to the mother the reason you are referring the young infant. You should also teach her anything she needs to do on the way, such as keeping the young infant warm, breastfeeding and giving sips of oral rehydration solution (ORS).

In addition, you should explain to the mother that young infants are particularly vulnerable. When they are seriously ill, they need hospital care and need to receive it promptly. Many cultures have reasons *not* to take a young infant to hospital. The mother may also be concerned about who is going to look after any other children at home if she is away. In all cases you will need to listen to the reasons and explain to the mother that her infant's illness can best be treated at the hospital.

As you read earlier in this study session there are a number of situations where a young infant should be referred urgently to hospital. These include possible serious bacterial infection and severe jaundice (they also include asphyxia and low birth weight and when the baby is very preterm).

When referring a young infant urgently to hospital, there are a number of pre-referral treatments that you should give. You will find these urgent pre-referral treatments printed in bold on the chart booklet in your health post. Some treatments should *not* be given before referral because they are not urgently needed and would delay referral. For example, when you're referring an infant urgently you would not spend time at that point teaching the mother how to treat a local infection, or giving the young infant immunizations.

3.7.1 Urgent pre-referral treatment

Urgent pre-referral treatments for a young infant are set out below (You will learn more about these in your practical skills training sessions.) You should:

- Give the first dose of intramuscular antibiotics.
- Give an appropriate oral antibiotic. If the infant needs an oral antibiotic for a local bacterial infection, give a first dose before referring the infant to the hospital.
- Advise the mother how to keep the infant warm on the way to the hospital. If the mother is familiar with wrapping her infant next to her body, this is a good way to keep him warm on the way to the hospital. Keeping a sick young infant warm is very important.
- Treat the young infant to prevent low blood sugar.
- Refer the young infant urgently to hospital, with the mother giving frequent sips of ORS on the way. For an infant with diarrhoea, advise the mother to continue breastfeeding.

3.7.2 Treatment for a young infant who does not need urgent referral

You can identify the appropriate treatment for each classification by reading the chart in your health post. You should enter on the record form what treatment you give the young infant. When you advise the mother on how to care for her young infant at home you should also tell her when she needs to

return for a follow-up visit. A young infant who receives antibiotics for local bacterial infection should return for a follow-up visit in two days.

Follow-up visits are especially important for a young infant. If you find at the follow-up visit that the infant's condition is worse, you must refer the infant to the hospital.

Oral antibiotics

For local bacterial infection you should give the young infant an appropriate oral antibiotic. Give amoxicillin as indicated in Table 3.2 below. However you should avoid giving cotrimoxazole to infants less than one month of age who are premature or jaundiced. Instead you should give the young infant amoxicillin.

Table 3.2 Treatment for local bacterial infection.

AGE or WEIGHT	**AMOXYCILLIN** **Give three times daily for five days**	
	TABLET 250 mg	SYRUP 125 mg in 5 ml
Birth up to one month (<3 kg)		1.25 ml
One month up to two months (3–4 kg)	¼	2.5 ml

Give first dose of intramuscular antibiotics

Table 3.3 below sets out the appropriate dose of intramuscular gentamycin that you should give the young infant with possible serious bacterial infection or very severe disease.

Table 3.3 Treatment for possible serious bacterial infection or very severe disease

WEIGHT	**GENTAMYCIN** **Dose: 2.5 mg per kg body weight (IM)**
	Use the undiluted 20 mg/2 ml formulation or dilute the 80 mg/2 ml formulation by adding 6 ml of sterile water
1 kg	0.25 ml*
2 kg	0.50 ml*
3 kg	0.75 ml*
4 kg	1.00 ml*
5 kg	1.25 ml*

*Avoid using undiluted 40 mg/ml Gentamycin. The dose is a quarter of that listed above and will be very difficult to measure accurately.

Referral is always the best option for a young infant classified with possible serious bacterial infection. However as taking the child to hospital is not always an option, or if you know that the mother is unlikely to take the child to hospital, the guidelines on *Where referral is not possible* state that you should advise the mother that she must treat the young infant with amoxycillin every eight hours and gentamycin every 12 hours for at least seven days. You would also tell her to come back for a follow-up visit in two days, so that you can check whether the infant is making progress. When the baby is a newborn you should explain to the mother the circumstances when she should bring her baby back to the health post immediately.

3.8 Follow-up visits and care for the sick young infant

Follow-up visits are recommended for young infants who are classified as having local bacterial infection and jaundice. You assess a sick young infant differently at a follow-up visit from how you do at an initial visit. Once you know that the young infant has been brought to the clinic for a follow-up visit, you should ask the mother whether there are any *new* problems. If the infant has a new problem then you should carry out a full assessment as if it were an initial visit.

If the young infant does not have a new problem and was previously assessed as having a local bacterial infection then you should follow the steps outlined in Box 3.4 below.

Box 3.4 Follow-up care for a young infant with local bacterial infection

Two days after initial assessment:

- Look at the umbilicus. Is it red or draining pus? Does the redness extend to the skin?
- Look at the skin pustules. Are there many or severe pustules?

Treatment:

- If the pus or redness remains the same or is worse, refer the infant to hospital.
- If the pus and redness have improved, tell the mother to continue giving the five days of antibiotic and treating the local infection at home.

The instructions for follow-up care of local bacterial infection and jaundice can be found in the 'young infant' chart.

If the young infant was previously assessed for jaundice, follow the steps in Box 3.5 below.

Box 3.5 Follow-up care for a young infant with jaundice

If the young infant was previously assessed as having jaundice then you should follow the steps outlined below.

Two days after initial assessment:

- Check for danger signs in the newborn
- Counsel and support optimal breastfeeding
- Follow-up of kangaroo mother care
- Follow-up of counselling given during previous visits
- Counsel mother/family to protect baby from infection
- Give one capsule of 200,000 IU vitamin A to the mother if not given before
- Immunize the baby with OPV and BCG if not given before.

Ask about new problems.

Look for jaundice — are the palms and soles yellow?

- If the palms and soles are yellow, or the infant is aged 14 days or more, refer the infant to hospital.
- If the palms and soles are not yellow and the infant is less than 14 days old, and jaundice has not decreased, advise the mother on home care, when to return immediately and ask her to return for a follow-up visit in two days.
- If the jaundice has started decreasing, reassure the mother and ask her to continue home care. Ask her to return for a follow-up visit when the infant is two weeks old. If the jaundice continues beyond two weeks of age, refer the infant to the hospital.

In this section you have looked at how to provide follow-up care for the sick young infant. During the follow-up visit you should see if the mother is following your advice from the previous visits and ask her if there any new problems. If there are, then you will need to do another full assessment of the young infant.

Summary of Study Session 3

In Study Session 3, you have learned that:

1 There are certain assessment steps that you must carry out for every sick young infant so you can identify the signs of bacterial infections, especially a serious infection, and jaundice.

2 A young infant can become sick and die very quickly from serious bacterial infections such as pneumonia, sepsis and meningitis.

3 Any one of the following signs are signs of possible serious bacterial infections or very severe disease: not feeding well, convulsions, fast breathing, severe chest in-drawing, grunting, fever or low temperature and the infant moving only when stimulated or not moving even when stimulated.

4 Assessment, classification and treatment of young infants with local bacterial infections and jaundice are key tasks for a Health Extension Practitioner.

5 You must enter relevant information on the young infant recording form.

6 You should give follow-up care, two days after the initial visit, for a young infant who has local bacterial infection and/or jaundice.

7 Effective communication with the mother is an important part of being able to carry out assessment of a young infant and when discussing with the mother how a young infant can be treated at home.

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 these questions. 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, 3.6, and 3.7)

You will recall reading about Shashie in Activity 3.1 in this study session. We have reproduced the facts of her case here and you can also look back to Case Study 3.1 in this study session to remind yourself where the information about Shashie was entered on her recording form.

Read the Case Study 3.3 below and then answer the questions that follow.

Case Study 3.3 for SAQ 3.1

Shashie is five weeks old. Her weight is 4 kg and her axillary temperature is 37°C. Her mother has brought her to the clinic because she has a rash. You assess her for signs of possible bacterial infection. Shashie's mother says that the baby has not had any convulsions. Her breathing rate is 55 per minute; she has no chest in-drawing and is not grunting. Her umbilicus is normal. You examine her entire body and find a red rash with just a few skin pustules on her buttocks. Shashie is awake, and her movements are normal. She does not have diarrhoea.

(a) How would you classify Shashie's illness and how would you treat her?

(b) What advice would you give to the mother about how she should treat Shashie at home?

(c) When should Shashie return for a follow-up visit?

SAQ 3.2 (tests Learning Outcomes 3.1, 3.2, 3.3, 3.4 and 3.5)

Read this Case Study 3.4 and then answer the questions below.

Case Study 3.4 for SAQ 3.2

Robel is a five-day old, full term newborn whose weight is 3 kg, axillary body temperature 38.5°C. He is attending the health post for an initial visit. When you ask the mother what the problem is, she tells you that her baby is breathing with difficulty and that he has stopped breastfeeding. When you ask her if he has had convulsions she answers no. When you examine Robel for possible bacterial infection, he is breathing 80 breaths in one minute. When you count again, his breathing rate is still 80 in one minute; in addition you can hear he is grunting. Robel does not move even when you stimulate him, and the palms of his hands and soles of his feet are yellow. There are no other signs of illness.

(a) How would you classify Robel's illness and what would you do next?

(b) Write a referral note for Robel which you will show to your clinical mentor for comment at your IMNCI practical skills training session.

Study Session 4 Assess and Classify Coughs or Difficult Breathing

Introduction

Coughs or difficult breathing are common problems in children under five years of age in Ethiopia. In some children the cause of cough could be pneumonia. Pneumonia is a serious disease that may cause death. However, these deaths can be prevented by early identification and treatment, so it is important that you know the signs to look for and what action you should take when you think a child brought to your health post has pneumonia.

In this study session you will learn how to assess and classify a sick child with a cough or difficult breathing. You will also learn how to treat and give follow-up care.

Pneumonia and other causes of acute respiratory infection are also described in Study Session 34 of the *Communicable Diseases* Module.

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**. (SAQs 4.1, 4.2 and 4.3)

4.2 Record information accurately about a child. (SAQ 4.1)

4.3 Identify when a child has fast breathing. (SAQs 4.2 and 4.3)

4.4 Identify a child with chest in-drawing. (SAQs 4.2 and 4.3)

4.5 Identify stridor in a calm child. (SAQs 4.1, 4.2 and 4.3)

4.6 Assess and classify coughs or difficult breathing. (SAQs 4.2 and 4.3)

4.7 Treat and give follow-up care for a child with cough or difficult breathing. (SAQs 4.2 and 4.3)

4.1 Assessing coughs or difficult breathing

In order to assess coughs or difficult breathing, you need to know about the structure of the airways. Figure 4.1 shows the terms for the main structures that you need to know. You may already be familiar with some or even all of the terms.

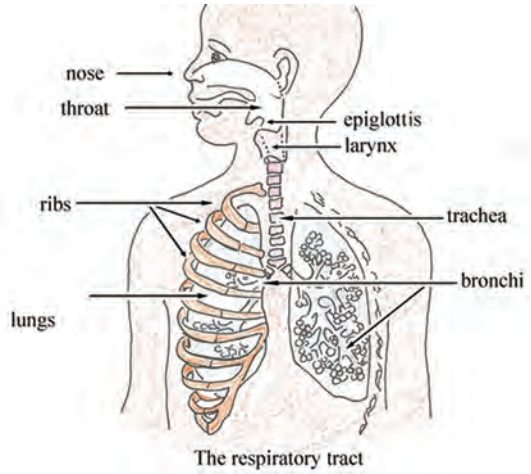


Figure 4.1 The respiratory tract.

You can see in Figure 4.1 that the airway (or **respiratory tract**) structures include the nose, throat, larynx, trachea and bronchi (the main air tubes inside the lungs). Coughs or difficult breathing may occur when there is an infection of the respiratory tract. These infections may be severe respiratory tract infections such as **pneumonia** (acute) which require antibiotics for treatment, or they can be mild infections such as a cold, which can be treated by the family at home.

Health Extension Practitioners must be able to identify the few very sick children who have cough or difficult breathing, which need treatment with antibiotics. Fortunately, it is possible to identify almost all cases of pneumonia by checking for these two clinical signs: fast breathing and chest in-drawing. Stridor in a child (see the definition below) can also be a sign of pneumonia or another very severe disease.

For all sick children who come to your practice, ask the mother if the child has cough or difficult breathing.

You are now going to look at the steps involved in assessing and classifying children with cough or difficult breathing.

For *all* sick children whom you encounter in your practice, you should ask the mother or caregiver whether the child has cough or difficult breathing. You should then ask how long the child has had cough or difficult breathing.

Then you need to assess for the following:

Fast breathing: breathing rate per minute higher than normal for the age group.

Chest in-drawing: the lower chest wall (lower ribs) goes in when the child breathes in.

Stridor is pronounced 'stry-dore'.

Stridor: a harsh noise which is made when the child breathes in.

Box 4.1 below is taken from the *IMNCI Assess and Classify* chart booklet and summarises the steps you should take when assessing a child for a cough or difficult breathing.

Box 4.1 Assessing cough or difficult breathing

You are now going to look at each of these steps in more detail.

ASSESS whether the child has cough or any difficult breathing

Difficult breathing is any unusual pattern of breathing. Mothers describe this in different ways. They may say that their child's breathing is 'fast' or 'noisy' or 'interrupted.'

If the mother says the child does *not* have cough or difficult breathing, you should still look at the child yourself to see whether you think the child has either of these symptoms. If the child does not have cough or difficult breathing, you do not need to assess the child further for signs related to either of these symptoms. You should go on to ask about the next main symptom, which is diarrhoea (you will read about how to assess and classify diarrhoea in Study Session 5).

If the mother answers 'Yes' to your question about whether the child has cough or difficult breathing, you should ask her the next question.

ASK: how long has the child had cough or difficult breathing?

A child who has had cough or difficult breathing for more than 21 days has a **chronic cough**. This may be a sign of tuberculosis, asthma, whooping cough or another respiratory problem.

COUNT the number of breaths the child takes in one minute

Count the breathing rate as you would in a young infant. The cut-off for fast breathing depends on the child's age. Young infants usually breathe faster than older infants and young children.

If the child is:	**The child has fast breathing if you count:**
2 months up to 12 months	50 breaths per minute or more
12 months up to 5 years:	40 breaths per minute or more

You should note that the child who is exactly 12 months old has fast breathing if you count 40 breaths per minute or more.

LOOK for chest in-drawing

You learned about chest in-drawing (also called subcostal redrawing or subcostal retraction) and how to examine a young infant for this sign, in Study Session 3 of this Module. In a child age two months up to five years, if chest in-drawing is clearly visible and present all the time during an examination, it is a sign of severe pneumonia or very severe disease (see Figure 4.2 on the next page, which illustrates in-drawing). Unlike in the young infant, mild chest in-drawing is not normal in older infants and children.

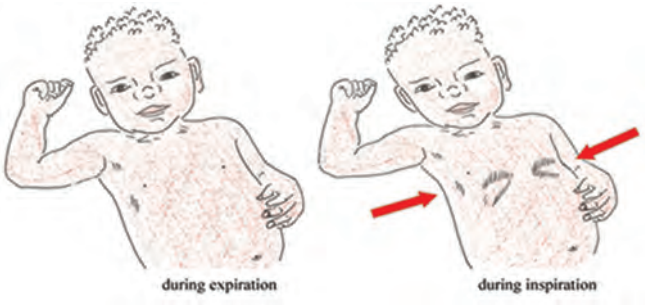


Figure 4.2 Signs of chest in-drawing in a sick child

LISTEN for stridor

Stridor happens when there is a swelling of the larynx, trachea or epiglottis (see Figure 4.1 to remind yourself where these structures are). This swelling interferes with air entering the lungs. It can be life-threatening when the swelling causes the child's airway to be blocked. A child who has stridor when calm has a dangerous condition.

Listen for stridor when the child breathes *in*. Put your ear near the child's mouth because stridor can be difficult to hear. A child who is not very ill may have stridor only when crying or upset. Be sure to listen for stridor when the child is calm.

- ■ What three signs in a sick child indicate the possibility of pneumonia or another very severe disease?
- □ If you identify any general danger sign, fast breathing, or chest in-drawing, and if you hear a harsh noise from the child when calm and breathing in (stridor), the child is likely to have severe pneumonia or another very severe disease.

4.2 Classifying coughs or difficulty in breathing

After assessing the child, your next step is to classify the cough or difficult breathing to determine the severity of the child's illness. To classify a child you need the classification table, a section of which is reproduced below (Table 4.1). The treatment column is included – you will be looking at treatment in more detail in Section 4.3 of this study session.

Table 4.1 Classification table for coughs and difficult breathing.

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print)
• Any general danger sign or • Chest indrawing or • Stridor in calm child	**SEVERE PNEUMONIA OR VERY SEVERE DISEASE**	▸ **Give first dose of Cotrimoxazole** ▸ **Refer URGENTLY to hospital**
• Fast breathing	**PNEUMONIA**	▸ **Give Cotrimoxazole for 5 days.** ▸ Soothe the throat and relieve the cough with a safe remedy. ▸ Advise mother when to return immediately. ▸ Follow-up in 2 days.
• No signs of pneumonia or very severe disease.	**NO PNEUMONIA: COUGH OR COLD**	▸ If coughing more than 21 days, refer for assessment. ▸ Soothe the throat and relieve the cough with a safe remedy ▸ Advise mother when to return immediately. ▸ Follow-up in 5 days if not improving.

4.2.1 How to use the classification table:

There are three possible classifications for a child with a cough or difficult breathing:

- Severe pneumonia or very severe disease, or
- Pneumonia, or
- No pneumonia: cough or cold.

To classify a cough or difficult breathing:

1 Look at the top row in the classification table which sets out the signs you need to assess.

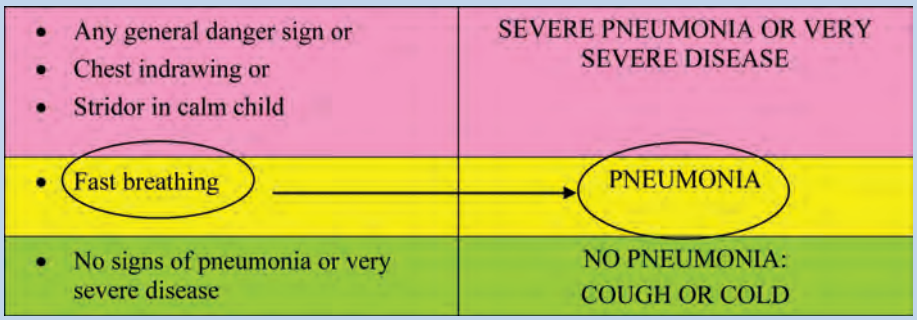
If the child has a general danger sign (you learned about general danger signs in Study Session 1 of this Module), chest in-drawing or stridor, you should select the severe classification given in the top (pink) row of the table: severe pneumonia or very severe disease.

Whenever you use a classification table, you should start with the top (pink) row.

2 If the child does not have the severe classification, look at the middle (yellow) row.

If the child has fast breathing, but does not have signs in the top row of the classification table, you should select the classification in the middle (yellow) row: pneumonia (see Box 4.2 below)

Box 4.2 Classification of pneumonia



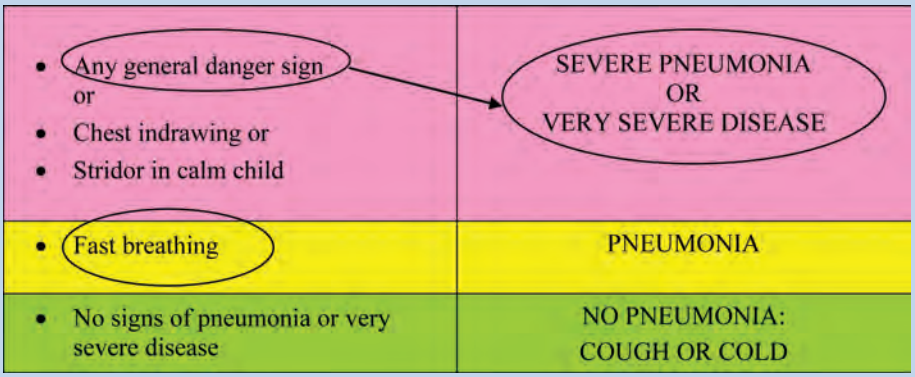
3 If the child does not have any of the signs in the top (pink) or middle (yellow) row, select the classification in the bottom (green) row: no pneumonia: cough or cold.

If the child has signs from more than one row, always select the more serious classification.

■ If a child has cough, a general danger sign and fast breathing, how would you classify the child?

□ You should classify the child with the more serious classification – severe pneumonia or very severe disease (see Box 4.3 on the next page).

Box 4.3 Classification of severe pneumonia



Now you have looked at the different classifications of cough or difficult breathing you are going to learn about the treatment that should be provided to the sick child.

4.3 Treatment of cough or difficult breathing

The treatment of a child's cough or difficult breathing will depend on your assessment and classification of their illness. This section looks at the different treatments depending on the level of classification.

4.3.1 Treatment for severe pneumonia or very severe disease

A child classified as having severe pneumonia or very severe disease needs urgent referral to a hospital.

A child classified as having severe pneumonia or very severe disease is seriously ill. The child needs urgent referral to a hospital for treatments such as oxygen or injectable antibiotics.

If a child has been classified with severe pneumonia or a very severe disease you should give the child the first dose of Cotrimoxazole (see Table 4.2 in Section 4.3.2 below) before the child leaves your health post. The antibiotic helps prevent severe pneumonia from becoming worse.

Then refer the child urgently to the hospital.

Referring a child to the hospital

There are four steps you should follow when referring a child to the hospital:

1 Explain to the mother the need for referral, and get her agreement to take the child. If you suspect that she does not want to take the child, find out why.

   Possible reasons are:

   - She thinks that hospitals are places where people often die, and she fears that her child will die there too.
   - She does not think that the hospital will help her child.

- She cannot leave home and tend to her child during a hospital stay because:
  - there is no one to take care of her other children, or
  - she is needed for farming, or
  - she may lose a job.
- She does not have money to pay for transportation, hospital bills, medicines or food for herself during the hospital stay.

2 Calm the mother's fears and help her resolve any problem. For example:

- If the mother fears that her child will die at the hospital, reassure her that the hospital has physicians, supplies and equipment that can help her child.
- Explain what will happen at the hospital and how that will help her child.
- If the mother needs help at home while she is at the hospital, ask questions and make suggestions about who could help. For example, ask whether her husband, sister or mother could help with the other children or with meals while she is away.
- Discuss with the mother how she can travel to the hospital. Help arrange transportation if necessary.

You may not be able to help the mother solve all her problems and/or be certain that she goes to the hospital. However, it is important to do everything you can to help. If referral is not possible, there are some things you can do for the child at your health post.

3 Write a referral note for the mother to take with her to the hospital. Tell her to give it to the nurse or doctor.

In your referral note you should include the following information:

- the name and age of the child
- the date and time of referral
- a description of the child's problems
- the reason for referral (the symptoms and signs leading to the severe classification)
- treatments that you have given
- any other information that the nurse or doctor at the hospital needs to know in order to care for the child, such as earlier treatment of the illness or immunizations needed
- your name and the name of your health post.

4 Give the mother any supplies and instructions needed to care for her child on the way to the hospital.

- If the hospital is far, give the mother additional doses of antibiotics and tell her when to give them to the child during the trip. If you think the mother will not actually go to the hospital, give her the full course of antibiotics, and teach her how to give them at home.
- Show the mother how to keep the young child warm during the trip.
- Advise the mother to continue breastfeeding.
- If the child has some or severe dehydration and can drink, give the mother some oral rehydration solution (ORS) for the child to sip frequently on the way.

■ What reasons might a mother give you for not wanting to take her child to a hospital?

□ The mother may be anxious about whether her child will receive the right care or may believe that hospitals are places where children often die. Even if she wants to take her child, she may be worried about leaving her other children without care, or may be afraid of losing her job if she is away for too long or not having the money to pay for hospital bills.

■ What could you do as a Health Extension Practitioner to reassure a mother who is anxious about taking her child to hospital?

□ You could explain to the mother what treatment her child is going to receive at the hospital and that this is the best chance the child has of getting well again. You might be able to suggest people who can help with her other children while she is away, and you might also be able to arrange transportation for her and the child.

4.3.2 Treatment for pneumonia

If you have classified the child as having pneumonia you can treat the child without referring him or her to hospital. The child will need treating with antibiotics.

Table 4.2 below sets out the oral antibiotics from which you can select the appropriate antibiotic and the dose. The **first-line antibiotic** is the drug that you give first. If the child does not respond to the first antibiotic (cotrimoxazole) you gave, then you should replace the first antibiotic with another one; the latter one is called **second-line antibiotic** (for example, amoxicillin). Among the three types of cotrimoxazole formulation, choose the one that is available in your health post.

Table 4.2 Antibiotic dosage for pneumonia.

	COTRIMOXAZOLE **(Trimethoprim + Sulphamethoxazole)** **Give two times daily for five days**			**AMOXICILLIN** **Give three times daily for five days**	
AGE or WEIGHT	ADULT TABLET 80 mg Trimethoprim + 400 mg Sulphamethoxazole	PAEDIATRIC TABLET 20mg Trimethoprim + 100 mg Sulphamethoxazole	SYRUP 40 mg Trimethoprim + 200 mg Sulphamethoxazole per 5 ml	TABLET 250 mg	SYRUP 125 mg per 5 ml
2 months up to 12 months (4–10 kg)	½	2	5 ml	½	5 ml
12 months up to 5 years (10–19 kg)	1	3	7.5 ml	1	10 ml

4.3.3 Treatment for no pneumonia: cough or cold

A child with 'no pneumonia: cough or cold' does not need an antibiotic. You should give the mother advice about good home care. Teach her how to soothe the child's throat and relieve the cough with a safe remedy such as breastmilk for exclusively breastfed infants, or home fluids such as tea with honey or fruit juice. Cough syrups are usually harmful so advise the mother that she should avoid using these. Advise her to watch for fast or difficult breathing and to return to the health post if either one of these develops in the child.

A child with a cold normally improves in one to two weeks. However, a child who has **chronic cough** (a cough lasting more than 21 days) may have tuberculosis, asthma, whooping cough or another problem. You should refer the child with a chronic cough to the hospital for further assessment.

4.4 Follow-up care for pneumonia

If a child has been classified with pneumonia, it is important that the mother is told to return to the health post in two days' time for a follow-up visit. You should assess the child for cough or difficult breathing in the way outlined in Box 4.4.

Box 4.4 Follow-up care for pneumonia

After 2 days:

Check the child for general danger signs.
Assess the child for cough or difficult breathing. } Use ASSESS & CLASSIFY chart

Ask:
- Is the child breathing slower?
- Is there less fever?
- Is the child eating better?

Treatment:
- If **chest in-drawing or general dangers sign present**, give a dose of amoxicillin. Then refer URGENTLY TO HOSPITAL.
- If **breathing rate, fever, and eating are the same or worse**, change to the amoxicillin and advise the mother to return in 2 days. If no amoxicillin available, refer. (If this child had measles within the last 3 months or is known or suspected to have symptomatic HIV infection, refer).
- If **breathing slower, less fever, or eating better**, complete the 5 days of antibiotic.

You should always refer a child to hospital if there are general danger signs or chest in-drawing.

The following case study will help you check your understanding of what you have read so far in this study session. It continues on the next page.

Case Study 4.1 Aziz's case

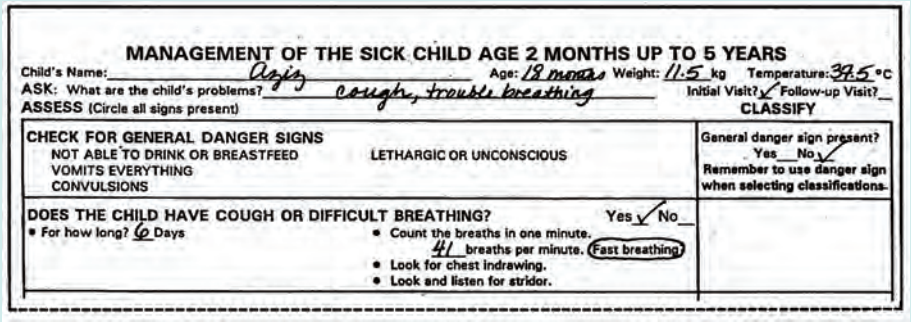
Aziz is 18 months old. He weighs 11.5 kg. His temperature is 37.5°C. His mother brought him to the health post because he had cough. She says he was having trouble breathing. This is his initial visit for this illness.

The Health Extension Practitioner checked Aziz for general danger signs. Aziz was able to drink. He had not been vomiting. He had not had convulsions. He was not convulsing, lethargic or unconscious.

The Health Extension Practitioner asked the mother, 'How long has Aziz had this cough?' His mother said that Aziz had been coughing for six or seven days. Aziz sat quietly on his mother's lap. The Health Extension Practitioner counted the number of breaths the child took in a minute and counted 41 breaths. She thought, 'Since Aziz is over 12 months of age, the cut-off for determining fast breathing is 40. He has fast breathing'.

The Health Extension Practitioner did not see any chest in-drawing. She did not hear stridor.

The chart below shows you how the Health Extension Practitioner recorded Aziz's case information and signs of illness:



MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

Child's Name: Aziz Age: 18 months Weight: 11.5 kg Temperature: 37.5 °C

ASK: What are the child's problems? cough, trouble breathing Initial Visit? ✓ Follow-up Visit? _

ASSESS (Circle all signs present) CLASSIFY

CHECK FOR GENERAL DANGER SIGNS
NOT ABLE TO DRINK OR BREASTFEED
VOMITS EVERYTHING
CONVULSIONS
LETHARGIC OR UNCONSCIOUS

General danger sign present? Yes__ No ✓
Remember to use danger sign when selecting classifications.

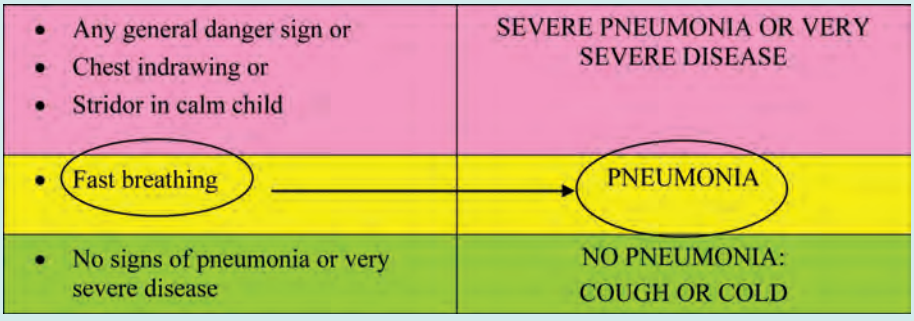
DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? Yes ✓ No__
- For how long? 6 Days
- Count the breaths in one minute. 41 breaths per minute. (Fast breathing)
- Look for chest indrawing.
- Look and listen for stridor.

To classify Aziz's illness, the Health Extension Practitioner looked at the classification table for coughs or difficulties in breathing.

First she checked to see if Aziz had any of the signs in the pink row. She considered, 'Does Aziz have any general danger signs? No, he does not. Does Aziz have any of the other signs (chest in-drawing and stridor in a calm child) in this row? No, he does not. Therefore Aziz does not have any of the signs for severe pneumonia or very severe disease.'

Next, the Health Extension Practitioner looked at the yellow (middle) row. She thought, 'Does Aziz have signs in the yellow (middle) row? He has fast breathing.'

The Health Extension Practitioner classified Aziz as having *pneumonia* and she wrote this down on the Recording Form (seee below).



• Any general danger sign or • Chest indrawing or • Stridor in calm child	SEVERE PNEUMONIA OR VERY SEVERE DISEASE
• Fast breathing →	PNEUMONIA
• No signs of pneumonia or very severe disease	NO PNEUMONIA: COUGH OR COLD

In this study session you have learned how to assess and classify cough or difficult breathing in children under five years. You looked at how to treat the sick child, when you need to refer a child urgently to hospital, what follow-up care is required, and what advice on home treatment you should give to the mother or child's caregiver.

Summary of Study Session 4

In Study Session 4, you have learned that:

1 In Ethiopia it is common for children under five years of age to develop cough.

2 To assess cough or difficult breathing, the steps you should take are:
- look for general danger signs
- ask about duration of the cough or difficult breathing
- count the breathing rate
- look for chest in-drawing
- listen for stridor.

3 Your assessment will enable you to classify the child's cough or difficult breathing and determine what treatment you should give, including referring the child urgently to hospital if they have severe pneumonia or very severe disease.

4 When using a classification table you should always begin with the top (pink) row and if a child has signs in more than one row you should always select the more serious classification.

5 There are four steps you should take when referring a child to the hospital: explain the need for referral, reassuring and supporting the mother, writing a referral note, and giving the mother supplies and instructions for the journey.

Self-Assessment Questions (SAQs) for Study Session 4

Now 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, 4.2 and 4.5)

Read this case study and then answer the questions below.

Case Study 4.2 for SAQ 4.1

Getu is six months old. He weighs 5.5 kg. His temperature is 38°C. His mother says he has had a cough for two days. The Health Extension Practitioner checked for general danger signs. The mother says that Getu is able to breastfeed and that he has not vomited during this illness. He has not had convulsions. Getu is not convulsing, lethargic or unconscious during his visit to the health post.

The Health Extension Practitioner said to the mother, 'I want to check Getu's cough. You said he has had a cough for two days now. I am going to count his breathing. He will need to remain calm while I do this'.

The Health Extension Practitioner counted 58 breaths per minute. She did not see chest in-drawing and did not hear stridor.

Record this information on the recording form which is reproduced below.

MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

Child's Name: _____ Age_____ Sex_____ Weight:___kg Temperature____^{0}C

ASK: What are the child's problems? _____ Initial visit?____ Follow-up visit? ____

ASSESS (Circle all signs present)	**CLASSIFY**
CHECK FOR GENERAL DANGER SIGNS NOT ABLE TO DRINK OR BREASTFEED LETHARGIC OR UNCONSCIOUS VOMITS EVERYTHING CONVULSING NOW CONVULSIONS	General danger sign present? **Yes ____No___** **Remember to use danger sign when selecting classifications**
DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? Yes___No_____ • For how long? ___Days • Count the breaths in one minute. ___breaths per minute. Fast breathing? • Look for chest indrawing. • Look and listen for stridor.	

SAQ 4.2 (tests Learning Outcomes 4.1, 4.3, 4.4, 4.5, 4.6 and 4.7)

Read Case Study 4.3 and then answer the questions that follow.

Case Study 4.3 for SAQ 4.2

Askale is eight months old, and weighs 6 kg. Her temperature is 39°C. Her parents say she has had a cough for three days and is having trouble breathing. Her mother says she will not breastfeed or take other fluids. Askale has not had convulsions or vomiting, but she is lethargic, is taking 55 breaths per minute and there is a harsh noise when she breathes in.

(a) How would you classify Askale's illness? Give reasons for your answer and explain what treatment you would provide.

(b) What might Askale's parents be concerned about and how would you reassure them?

SAQ 4.3 (tests Learning Outcomes 4.1, 4.3, 4.4, 4.5, 4.6 and 4.7)

How should you treat a child whom you classify as having just a cough or a cold?

Study Session 5 Management of Diarrhoeal Disease in Young Infants and Children

Introduction

You may recall from Study Session 1 of this Module that diarrhoea is the second most important cause of death among children under the age of five years. As a Health Extension Practitioner, therefore, you need to know how to assess and classify a sick child with diarrhoea. This study session includes case studies based on common experiences which will also help you understand how to treat a sick child with diarrhoea and what follow-up care is required. This study session is in two parts; the first six sections deal with management of diarrhoeal disease in children and the last section looks at how you manage diarrhoea in young infants. Although the classification is the same for both age groups, the treatment is different and you need to be aware of this difference.

If you have access to your Assess and Classify booklet you should have the section on diarrhoea open for this study session.

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, 5.2, 5.3 and 5.4)

5.2 Assess a child presenting with diarrhoea. (SAQ 5.1)

5.3 Classify the illness in a child who has diarrhoea. (SAQs 5.2 and 5.3)

5.4 Treat the child with diarrhoea. (SAQ 5.3)

5.5 Give follow-up care for a child with diarrhoea. (SAQ 5.3)

5.1 Assess and classify diarrhoea

There are different kinds of diarrhoea and you will need to know how to identify and assess these. Diarrhoea may be loose or watery, with blood in the stool and may be with or without mucus. It frequently leads to dehydration in the child, and can be serious enough to lead not only to malnutrition but also to the child's death. It may be acute or persistent (you will learn about the difference between these below) and can be linked to a number of diseases, including cholera and dysentery. The most common cause of dysentery is *Shigella* bacteria (amoebic dysentery is not common in young children).

Shigella bacteria and other infectious agents that cause diarrhoea are described in Study Sessions 32 and 33 of the *Communicable Diseases* Module.

A child may have both watery diarrhoea and dysentery. The death of a child with acute diarrhoea is usually due to dehydration.

- Diarrhoea is the passage of three or more loose or watery stools per day.
- Persistent diarrhoea: diarrhoea which lasts 14 days or more (in a young infant this would be classified as severe persistent diarrhoea).
- Dysentery: diarrhoea with blood in the stool, with or without mucus.

5.2 Assess diarrhoea in children

All sick children that come to your health post should be checked for diarrhoea.

ASK: Does the child have diarrhoea?

- If the mother answers no, ask about the next main symptom, fever. You do not need to assess the child further for signs related to diarrhoea.
- If the mother answers yes, or if the mother said earlier that diarrhoea was the reason for coming to the health post, record her answer. Then assess the child for signs of dehydration, persistent diarrhoea and dysentery.

You need to assess the following:

- How long the child has had diarrhoea
- Whether there is blood in the stool to determine if the child has dysentery, and
- Any signs of dehydration.

Box 5.1 sets out the signs you need to ask about and look for when assessing a child who has diarrhoea.

Box 5.1 Assessing diarrhoea in a child

Does the child have diarrhoea? IF YES ASK:	**LOOK AND FEEL**
• For how long? • Is there blood in the stool?	• Look at the child's general condition. Is the child: - Lethargic or unconscious? - Restless and irritable? - Look for sunken eyes. • Offer the child fluid. Is the child: - Not able to drink or drinking poorly? - Drinking eagerly, thirsty? • Pinch the skin of the abdomen. Does it go back: - Very slowly (longer than two seconds)? - Slowly?

You will now look at the steps for assessing diarrhoea in a child in more detail.

ASK: For how long has the child had diarrhoea?

- Give the mother time to answer the question. She may need time to recall the exact number of days.

ASK: Is there blood in the stool?

- Ask the mother if she has seen blood in the stools at any time during this episode of diarrhoea.

Next, you need to check the child for signs of dehydration.

A child who becomes dehydrated is at first restless and irritable. If dehydration continues, the child becomes lethargic or unconscious. As the child's body loses fluids, the eyes may look sunken. When pinched, the skin will go back slowly or very slowly. To assess whether the child is dehydrated, and how seriously, you need to look and feel for the following signs.

LOOK at the child's general condition

LOOK to see if the child is lethargic or unconscious. Or, is the child restless and irritable?

If a child is lethargic or unconscious this is a general danger sign.

When you checked for general danger signs, you checked to see if the child was *lethargic or unconscious*. If the child is lethargic or unconscious, he has a general danger sign. Remember to use this general danger sign when you classify and record the child's diarrhoea.

The sign *restless and irritable* is present if the child is restless and irritable all the time or every time he is touched and handled. If an infant or child is calm when breastfeeding, but again becomes restless and irritable when breastfeeding stops, he has the sign 'restless and irritable'. However, many children are upset just because they are in the health post and in unfamiliar surroundings. Usually these children can be consoled and calmed. They do not have the sign 'restless and irritable'.

LOOK for sunken eyes

- The eyes of a child who is dehydrated may look sunken. Decide if you think the eyes are sunken. Then ask the mother if she thinks her child's eyes look unusual. Her opinion helps you confirm whether the child's eyes are sunken.
- You should note that in a severely malnourished child who is visibly wasted, the eyes may always look sunken, even if the child is not dehydrated. However, although sunken eyes is less reliable in a visibly wasted child, you should still use the sign to classify the child's dehydration.

OFFER the child fluid. Is the child not able to drink or drinking poorly? Or, is the child drinking eagerly, thirsty?

- Ask the mother to offer the child some water in a cup or spoon. Watch the child drink. A child is ***not able to drink*** if he is not able to suck or swallow when offered a drink. A child may not be able to drink because he is lethargic or unconscious.
- A child is ***drinking poorly*** if the child is weak and cannot drink without help. He may be able to swallow only if fluid is put in his mouth.

- A child has the sign ***drinking eagerly,*** or ***thirsty*** if it is clear that the child wants to drink. Look to see if the child reaches out for the cup or spoon when you offer him water. When the water is taken away, see if the child is unhappy because he wants to drink more.
- If the child takes a drink only with encouragement and does not want to drink more, or refuses to drink, he does not have the sign 'drinking eagerly, thirsty'.

PINCH the skin of the abdomen. Does it go back very slowly (longer than two seconds) or slowly?

- Ask the mother to place the child on the examining table so that the child is flat on his back with his arms at his sides (not over his head) and his legs straight. Or, ask the mother to hold the child so he is lying flat on her lap. Locate the area on the child's abdomen halfway between the umbilicus and the side of the abdomen. To do the skin pinch, use your thumb and first finger. Do not use your fingertips because this will cause pain. Place your hand so that when you pinch the skin, the fold of skin will be in a line up and down the child's body and not across the child's body. Firmly pick up all of the layers of skin and the tissue under them. Pinch the skin for one second and then release it. If the skin stays up for even a brief time after you release it, decide that the skin pinch goes back slowly.
- When you release the skin, look to see if the skin pinch goes back:
  - very slowly (longer than two seconds)
  - slowly
  - immediately.

The photographs in Figure 5.1 show you how to do the skin pinch test and what the child's skin looks like when the skin pinch does not go back immediately.

The skin pinch test is not always an accurate sign of dehydration because in a child with severe malnutrition, the skin may go back slowly even if the child is not dehydrated. In an overweight child, or a child with oedema, the skin may go back immediately even if the child is dehydrated. However even though skin pinch is less reliable in these children, you should still use it to classify the child's dehydration.

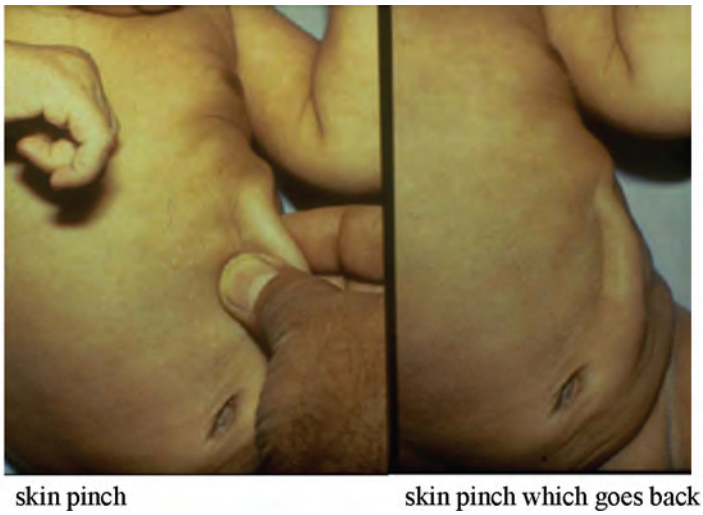


Figure 5.1 Skin pinch test. (Source: *IMCI Training Guide*, Ethiopia)

■ What are the possible assessments you might make for a child with diarrhoea?

□ You might assess the child for dehydration. If the child has had diarrhoea for 14 days or longer you would assess persistent diarrhoea, and if you see blood in the stool or if the mother tells you that there has been blood in the stool, you would record that the child might have dysentery.

■ How can you assess whether a child has dehydration?

□ If the child is irritable and restless, not able to drink or drinks poorly, these are all signs of dehydration. Another sign is a skin pinch that returns slowly or very slowly. You should also remember that if a child is lethargic or unconscious this is one of the general danger signs as well as a possible sign of dehydration.

Following your assessment of the child for diarrhoea and dehydration, your next step is to classify the diarrhoea. How you do this will depend on the age of the child, and you are going to look at this next.

5.3 Classifying diarrhoea

There are three classification tables for classifying diarrhoea:

- All children with diarrhoea are classified for dehydration.
- If a child has had diarrhoea for 14 days or more, the child should be classified as having persistent diarrhoea.
- If a child has blood in the stool, the child should be classified as having dysentery.

You are now going to look at each of these classifications in turn, beginning with classifying dehydration.

5.3.1 Classifying dehydration

There are three possible classifications of dehydration in a child with diarrhoea:

- Severe dehydration
- Some dehydration
- No dehydration.

The relevant section from the Assess and Classify chart booklet is set out in Table 5.1 (on the next page). The treatment plans A, B and C referred to in the third column are explained in Section 5.4 below.

Table 5.1 Classification of dehydration in a child (1).

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print)
Two of the following signs: • Lethargic or unconscious • Sunken eyes • Not able to drink or drinking poorly • Skin pinch goes back very slowly	**SEVERE DEHYDRATION**	► If child has no other severe classification - Give fluid for severe dehydration (Plan C). OR If child also has another severe classification: Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise the mother to continue breastfeeding. ► If child is 2 years or older, and there is cholera in your area, give antibiotic for cholera.
Two of the following signs: • Restless, irritable • Sunken eyes • Drinks eagerly, thirsty • Skin pinch goes back slowly.	**SOME DEHYDRATION**	► Give fluid, Zinc supplements and food for some dehydration (Plan B) ► ***If Child also has a severe classification:*** ***Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise the mother to continue breastfeeding.*** ► Advise mother when to return immediately. ► Follow-up in 5 days if not improving. ► If confirmed/symptomatic HIV, follow-up in 2 days if not improving.
• Not enough signs to classify as some or severe dehydration	**NO DEHYDRATION**	► Give fluid, Zinc supplements and food to treat diarrhoea at home (Plan A). ► Advise mother when to return immediately. ► *Follow-up in 5 days if not improving.* ► If confirmed/symptomatic HIV, follow-up in 2 days if not improving.

To classify the child's dehydration, begin with the top (pink) row.

- If *two or more* of the signs in the pink row are present, you should classify the child as having SEVERE DEHYDRATION.
- If *two or more* of the signs are not present, look at the middle (yellow) row. If two or more of the signs are present, you should classify the child as having SOME DEHYDRATION.
- If *two or more* of the signs from the yellow row are not present, classify the child has having NO DEHYDRATION (bottom, green row). The child does not have enough signs to be classified as having SOME DEHYDRATION.

Case Study 5.1 below provides an example for you to see how you would classify a child in practice.

Case Study 5.1 Amina's story

A four-month-old child named Amina was brought to the health post because she had had diarrhoea for five days. She did not have danger signs and she was not coughing. However Amina was restless and irritable every time the health worker touched her and would not settle even when her mother tried to soothe her. The only time she was calm was when her mother was breastfeeding her. Amina was able to feed strongly. The health worker assessed the child's diarrhoea. She recorded the following signs:

DOES THE YOUNG INFANT HAVE DIARRHOEA		Yes ✓ No ____
For how long? 5 Days Is there blood in the stools?	• Look at the child's general condition. Lethargic or unconscious? Restless and irritable • Look for sunken eyes. • Offer the child fluid. Is the child: Not able to drink or drinking poorly? Drinking eagerly, thirsty • Pinch the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds)? Slowly?	

Look at Table 5.2 below. Amina does not have any signs in the pink row. Therefore Amina does not have SEVERE DEHYDRATION.

Table 5.2 Classification of dehydration in a child (2).

Two of the following signs: • Lethargic or unconscious • Sunken eyes • Not able to drink or drinking poorly • Skin pinch goes back very slowly	**SEVERE DEHYDRATION**
Two of the following signs: • Restless, irritable • Sunken eyes • Drinks eagerly, thirsty • Skin pinch goes back slowly.	**SOME DEHYDRATION**
• Not enough signs to classify as some or severe dehydration	**NO DEHYDRATION**

Amina had two signs from the yellow row. Therefore the health worker classified Amina's dehydration as SOME DEHYDRATION.

The health worker recorded Amina's classification on the recording form which is reproduced in Box 5.2 below.

Box 5.2 Recording form for Amina

DOES THE YOUNG INFANT HAVE DIARRHOEA		Yes ✓ No ____
For how long? 5 Days Is there blood in the stools?	• Look at the child's general condition. Lethargic or unconscious? Restless and irritable • Look for sunken eyes. • Offer the child fluid. Is the child: Not able to drink or drinking poorly? Drinking eagerly, thirsty • Pinch the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds)? Slowly?	Some Dehydration

Now complete Activity 5.1 (on the next page).

Activity 5.1 How to assess a child with severe dehydration

Look back at Table 5.1 and answer the following questions.

(a) Describe the signs that would lead you to assess a child as having severe dehydration.

(b) How would you know if the child had some dehydration?

(c) What classification would you give for a child who has sunken eyes, appears restless and irritable except when breastfeeding and whose skin pinch goes back slowly? Give reasons for your answer.

Comment

(a) As you can see from the top (pink) row in Table 5.1, if the child has any two of the signs in this row then you should classify the child as having severe dehydration. One of the signs is 'lethargic or unconscious' and you should remember that this is also a general danger sign and requires the child to be referred urgently.

(b) The middle row (yellow) sets out the signs leading to classification of 'some dehydration'. You should remember however that even if a child does not have signs of dehydration it does not mean that the child has not lost fluids. If the diarrhoea persists, dehydration is a risk to the child so you should advise the mother when she should return to the health post.

(c) A child with the signs in (c) above has one sign from the top (pink) row and has three signs from the middle (yellow) row. Therefore you should classify this child as having some dehydration.

You are now going to look at what treatment can be provided for a child with diarrhoea, depending on the level of dehydration you have classified.

5.4 Treatment for dehydration

There are three treatment plans for treating children with dehydration and for diarrhoea: Plan C sets out the steps for treating children with severe dehydration, Plan B is for children with some dehydration, and Plan A sets out home treatment for children with diarrhoea but no dehydration.

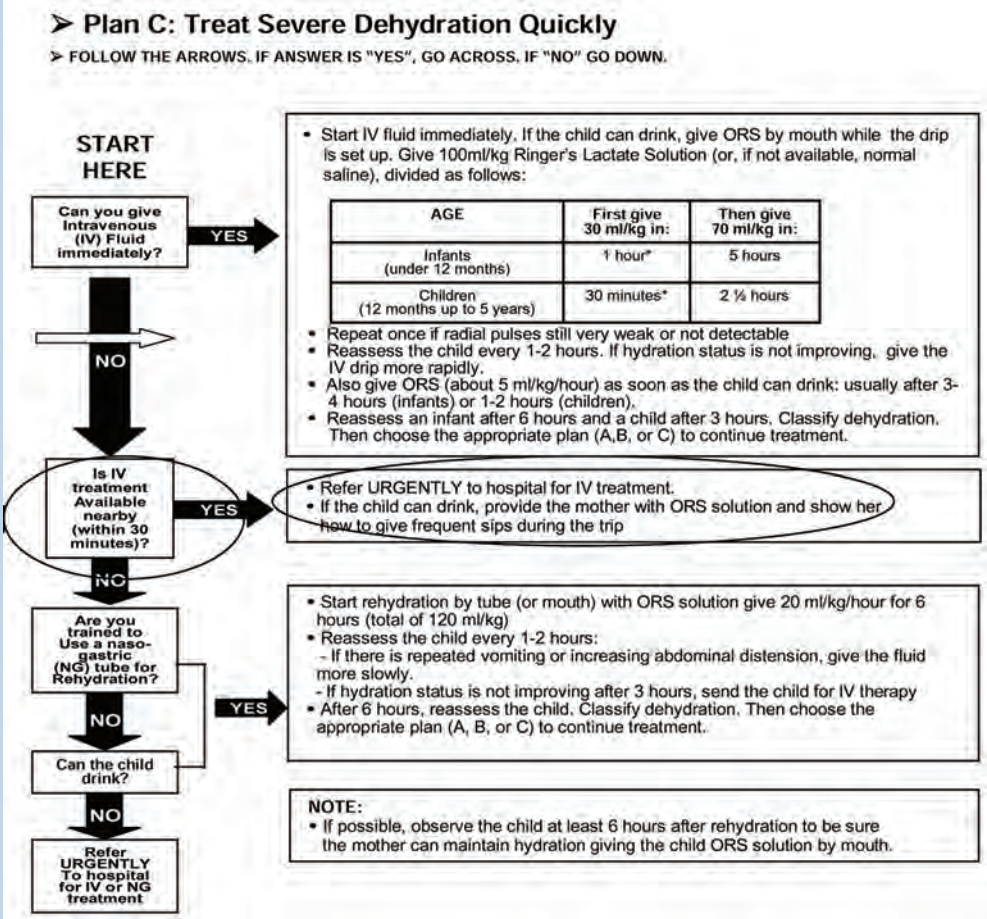
First you are going to look at how to treat severe dehydration, using Plan C.

5.4.1 Severe dehydration

Any child with dehydration needs fluid replacement. A child classified with *severe dehydration* needs fluids quickly. 'Plan C: Treat Severe Dehydration Quickly' describes how to give fluids to severely dehydrated children and is set out in Box 5.3 below.

Note that giving intravenous (IV) fluid therapy through a sterile tube and cannula into a small child's vein requires special training *in addition* to any training you may have received on giving IV fluids to adults.

Box 5.3 Plan C: Steps for treating severe dehydration



Activity 5.2 Steps for treating severe dehydration

Look at the information in Box 5.3 and then make notes in your Study Diary in answer to the following questions.

(a) When should you refer a child urgently to hospital for treatment?

(b) If there is no IV line available, or you have not been trained to insert one, what options could you follow?

(c) How often would you assess the child after rehydration? Give reasons for your answer.

Comment

You can see that the guidance in Box 5.3 sets out a series of questions that take you through a range of options depending on your training and what resources are available in your health post, such as IV fluids or naso-gastric (NG) tube. The essential points are these:

(a) A child with severe dehydration needs to be treated as quickly as possible.

(b) If you are not able to rehydrate the child using an IV line, naso-gastric tube, or because the child is unable to take fluids by mouth, you must refer the child urgently to a hospital.

If IV fluid cannot be given immediately to a child with severe dehydration, but treatment is available nearby, you should refer the child urgently.

- If there is an IV facility which the mother can reach in less than 30 minutes you should refer the child urgently, giving sips of ORS during the trip.
- If the health facility is more than 30 minutes away you should still refer if you are not able to rehydrate the child using a naso-gastric tube or orally.

(c) If you are able to rehydrate the child but his hydration status does not improve after three hours, you should refer the child.

You are now going to look at how to treat a child classified with some dehydration.

5.4.2 Some dehydration

Although this is not as serious as '*severe dehydration*' it is still important that you treat a child who has '*some dehydration*' in order to prevent his situation becoming worse. Box 5.4 below sets out Plan B: the steps to take to treat a child with some dehydration.

Box 5.4 Plan B: Treatment of a child with some dehydration

Plan B: Treat Some Dehydration with ORS

Give in clinic recommended amount of ORS over 4-hour period
DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS

AGE	Up to 4 Months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
Weight in kg	< 6 kg	6–10 kg	10–12 kg	12–19 kg
ORS in ml	200–400	400–700	700–900	900–1400

Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75.

- If the child wants more ORS than shown, give more.
- For infants under 6 months who are not breastfed, also give 100–200 ml clean water during his period.

SHOW THE MOTHER HOW TO GIVE ORS SOLUTION.

- Give frequent small sips from a cup or cup and spoon (one spoon every 1–2 minutes).
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue breastfeeding whenever the child wants.

AFTER 4 HOURS:

- Reassess the child and classify the child for dehydration.
- Select the appropriate plan to continue treatment.
- Begin feeding the child in clinic.

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:

- Show her how to prepare ORS solution at home.
- Show her how much ORS to give to finish 4-hour treatment at home.
- Give her enough ORS packets to complete rehydration. Also give her a box of 10 packets of ORS as recommended in Plan A.
- Explain the 4 Rules of Home Treatment; these are:

  1 GIVE EXTRA FLUIDS

  2 GIVE ZINC SUPPLEMENTS

  3 CONTINUE FEEDING

  4 WHEN TO RETURN

5.4.3 No dehydration

A child with diarrhoea, even if classified as having no dehydration, still needs extra fluid to prevent dehydration occurring. A child who has no dehydration needs home treatment and the steps for this are set out in Plan A in Box 5.5.

Box 5.5 Plan A: Treatment for a child with diarrhoea but no dehydration

Counsel the mother on the 4 Rules of Home Treatment

Give Extra Fluids, Give Zinc Supplements, Continue Feeding, When to Return

1 Give extra fluids (as much as the child will take):

Tell the mother:

– To breastfeed frequently and for longer at each feed.

– If the child is exclusively breastfed, give ORS in addition to breastmilk.

– If the child is not exclusively breastfed, give one or more of the following: ORS solution, food-based fluids (such as soup, rice water and yoghurt drinks), or clean water.

It is especially important to give ORS at home when:

– The child has been treated with Plan B or Plan C during this visit.

– The child cannot return to a clinic if the diarrhoea gets worse.

- Teach the mother how to mix and give ORS.
- Give the mother 2 packets of ORS to use at home.
- Show the mother how much fluid to give in addition to the usual fluid intake:

Up to 2 years	50 to 100 ml after each loose stool
2 years or more	100 to 200 ml after each loose stool

Tell the mother to:

– Give frequent small sips from a cup.

– If the child vomits, wait 10 minutes. Then continue, but more slowly.

– **Continue giving extra fluid until the diarrhoea stops**.

Box 5.5 continues on the next page.

2 Give zinc supplements:

- Tell the mother how much zinc to give:

Up to 6 months	1/2 tablet for 10 days
6 months or more	1 tablet for 10 days

- Show the mother how to give Zinc supplements

– Infants — dissolve tablet in a small amount of expressed breastmilk, ORS or clean water in a cup;

– Older children — tablets can be chewed or dissolved in a small amount of clean water in a cup.

3 Continue feeding

4 Tell her when to return

You should now have a good understanding of how to treat a child with any of the three dehydration classifications. Next you are going to look at how to classify diarrhoea, beginning with persistent diarrhoea.

5.5 Classify persistent diarrhoea

After you have classified a child's dehydration, you need to classify what kind of diarrhoea the child has. As you read earlier in this study session, a child who has had diarrhoea for 14 days or more should be classified as having persistent diarrhoea. There are two classifications of persistent diarrhoea, which are linked to the level of dehydration in the child (Box 5.6):

- severe persistent diarrhoea and
- persistent diarrhoea.

Box 5.6 Classification of persistent diarrhoea

• Dehydration present	**SEVERE PERSISTENT DIARRHOEA**	▸ **Treat dehydration before referral unless the child has another severe classification.** ▸ **Give Vitamin A.** ▸ **Refer to hospital.**
• No dehydration	**PERSISTENT DIARRHOEA**	▸ Advise the mother on feeding a child who has PERSISTENT DIARRHOEA. ▸ **Give Vitamin A, therapeutic dose.** ▸ Advise mother when to return immediately. ▸ Follow-up in 5 days.

A child who has had diarrhoea for 14 days or longer, and is also dehydrated, must be referred to hospital.

5.5.1 Severe persistent diarrhoea

If a child has had diarrhoea for 14 days or more *and* also has some or severe dehydration, you should classify the child's illness as s*evere persistent diarrhoea.*

Treatment

Children with diarrhoea lasting 14 days or more, who are also dehydrated, need to be referred to hospital. They may need laboratory tests of stool samples to identify the cause of the diarrhoea.

Treatment of dehydration in children with severe diarrhoea can be difficult and it is much more likely that a hospital will be able to treat such children more effectively. Therefore you should always refer these children, first giving a therapeutic dose of vitamin A before the child leaves your health post.

5.5.2 Persistent diarrhoea

A child who has had diarrhoea for 14 days or more *but* who has no signs of dehydration is classified as having *persistent diarrhoea*.

Treatment

Special feeding is the most important treatment for a child with persistent diarrhoea. Feeding recommendations for persistent diarrhoea are given in more detail later in this Module. Box 5.7 summarises how a child with persistent diarrhoea should be treated. You can see that it is important to treat the child with the recommended dose of vitamin A. Zinc supplements should also be given.

Box 5.7 Treatment for persistent and severe persistent diarrhoea.

Give vitamin A

For MEASLES, MEASLES with EYE/MOUTH complications and PERSISTENT DIARRHOEA give three doses.

- Give first dose in clinic.
- Give two doses in the clinic on days 2 and 15.

For a child with SEVERE MALNUTRITION, SEVERE COMPLICATED MEASLES or SEVERE PERSISTENT DIARRHOEA give one dose in clinic and then refer.

- For a routine Vitamin A supplementation for children six months up to five years give one dose in clinic if the child has not received a dose within the last six months.

AGE	VITAMIN A CAPSULES		
	200,000 IU	100,000 IU	50,000 IU
Up to 6 months		½ capsule	1 capsule
6 months up to 12 months	½ capsule	1 capsule	2 capsules
12 months up to 5 years	1 capsule	2 capsules	4 capsules

5.5.3 Follow-up care for persistent diarrhoea

Children who have been classified with diarrhoea will need follow-up care to ensure that rehydration/hydration is maintained and to assess that the diarrhoea has stopped. You should give follow-up care after five days:

Ask:

- Has the diarrhoea stopped?
- How many loose stools is the child having per day?

If diarrhoea does not stop after five days, do a full reassessment, treat and refer the child to hospital.

Treatment:

If the diarrhoea has not stopped (the child is still having three or more loose stools per day), do a full reassessment of the child, give any treatment needed and then refer the child to hospital.

If the diarrhoea has stopped (the child is having less than three loose stools per day), you should tell the mother to follow the usual feeding recommendations for the child's age. You will learn more about feeding recommendations in Study Sessions 10 and 11 of this Module.

5.6 Classify dysentery

There is only one classification for dysentery; see Box 5.8 below:

Box 5.8 Classification for dysentery

• Blood in the stool	**DYSENTERY**	▸ **Treat for 5 days with Cotrimoxazole.** ▸ Advise mother when to return immediately. ▸ Follow-up in 2 days.

Classify a child with diarrhoea and blood in the stool as having *dysentery.*

Treatment

You should treat the child's dehydration in the same way as outlined earlier in this study session and give cotrimoxazole. Table 5.3 below sets out which antibiotics should be given and the correct dosage according to the weight (or age) of the child.

Table 5.3 Treatment for dysentery: give two times daily for 5 days.

Age (weight in kg)	Adult tablets	Paediatric tablets	Syrup in ml
2 months up to 12 months	½	2	5
12 months up to 5 years	1	3	7.5

5.6.1 Follow-up care for dysentery

For a child classified with dysentery, you need to provide follow-up care two days after the initial visit. Box 5.9 sets out the questions you need to ask at the follow-up care visit and what treatment should be provided. If you find the child's symptoms are the same or have got worse, you should refer the child to hospital.

Box 5.9 Follow-up care for dysentery

Give follow-up care after two days as follows:

Ask:

- Are there fewer stools?
- Is there less blood in the stool?
- Is there less fever?
- Is there less abdominal pain?
- Is the child eating better?

Assess the child for diarrhoea. (Use the Assess and Classify chart to help you.)

Treatment:

- If the child is dehydrated, treat dehydration.
- If the number of stools, amount of blood in stools, fever, abdominal pain or eating problems are the same or worse: refer to hospital.
- If there are fewer stools, or there is less blood in the stools, less fever, less abdominal pain, and the child is eating better, continue giving the same antibiotic until finished. Review with the mother the importance of the child finishing the antibiotics.

5.7 Classify diarrhoea in young infants

A young infant who has had diarrhoea lasting for 14 days or more should be referred to hospital.

Diarrhoea in a young infant (below two months) is not classified in the same way as in an older infant or young child (two months to five years). The main difference is that for a young infant with diarrhoea lasting for 14 days or more the only classification is *severe persistent diarrhoea*. This is because 14 days represents a significant amount of time in a young infant's life and they should be referred to hospital for treatment.

The main differences between classification and treatment for a young infant are the following:

- Movement only when stimulated or no movement even when stimulated (compared with lethargic or unconscious in a child).
- Treatment for a young infant with severe or some dehydration includes advising the mother how to keep her baby warm on the way to hospital.
- A young infant with diarrhoea lasting for 14 days or more is always classified as *severe persistent diarrhoea* (in a child, there also needs to be some or severe dehydration for a classification of severe persistent diarrhoea).

Table 5.4 (on the next page) sets out the classification and treatment of dehydration, dysentery and diarrhoea in the young infant. As you can see from Table 5.4, dysentery in a young child is a severe classification.

Table 5.4 How to classify and treat dehydration, diarrhoea and dysentery in a young infant.

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print)
Two of the following signs: • Movement only when stimulated or no movement even when stimulated • Sunken eyes • Skin pinch goes back very slowly.	**SEVERE DEHYDRATION**	▸ **Give first dose of intramuscular Ampicillin and Gentamycin** ▸ **If infant has another severe classification:** - **Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way** - **Advise mother to continue breastfeeding more frequently** - **Advise mother how to keep the young infant warm on the way to hospital** OR ▸ If infant does not have low weight or any other severe classification; give fluid for severe dehydration (Plan C) and refer to hospital after rehydration
Two of the following signs: • Restless, irritable • Sunken eyes • Skin pinch goes back slowly	**SOME DEHYDRATION**	▸ **If infant has another severe classification:** - **Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way** - **Advise mother to continue breastfeeding more frequently** - **Advise mother how to keep the young infant warm on the way to hospital** ▸ If infant does not have low weight or any other severe classification - Give fluid for some dehydration (Plan B) - Advise mother when to return immediately - Follow-up in 2 days
• Not enough signs to classify as some or severe dehydration	**NO DEHYDRATION**	▸ Advise the mother when to return immediately ▸ Follow-up in 5 days if not improving ▸ Give fluids to treat diarrhoea at home (Plan A)
• Diarrhoea lasting 14 days or more.	**SEVERE PERSISTENT DIARRHOEA**	▸ **Give first dose of intramuscular Ampicillin and Gentamycin** ▸ **Treat to prevent low blood sugar** ▸ **Advise how to keep infant warm on the way to the hospital** ▸ **Refer to hospital**
• Blood in the stool.	**DYSENTERY**	▸ **Give first dose of intramuscular Ampicillin and Gentamycin** ▸ **Treat to prevent low blood sugar** ▸ **Advise how to keep infant warm on the way to the hospital** ▸ **Refer to hospital**

In this study session you have looked at how to assess, classify and treat children and young infants with diarrhoea and dehydration. As you read in the introduction, diarrhoea is the second major cause of death in Ethiopia of children under five years old. Your role as a Health Extension Practitioner is therefore crucial in identifying the severity of the diarrhoea and dehydration in the sick child or young infant brought to your health post and in providing the best possible treatment and follow-up care for them. Knowing when to refer a child or young infant urgently to hospital is also important, since in some cases the special treatment available there is more likely to be effective than the treatment you can provide in a health post, in particular if you have limited resources available.

Summary of Study Session 5

In Study Session 5, you have learned that:

1 Diarrhoea is a common illness among children under five years of age in Ethiopia.

2 To assess diarrhoea in a child or young infant the steps you should take are:
   - look for general danger signs
   - ask for duration of diarrhoea
   - assess for signs of dehydration
   - ask about blood in the stool.

3 Based on your findings on assessment, you classify the child for:
   - Dehydration
   - Persistent or severe persistent diarrhoea
   - Dysentery.

4 The classification and treatment in a child and a young infant are different; if a young infant has had diarrhoea for 14 days or more they should *always* be classified as having severe persistent diarrhoea.

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 these questions. 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, 5.2, and 5.3)

Why is it important to check for diarrhoea in all sick children who come to the health post?

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

Under what circumstances would you refer to hospital an infant or child who is dehydrated with diarrhoea or dysentery?

SAQ 5.3 (tests Learning Outcomes 5.1, 5.3, 5.4 and 5.5)

Read Case Study 5.2 and then answer the questions below.

Case Study 5.2 for SAQ 5.3

Sora is 10 months old. He weighs 8 kg. His temperature is 38.5°C. He is here today because he has had diarrhoea for three days. His mother has noticed blood in Sora's stool. Sora does not have any general danger signs. He does not have cough or difficult breathing. The health worker assesses Sora for diarrhoea. He is not lethargic or unconscious. He is not restless or irritable. He does not have sunken eyes. Sora drank normally when offered some water and did not seem thirsty. The skin pinch goes back immediately.

(a) How do you classify Sora's illness? Write down the reasons for your answer.

(b) How would you treat Sora and what advice would you give to the mother about follow-up care?

Study Session 6 Management of Sick Children with Fever

Introduction

Fever is a common symptom in many sick children. Think about your health post — many of the mothers who bring their children to see you are likely to say that the reason for their visit is that the child has fever. Being able to assess fever and classify the illness that is causing the fever is therefore an important task for you as a Health Extension Practitioner.

This study session will introduce you to the common causes of fever in children. A child with fever may just have a simple cough or other viral infection. However fever may also be caused by a more serious illness, such as malaria, measles or meningitis.

Malaria is a major cause of death in children so it is important that you are able to identify the symptoms and ensure the sick child receives urgent treatment as quickly as possible.

In this study session you will learn how to recognise and assess fever and which focused questions to ask so that you are able to classify the illness causing the fever. You will also learn how you treat the illness as effectively as possible and to support the mother in providing home care for her child.

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 and 6.3)

6.2 Assess a child with fever. (SAQs 6.1, 6.2 and 6.3)

6.3 Classify the illness in a child with fever. (SAQs 6.2 and 6.3)

6.4 Treat and give follow-up care for very severe febrile illness, malaria, measles and other causes of fever. (SAQ 6.3)

6.1 Assess and classify fever

Malaria and measles are the two major illnesses where fever is likely to be a symptom (although you should not rule out either illness even if fever is not present).

Measles and malaria are both described in *Communicable Diseases*, Part 1; see Study Sessions 4 and 8 respectively.

Box 6.1 (on the next page) outlines the key symptoms and signs of malaria and the complications that can arise in an infant or child who has malaria.

Box 6.1 Malaria symptoms and possible complications

Fever is the main symptom of **malaria**. It can be present all the time or recur at regular intervals during the illness. Other signs of malaria are shivering, sweating and vomiting. A child with malaria may have chronic anaemia (with no fever) as the only sign of illness.

In areas with very high malaria transmission, malaria is a major cause of death in children. A case of uncomplicated malaria can develop into severe malaria within 24 hours of onset of the illness. The child can die if urgent treatment is not given.

Measles is another cause of fever. It is a highly infectious disease with most cases occurring in children aged between six months and two years. Box 6.2 below outlines the main symptoms and possible related infections that you need to be aware of if you are treating a child with measles.

Box 6.2 Measles: symptoms and complications

Fever and a generalised rash are the main signs of measles. Most cases occur in children between six months and two years of age. Measles is highly infectious. Overcrowding and poor housing increases the risk of measles occurring early in a child's life.

Measles affects the skin and the layer of cells that line the lung, gut, eye, mouth and throat. The measles virus damages the immune system for many weeks after the onset of measles. This leaves the child at risk of other infections.

Complications of measles occur in many cases. The most important are: diarrhoea (including dysentery and persistent diarrhoea), pneumonia, stridor, mouth ulcers, ear infection and severe eye infection and blindness.

Measles also contributes to malnutrition because it causes diarrhoea, high fever and mouth ulcers, all of which can interfere with feeding. Malnourished children are more likely to have severe complications due to measles. This is especially true for children who are deficient in vitamin A. One in ten severely malnourished children with measles may die. For this reason, it is very important to help the mother to continue to feed her child during measles.

6.2 Assess fever

Whether or not the mother says the child has fever, it is important that you assess all sick children for fever.

A child has the main symptom of fever if:

- the child has a history of fever or
- the child feels hot or
- the child has an axillary temperature of 37.5°C or above.

ASK: Does the child have fever?

Check to see if the child has a history of fever, feels hot or has a temperature of 37.5°C or above.

The child has a history of fever if the child has had any fever with this illness. Use words for 'fever' that the mother understands. For example, ask the mother if the child's body has felt hot. Feel the child's abdomen or armpit and determine if the child feels hot.

If the child's temperature has not been measured, and you have a thermometer, measure the child's temperature.

If the child has fever, assess the child for additional signs related to fever (if the child has no fever you should ask about the next main symptom, which is an ear problem. You will learn how to assess and classify ear problems in Study Session 13).

When a child presents with fever you should assess the child following the steps set out in Box 6.3 below. You will see that it lists the steps for assessing a child for fever and what the related illness may be.

There are two parts to the box. The top section (above the broken line) describes how to assess the child for signs of malaria, measles, meningitis and other causes of fever. In meningitis there will be bulging fontanelle in infants and stiffness of the neck. The bottom section of the box describes how to assess the child for signs of measles complications if the child has measles now, or has had measles within the last three months.

The fontanelle is the 'soft spot' on top of an infant's head where the skull bones have not yet fused. Meningitis is described in detail in Study Session 3 of *Communicable Diseases*, Part 1.

Therefore, if your assessment is that the child does have fever, you should follow the steps in Box 6.3:

Box 6.3 Assessing for fever and possible related illnesses

Decide **malaria risk**: high or low or no.

If 'low or no' malaria risk, then ask:

- Has the child travelled outside this area during the previous 15 days?
- If yes, has the child been to a malarious area?

.....

Box 6.3 continues on the next page.

THEN ASK	LOOK AND FEEL:
• For how long has the child had fever? • If more than seven days, has the fever been present every day? • Has the child had measles within the last three months?	• Look or feel for stiff neck • Look or feel for bulging fontanelles (under one year old) • Look for runny nose • Look for signs of MEASLES • Generalised rash and one of these: cough, runny nose, red eyes
If the child has measles now or within the last three months	• Look for mouth ulcers Are they deep and extensive? • Look for pus draining from the eye • Look for clouding of the cornea

You are now going to look in more detail at how to classify illnesses associated with fever.

6.2.1 Assessing for malaria

You need to decide whether the malaria risk is high or low. The practical criteria for classification of risk of malaria in Ethiopia, where malaria is seasonal, should be based on altitude and season.

(a) *High risk:* areas at altitude range of less than 2,000 metres above sea level, especially during the months of September to December and from April to June.

(b) *Low risk*: areas at altitude range of 2,000–2,500 metres above sea level, especially during the months of September to December and from April to June.

(c) *No risk*: areas at altitude range of above 2,500 metres above sea level.

If you are not sure whether the child has been to a malarious area you should assume the malaria risk is high.

If the malaria risk in the local area is low or absent, ask whether the child has travelled outside this area during the previous 15 days. If yes, then you should ask if the child has been to a malarious area. You should identify the malaria risk as high if there has been travel to a malarious area.

If the mother does not know or is not sure, ask about the area and use your own knowledge of whether the area has malaria. If you are still not sure, then you should assume the malaria risk is high.

■ Why do you think it is important to assess *all* sick children for fever?

□ Although fever may be caused by a simple cough or other virus infection, it can also be caused by a more serious illness, such as measles or malaria. As you read, malaria is a major cause of death for children so it is important than you know how to identify the signs.

6.2.2 Assessing for other diseases

If you assess the child as not having malaria, you need to consider other possible causes for the child's fever.

ASK: How long has the child had fever?

If the fever has been present for more than seven days, ask if the fever has been present every day.

Most fevers due to a virus infection go away within a few days. A fever which has been present every day for more than seven days can mean that the child has a more severe disease. In this case you should refer the child for further assessment.

ASK: Has the child had measles within the last three months?

A child with fever and a history of measles within the last three months may have an infection due to complications of measles.

LOOK or FEEL for stiff neck

A child with fever and a stiff neck may have meningitis. A child with meningitis needs urgent treatment with injectable antibiotics and referral to a hospital.

While you talk with the mother during the assessment, look to see if the child moves and bends his neck easily as he looks around. If the child is moving and bending his neck, he does not have a stiff neck.

If you did not see any movement, or if you are not sure, draw the child's attention to his umbilicus or toes. For example, you can shine a flashlight on his toes or umbilicus or tickle his toes to encourage the child to look down (see Figure 6.1). Look to see if the child can bend his neck when he looks down at his umbilicus or toes.

Figure 6.1 Checking the child's neck movements (1).

If you still have not seen the child bend his neck himself, ask the mother to help you lie the child on his back. Lean over the child; gently support his back and shoulders with one hand. With the other hand, hold his head. Then carefully bend the head forward toward his chest (see Figure 6.2). If the neck bends easily, the child does not have a stiff neck. If the neck feels stiff and there is resistance to bending, the child has a stiff neck. Often a child with a stiff neck will cry when you try to bend his neck.

LOOK or FEEL for bulging fontanelle (age less than 12 months)

Hold the infant in an upright position. The infant must not be crying. Then look at and feel the fontanelle. The **fontanelle** is the soft (not hard or bony) part of the head normally found in infants. If the fontanelle is bulging rather than flat, this may mean the young infant has meningitis.

LOOK for runny nose

A runny nose in a child with fever may mean that the child has a common cold. When malaria risk is low, a child with fever and a runny nose does not need antimalarial drugs. The fever is probably due to the common cold.

Figure 6.2 Checking the child's neck movements (2).

6.2.3 Assessing measles

Assess a child with fever to see if there are signs suggesting measles. Look for a generalised rash and for one of the following signs: cough, runny nose or red eyes.

Generalised rash

In measles, a red rash begins behind the ears and on the neck. It spreads to the face first and then over the next 24 hours, the rash spreads to the rest of the body, arms and legs. After four to five days, the rash starts to fade and the skin may peel.

Measles rash does not have blisters or pustules. The rash does not itch. You should not confuse measles with other common childhood rashes such as chicken pox, scabies or heat rash. Chicken pox rash is a generalised rash with vesicles (raised, fluid-filled spots). Scabies occurs on the hands, feet, ankles, elbows and buttocks, and is itchy. Heat rash can be a generalised rash with small bumps and is also itchy. A child with heat rash is not sick. You can recognise measles more easily during times when other cases of measles are occurring in your community.

Cough, runny nose or red eyes

To classify a child as having measles, the child with fever must have a generalised rash and one of the following signs: cough, runny nose or red eyes.

If the child has measles now or within the last three months:

LOOK to see if the child has mouth or eye complications

You have already looked at how to assess other complications of measles, such as stridor in a calm child, pneumonia and diarrhoea, in earlier study sessions in this Module. You will learn about other complication such as malnutrition and ear infection in later study sessions.

LOOK for mouth ulcers. Are they deep and extensive?

Mouth ulcers are common complications of measles which interfere with the feeding of a sick child. Look for mouth ulcers in every child with measles and determine whether they are deep and extensive.

The mouth ulcers should be distinguished from **Koplik spots**. Koplik spots occur inside the cheek during the early stages of measles infection. They are small irregular bright spots with a white centre. They do not interfere with feeding.

LOOK for pus draining from the eye

Pus draining from the eye is a sign of conjunctivitis. If you do not see pus draining from the eye, look for pus on the eyelids.

Often the pus forms a crust when the child is sleeping and seals the eye shut. It can be gently opened with clean hands. Wash your hands before and after examining the eye of any child with pus draining from the eye.

LOOK for clouding of the cornea

The cornea is the transparent covering of the front part of the eye.

Look carefully for corneal clouding in every child with measles. The corneal clouding may be due to vitamin A deficiency which has been made worse by measles. If the corneal clouding is not treated, the cornea can ulcerate and cause blindness.

A child with clouding of the cornea needs urgent referral and treatment with vitamin A.

- What kinds of complications might a child have who had measles a month ago?

- If a child has had measles at any time in the past three months you should check to see if he has any mouth complications such as ulcers, which interfere with feeding if they are deep and extensive. You should also look to see if the child has eye problems such as conjunctivitis or corneal clouding which can ulcerate and cause blindness.

6.3 Classifying fever

The next step after assessing for fever *and* measles is to classify the illness. If the child has fever and no signs of measles, classify the child for fever only. If the child has signs of both fever and measles, classify the child for both.

Activity 6.1 Assess and classify fever (1)

This activity will help you to check your understanding of what you have learned so far. Make notes in your Study Diary in answer to the following questions:

(a) How would you classify a child with fever who lives in a low risk malaria area, and who does not have measles or a runny nose?

(b) If a child brought to your health post with fever has recently travelled to another area, but neither his mother nor you know the malaria risk for that area, how would you classify the child?

(c) What is the classification in all cases when a child has a fever and a stiff neck, bulging fontanelle or any general danger sign?

Comment

As you may recall, the Assess and Classify chart has three tables for fever classification. One is for classifying fever when the risk of malaria is high; the second is for when the risk of malaria is low and the third is for classifying fever when there is no malaria risk.

Therefore, to classify fever, you must know if the malaria risk is high, low or none and then select the appropriate table.

For the child in question (a) above, you would use the 'low risk' table and classify for 'malaria low risk'.

All children with fever and a stiff neck, bulging fontanelle or any general danger sign must be referred urgently.

The child in question (b) will need to be classified according to the high risk malaria table. You read that if you do not know the risk of malaria in an area a child has visited, you should assume 'high risk'. Therefore this child should be classified as 'malaria high risk'.

(c) In all cases where a child with fever also has a stiff neck, bulging fontanelle or any general danger sign, they must be classified as very severe febrile disease. In such cases you must refer the child urgently.

You will now look in more detail at how to classify malaria.

6.3.1 Classification of malaria

High malaria risk

There are two possible classifications of fever when the malaria risk is high:

- Very severe febrile disease
- Malaria.

When the risk of malaria is high, the chance is also high that the child's fever is due to malaria.

If the child with fever has any general danger sign or a stiff neck, classify the child as having very severe febrile disease (*High Malaria Risk*).

If a general danger sign or stiff neck is not present but the child has fever (by history, feels hot, or temperature 37.5°C or above) in a high malaria risk area, you should classify the child as having malaria (*High Malaria Risk*).

Low malaria risk

If you see children for whom the risk of malaria is low, use the Low Malaria Risk classification table. There are three possible classifications of fever in a child with low malaria risk:

- Very severe febrile disease
- Malaria
- Fever – malaria unlikely.

If the child has any general danger sign or a stiff neck, and the malaria risk is low, classify the child as having very severe febrile disease (*Low Malaria Risk*).

If the child does not have signs of very severe febrile disease and the risk of malaria is low, a child with fever *and no* runny nose, *no* measles *and no* other cause of fever is classified as having malaria (*Low Malaria Risk*).

When signs of another infection are not present, and blood film and rapid diagnostic test (RDT) for malaria are not available, you should classify and treat the illness as malaria even though the malaria risk is low.

If the child does not have signs of very severe febrile disease or of malaria and the malaria risk is low *and* the child has a runny nose, measles or other cause of fever, classify the child as having fever – malaria unlikely.

No malaria risk

There are two possible classifications of fever in a child with no malaria risk:

- Very severe febrile disease
- Fever – no malaria.

A child with any general danger sign, stiff neck or bulging fontanelle should be classified as very severe febrile disease and referred urgently.

If the child has any general danger sign or a stiff neck, and there is no malaria risk, classify the child as having very severe febrile disease (*No Malaria Risk*).

When there is no malaria risk, a child with fever who has *not* travelled to a malarious area should be classified as fever — no malaria.

6.4 Treatment for fever and malaria

The treatment for fever or malaria is *not* based on classification of malaria risk. Therefore once you have classified for fever, the treatment is the same. The exception is where there is no malaria risk when you do not have to treat the child with an antimalarial drug.

Treatment for malaria is described in detail in Study Session 8 of *Communicable Diseases*, Part 1. All the drugs and dosages are listed there, including for children aged over 4 months, and adults.

6.4.1 Very severe febrile disease or severe malaria

A child with fever and any general danger sign or stiff neck may have meningitis, severe malaria (including cerebral malaria) or sepsis. It is not possible to distinguish between these severe diseases without laboratory tests.

A child classified as having very severe febrile disease needs urgent treatment and referral. Before referring urgently, you should give a dose of paracetamol if the child's temperature is 38.5°C or above, and prevent low sugar by ensuring the child has food on the journey to hospital. You should administer artesunate rectally as indicated in Table 6.1 below.

Table 6.1 Rectal artesunate treatment for children (aged 0–5 years) and weighing at least 5 kg.

Weight (kg)	Age	Artesunate dose (mg)	Regimen (single dose)
5–8.9	0–12 months	50	One 50 mg suppository
9–19	13–41 months	100	One 100 mg suppository
20–29	42–60 months	200	Two 100 mg suppositories

6.4.2 Malaria

Treat a child over 4 months of age, classified as having *P. falciparum* malaria, with Coartem (or chloroquine if RDT confirms *P. vivax* malaria). You should give paracetamol if the child has a fever. If the fever has been present every day for more than seven days, you should refer the child for assessment.

Plasmodium falciparum and *Plasmodium vivax* are the commonest species of malaria parasite in Ethiopia.

6.4.3 Fever (no malaria)

If the child's fever is high, give paracetamol. Advise the mother to return for a follow-up visit in two days if the child's fever persists. If the fever has been present every day for more than seven days, then you should refer the child for assessment.

6.4.4 Follow-up care and treatment for fever or malaria

The follow-up care for high and low risk malaria is set out in Box 6.4 (on the next page). If the child's fever persists after two days, or returns within 14 days of the initial classification, you should do a full re-assessment of the child. You should consider whether there are other causes of the fever.

Box 6.4 Follow-up care for malaria (low or high risk)

If the fever persists after two days, or returns within 14 days:

- Do a full reassessment of the child.
- Use the Assess and Classify chart.
- Assess for other causes of fever.

Treatment

- If the child has any general danger sign or a stiff neck, treat as very severe febrile disease.
- Ask if the child has actually been taking his antimalarial drugs. If he hasn't, make sure that he takes it.
- If the child has any cause of fever other than malaria, provide treatment.
- If malaria is the only apparent cause of fever, refer the child to hospital.

6.5 Classifying measles

A child with fever and who has measles, or has had measles within the last three months, should be classified both for fever *and* for measles.

There are three possible classifications of measles:

- Severe complicated measles
- Measles with eye or mouth complications
- Measles.

6.5.1 Severe complicated measles

Children with measles may have other serious complications. A child with any general danger sign, clouding of the cornea or deep and extensive mouth ulcers will be classified as 'severe complicated measles'.

6.5.2 Measles with eye or mouth complications

If the child has pus draining from the eye or mouth ulcers which are not deep or extensive, you should classify the child as having measles with eye or mouth complications. A child with this classification does not need referral.

6.5.3 Measles

All children with measles should receive a therapeutic dose of vitamin A.

A child with measles now or within the last three months and with none of the complications listed in the pink or yellow rows is classified as having measles. You should give the child a therapeutic dose of vitamin A to help prevent measles complications from developing. Table 6.2 summarises these classifications and also indicates what treatment should be provided according to the classification.

Table 6.2 Assess and classify table for measles.

SIGNS	CLASSIFY AS	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print.)
• Any general danger sign or • Clouding of cornea or • Deep or extensive mouth ulcers.	SEVERE COMPLICATED MEASLES***	➢ ***Give vitamin A therapeutic dose.*** ➢ ***Give first dose of an appropriate antibiotic.*** ➢ ***If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment.*** ➢ ***Refer URGENTLY to hospital.***
• Pus draining from the eye or • Mouth ulcers	MEASLES WITH EYE OR MOUTH COMPLICATIONS ***	➢ ***Give vitamin A, therapeutic dose..*** ➢ ***If pus draining from the eye, treat eye infection with tetracycline eye ointment.*** ➢ If mouth ulcers, treat with gentian violet. ➢ Follow-up in 2 days.
• Measles now or within the last 3 months.	MEASLES	➢ **Give vitamin A, therapeutic dose.** ➢ **Advise when to return immediately**
*** Other important complications of measles - pneumonia, stridor, diarrhoea, ear infection, and malnutrition - are classified in other tables.		

You are now going to look at how you treat measles and associated complications.

6.6 Treatment of measles

6.6.1 Severe complicated measles

All children with severe complicated measles should receive urgent treatment and referral. Give the first dose of vitamin A to the child and an appropriate antibiotic and then refer the child urgently. If there is clouding of the cornea, or pus draining from the eye, apply eye ointment.

6.6.2 Measles with eye or mouth complications

Identifying and treating measles complications in infants and children in the early stages of the infection can prevent many deaths. As you read earlier, these children should be treated with vitamin A. It will help decrease the severity of the complications as well as correct any vitamin A deficiency. The mother should be taught how to treat the child's eye infection or mouth ulcers at home.

Eye infections should be treated as follows:

- *If pus is still draining from the eye*, ask the mother to describe how she has treated the eye infection. If treatment has been given correctly, you should refer the child to hospital. If not, teach the mother the correct treatment; this may help to solve the problem.
- *If the pus is gone but redness remains*, tell the mother to continue the treatment.
- *If no pus or redness*, tell the mother she can stop the treatment.

Mouth ulcers should be treated with gentian violet twice daily as follows:

- Wash hands.
- Clean the child's mouth with a clean soft cloth wrapped around a clean stick or the end of a spoon and wet with salt water.
- Paint the mouth with half strength gentian violet.
- Wash hands again.

Treating mouth ulcers helps the child to resume normal feeding more quickly.

6.6.3 Follow-up care for measles with eye or mouth complications

You should give follow-up care to the child after two days: you should look for red eyes and/or pus draining from the eyes and you should check to see whether the child still has the mouth ulcers. If the child's mouth ulcers are worse, or there is a very foul smell from the mouth, you should refer the child to hospital. If the mouth ulcers are the same or better, you should tell the mother that she must continue to use the gentian violet for a total of five days.

You are now going to do a short activity which will help you to understand the main points that you have covered in this study session.

Activity 6.2 Assess and classify fever (2)

Read Case Study 6.1 and then answer the questions below. You should either have a copy of the Assess and Classify chart to help you with this activity, or you could refer to the sections from the chart that are reproduced in this study session.

Case Study 6.1 Pawlos's story

Pawlos is ten-months-old. He weighs 8.2 kg. His temperature is 37.5°C. His mother says he has a rash and cough.

The health worker checked Pawlos for general danger signs. Pawlos was able to drink, was not vomiting, did not have convulsions and was not lethargic or unconscious.

The health worker next asked about Pawlos's cough. The mother said Pawlos had been coughing for five days. The health worker counted 43 breaths per minute. She did not see chest in-drawing nor hear stridor. Pawlos did not have diarrhoea.

The mother said Pawlos had felt hot for two days and that they lived in a high malaria risk area. Pawlos did not have a stiff neck. He has had a runny nose with this illness.

Pawlos had a rash covering his whole body. Pawlos's eyes were red. The health worker checked the child for complications of measles. There were no mouth ulcers. There was no pus draining from the eye and no clouding of the cornea.

(a) Does Pawlos have severe febrile disease? Write down your reasons for your answer.

(b) What malaria classification would you record on Pawlos's form and why?

(c) How would you classify Pawlos's measles? Write down reasons for your answer.

Comment

To help you understand the process of classification for Pawlos, we have set out below how the health worker classified Pawlos's fever, using the table for classifying fever when there is a high malaria risk. (If you have your chart booklet with you, you should open it on page 24.)

(a) First, the health worker checked to see if Pawlos had any of the signs in the pink row. She thought, 'Does Pawlos have any general danger signs or a stiff neck? No, he does not. Pawlos does not have any signs of *severe febrile disease*.'

(b) Next, the health worker looked at the yellow row. She thought, 'Pawlos has a fever. His temperature measures 37.5°C. He also has a history of fever because his mother says Pawlos felt hot for two days. He is from a high malaria risk area'. She classified Pawlos as having *malaria*.

(c) Because Pawlos had a generalised rash and red eyes, Pawlos has signs suggesting measles. To classify Pawlos's measles, the health worker looked at the classification table for classifying measles.

- She checked to see if Pawlos had any of the signs in the pink row. She thought, 'Pawlos does not have any general danger signs. The child does not have clouding of the cornea. There are no deep or extensive mouth ulcers. Pawlos does not have *severe complicated measles*.'
- Next the health worker looked at the yellow row. She thought, 'Does Pawlos have any signs in the yellow row? He does not have pus draining from the eye. There are no mouth ulcers. Pawlos does not have *measles with eye or mouth complications*.'
- Finally the health worker looked at the green row. Pawlos has measles, but he has no signs in the pink or yellow row. The health worker classified Pawlos as having measles.

In this study session you have learned about assessing fever in children. As you read earlier, fever may be caused by a serious illness such as malaria, measles or meningitis, and therefore it is critical that you are able to classify these conditions and ensure the sick child receives the correct treatment as quickly as possible.

Summary of Study Session 6

In Study Session 6, you have learned that:

1 Fever is a symptom of both simple and serious diseases.

2 Identifying serious disease is very important to prevent death among children.

3 To assess for fever you need to determine the malaria risk, ask about the duration of any fever, ask about and look for measles, look and check for signs of meningitis.

4 Malaria, measles and other severe febrile diseases like meningitis should be classified to give appropriate and prompt treatment.

5 Infants and children with severe febrile diseases and severe complicated measles should be referred urgently.

6 Malaria and measles with eye or mouth complications can be treated at the health post, while measles and fever with no malaria can be treated at home.

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 these questions. 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 6.2)

If a child is brought to the health post with a fever, what would you need to do immediately and why?

SAQ 6.2 (tests Learning Outcomes 6.2 and 6.3)

Read Case Study 6.2 and then answer the questions below.

Case Study 6.2 for SAQ 6.2

Abdi is three years old. He weighs 9.4 kg. He feels hot and has also had a cough for three days. Abdi is able to drink, has not vomited, has not had convulsions, and has not been lethargic or unconscious during the visit to the health post. His breathing rate is 51 a minute. The health worker did not see chest in-drawing or hear stridor when he is calm. Abdi does not have diarrhoea.

The mother says Abdi has felt hot for five days. The risk of malaria is high.

Abdi has not had measles within the last three months. He does not have a stiff neck; there is no runny nose, and no generalised rash.

(a) What are the child's signs?

(b) How would you classify his illness?

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

Read Case Study 6.3 and answer the questions below.

Case Study 6.3 for SAQ 6.3

Lemlen is three years old. She weighs 10 kg. Her temperature is 38°C. She has been coughing for two days, has a generalised rash and has felt hot for three days. She is able to drink, has not been vomiting and does not have convulsions. She is not lethargic. The health worker counts 42 breaths per minute. There is no chest in-drawing or stridor when she is calm. She has no diarrhoea. She does not have a stiff neck or runny nose, or mouth ulcers or pus draining from the eye. There is no clouding of the cornea.

(a) How would you classify Lemlen's illness?

(b) How would you treat her illness?

Study Session 7 Assessment of Malnutrition and Anaemia in the Sick Child

Introduction

This study session provides you with the knowledge and skills to undertake the accurate assessment and classification of children suffering from malnutrition and anaemia. This session will help you integrate the theory of assessment and classification of these diseases with the practice of treating these diseases. It also provides you with the knowledge of *how* to recognise signs of malnutrition and anaemia. You will need this information for Study Session 8 which will teach you how to manage and treat malnutrition and anaemia in a sick child.

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**. (SAQs 7.1, 7.2 and 7.3)

7.2 Correctly assess the sick child for the presence of specific signs of acute malnutrition and anaemia. (SAQs 7.1, 7.2 and 7.3)

7.3 Correctly classify the sick child for malnutrition and anaemia based on the presence or absence of specific signs. (SAQ 7.2)

7.4 Identify and distinguish moderate, severe and acute malnutrition. (SAQs 7.1 and 7.3)

7.5 Classify the different causes of malnutrition. (SAQs 7.1 and 7.3)

7.1 Malnutrition

Malnutrition is a condition that occurs when a person does not get enough nutrients. Malnutrition mainly affects children under five in developing countries and results in poor health. The malnourished child will also perform poorly at school and will be a less productive adult in the future.

7.1.1 Causes of malnutrition

There are several causes of malnutrition that can vary from country to country. They can be classified as *root causes*, *underlying causes* and *immediate causes*. **Immediate causes of malnutrition** are:

Inadequate dietary intake: this is when a child is not getting enough nutrients from his or her food to meet the nutritional needs of its body.

Frequent attacks of illness: a child who has had frequent illnesses can develop malnutrition. During illness the child's appetite decreases; the food eaten might not be absorbed or it may be vomited; the food that the child eats is not used efficiently, or it may not be enough for the increased metabolic need of the child's body.

7.1.2 Types of malnutrition

There are two types of malnutrition:

- Protein-energy malnutrition
- Micronutrient malnutrition or deficiency.

Protein-energy malnutrition

Protein-energy malnutrition, as its name implies, is lack of adequate protein and/or calories in the body. This can be acute or chronic.

Chronic protein-energy malnutrition is manifested by **stunting,** which means short height or length for age. Stunting occurs as a result of lack of food, or an illness which has been there for a long period of time.

Acute protein-energy malnutrition is the term used to cover both *moderate* and *severe* wasting and **nutritional oedema,** which is swelling of parts of the body due to fluid building up in the tissues (also known as *kwashiorkor*). Acute protein-energy malnutrition occurs as a result of a recent lack of nutrients or illness. This study session focuses in particular on acute malnutrition.

Micronutrient malnutrition or deficiency

A child whose diet lacks the recommended amounts of essential vitamins and minerals can develop **micronutrient malnutrition**. The child may not be eating enough of the recommended amounts of specific vitamins (such as vitamin A) or minerals (such as iron). Examples of foods that are rich in vitamin A include liver, egg yolk, milk and milk products from animals, as well as green leaves and yellow fruits and vegetables from plants. Foods that are rich in iron include animal sources such as flesh or meat, and foods prepared from blood and organs such as the liver of birds and fish.

Other causes of anaemia

A child can also develop anaemia as a result of:

- Infections
- Parasites such as hookworm or whipworm: these parasites can cause blood loss from the gut and lead to anaemia
- Malaria: often anaemia is a result of a combination of malnutrition and malaria.

7.2 Checking the sick child for malnutrition and anaemia

All children who are brought to the health post for consultation with you should be checked for malnutrition and anaemia. A mother may bring her child to the health post because the child has an acute illness and specific complaints that may point to malnutrition or anaemia. A sick child can be malnourished, but the child's family may not have realised this problem.

A child with malnutrition has a higher risk of disease and death. Even children with mild and moderate malnutrition have an increased risk of death. Identifying children with malnutrition and treating them is therefore a critically important part of your role as a Health Extension Practitioner. Some malnutrition cases can be treated at home, while severe cases need treatment in an **out-patient therapeutic programme** (OTP), or referral to a health centre or hospital for special feeding, blood transfusion, or specific treatment of a disease contributing to malnutrition (such as tuberculosis or HIV).

You are now going to learn how you should assess all sick children for malnutrition and anaemia.

7.3 Assessing for malnutrition

There are a number of indicators which tell you that a child is malnourished.

7.3.1 Visible severe wasting in infants less than six months of age

An infant with visible severe wasting has **marasmus**, a form of severe malnutrition. A child has this sign if he is very thin, has reduced subcutaneous fat, and looks like skin and bones. Some children are thin but do not have visible severe wasting. A child with visible severe wasting needs urgent treatment and you should refer him to a hospital.

Subcutaneous means 'under the skin'.

To look for visible severe wasting, remove the child's clothes. Look for severe wasting of the muscles of shoulders, arms, buttocks and legs. Look to see if the outline of the child's ribs is easily seen. Look at the child's hips. They may look small when you compare them with the chest and abdomen. Look at the child from the side to see if the fat of the buttocks is missing. When wasting is extreme, there are many folds of skin on the buttocks and thighs. It looks as if the child is wearing baggy pants. The illustrations and photo in Figure 7.1 show you how a child with visible severe wasting looks.

The face of a child with visible severe wasting may still look normal. The child's abdomen may be large or distended.

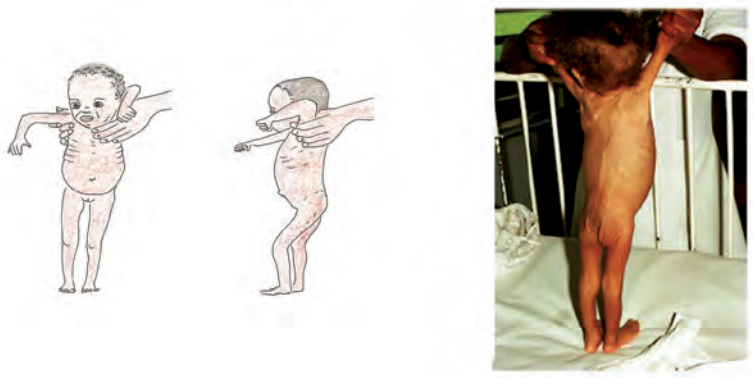


Figure 7.1 Infant with visible severe wasting. (Photo: *IMCI and OTP Training Guides*, Ethiopia)

7.3.2 The mid upper arm circumference (MUAC)

For children aged six months or more, the most feasible way to determine wasting or acute malnutrition is by measuring their **mid upper arm circumference** (MUAC). A MUAC of less than 11.0 cm indicates severe acute malnutrition.

Steps of MUAC measurement

1 Ask the mother to remove any clothing that covers the child's arm. If possible the child should stand erect and sideways to the measurer.

2 Estimate the mid-point of the left arm.

3 Straighten the child's arm and wrap the tape around at the mid-point. Make sure that the numbers are right side up. Make sure the tape is flat around the skin.

4 Inspect the tension of the tape on the child's arm. Make sure the tape has the proper tension and is not too tight or too loose. Repeat any step as necessary.

5 When the tape is in the correct position and correct tension on the arm, read and call out the measurement to the nearest 0.1 cm.

6 Immediately record the measurement.

Figure 7.2 below illustrates how to measure MUAC.

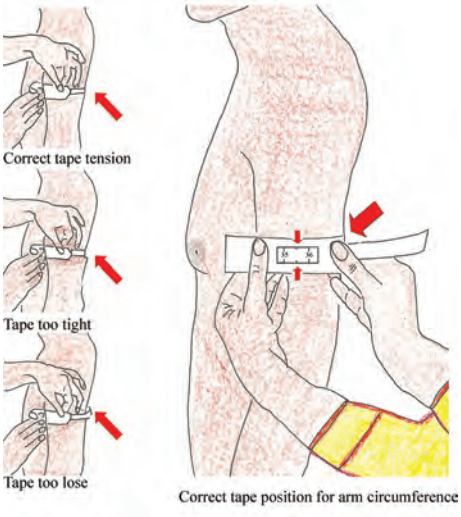


Figure 7.2 Measuring MUAC.

7.3.3 Look and feel for oedema of both feet

A child with oedema of both feet may have *kwashiorkor*. To determine the presence of oedema, press gently with your thumb on the topside of each foot for at least three seconds (or a count of 101; 102; 103); the child has **pitting oedema** if a dent remains following the pressing. Look at Figure 7.3 which shows you how a child's feet look when the dent remains.

Figure 7.3 Checking for bilateral pitting oedema. (Photo: *National OTP Training Guide*, Ethiopia)

7.3.4 Measuring a child's weight

Knowing the child's weight will be important for at least three reasons. It will enable you:

1 To monitor the growth of a child over time using a standard WHO growth chart, and to counsel the mother on feeding if the child's weight is found to be low.

2 To evaluate the progress of a child who is receiving nutritional treatment in an outpatient therapeutic programme (OTP) or **supplementary feeding programme (SFP)**. Baseline data for and subsequent follow-up of the child's weight is therefore needed to decide the management of that child.

3 To determine the dose of drug for the sick child.

Children are weighed by using a 25 kg hanging spring scale graduated to 0.1 kg (see Figure 7.4). You should not forget to re-adjust the scale to zero before each weighing. A plastic washing bowl should be attached by four ropes that go underneath the bowl. The bowl needs to be close to the ground in case the child falls out, and to make the child feel secure during weighing. If the basin is dirtied, then it should be cleaned with disinfectant. This is much more comfortable and familiar for the child; it can be used for ill children and is easily cleaned.

Figure 7.4 Weighing the child. (Source: *National OTP Training Guide*, Ethiopia)

When the child is steady, record the measurement to the nearest 100 gm (the frame of the scale should be at eye level). Each day, the scales must be checked and calibrated by using a known weight. Suitable items for the calibration include a stone or a standard 5–10 kg weight. If the measure does not match the weight to within 0.01 kg, the scale should be replaced. Spring balance scales should be replaced whenever the springs become too stretched.

As a Health Extension Practitioner you are expected to determine the classification of a child for malnutrition on the basis of visible severe wasting, *oedema* and *MUAC* measurements, and to treat the child based on the presence or absence of these signs. Weight in particular is used for monitoring the child and when making a decision whether to discharge a child from an OTP.

7.3.5 Assessing appetite

If a child aged six months or above has a MUAC less than 11 cm or pitting oedema of both feet *and has no medical complications*, you should assess the child's appetite.

An **appetite test** is not needed when the child has any one of the following: medical complications that require in-patient care, pneumonia, persistent diarrhoea, watery diarrhoea, dysentery, malaria, measles, low body temperature or high fever, open skin lesions or signs of vitamin A deficiency.

The appetite test

The appetite test has a number of steps you should follow:

1 The appetite test should be conducted in a separate quiet area.

2 You should explain to the caregiver the purpose of the appetite test and how it will be carried out.

3 The caregiver, where possible, should wash their hands.

4 The caregiver should sit comfortably with the child on their lap and either offer the child **ready-to-use therapeutic food** (RUTF) such as Plumpy'nut® or BP-100® from the packet, or put a small amount on her finger and give it to the child.

5 The caregiver should offer the child the RUTF gently, encouraging the child all the time. If the child refuses, then the caregiver should continue to quietly encourage the child and take time over the test. The test usually takes 15–30 minutes but may take up to one hour. *The child must not be forced to take the RUTF.*

6 The child needs to be offered plenty of water to drink from a cup when taking the RUTF.

You interpret the result of the appetite test in the following way:

Pass: a child that takes at least the amount shown in Table 7.1 below passes the appetite test. You should:

- Explain to the caregiver the choices of treatment and decide with the caregiver whether the child should be treated as an out-patient or an in-patient (nearly all caregivers will opt for out-patient treatment).
- Refer the child to the Out-patient Therapeutic Programme (OTP) for registration and initiation of treatment.

Fail: a child that does not take at least the amount of RUTF shown in Table 7.1 below should be referred for in-patient care. You should:

- Explain to the caregiver the reasons for recommending in-patient care; decide *with the caregiver* whether the child will be treated as an in-patient or an out-patient.
- Refer the child to the nearest **therapeutic feeding unit** (TFU) or hospital.

The appetite test should always be performed carefully. You should always offer treatment as an in-patient for children who fail their appetite tests. If there is any doubt, however, then you should refer the child for in-patient treatment until their appetite returns.

Table 7.1 Appetite test table.

APPETITE TEST **This is the minimum amount that malnourished children should take to pass the appetite test**			
Plumpy'nut®		BP-100®	
Body weight (kg)	**Sachet**	**Body weight (kg)**	**Bars**
<4	⅛–¼	<5	¼–½
4 up to 10	¼–½	5 up to 10	½–¾
10 up to 15	½–¾	10 up to 15	¾–1
>15	¾–1	>15	1–1½

7.4 Assessing for anaemia

There is one very clear way in which you can assess whether a sick child brought to your health post has anaemia, and this is to look for **palmar pallor**. Palmar pallor is unusual paleness of the skin of the palms. It is a sign of anaemia.

The steps for this are described below.

To see if the child has palmar pallor, look at the skin of the child's palm. Hold the child's palm open by grasping it gently from the side as illustrated in Figure 7.5. Do not stretch the fingers backwards. This may cause pallor by blocking the blood supply.

Compare the colour of the child's palm with your own palm and with the palms of other children. If the skin of the child's palm is pale, but has some pink areas, the child has **some palmar pallor**. If the skin of the palm is very pale or so pale that it looks white, the child has **severe palmar pallor**.

Box 7.1 below summarises the key points you have learned about how to assess for malnutrition and anaemia.

Figure 7.5 Checking for palmar pallor.

Box 7.1 Summary of assessment steps for malnutrition and anaemia

Malnutrition

Look and feel:

- For children under six months:
  - Look for pitting oedema of both feet
  - Look for visible severe wasting.
- For children aged six months or more:
  - Look for pitting oedema of both feet
  - Determine if the MUAC is less than 11.0 cm
  - If the MUAC is less than 11.0 cm or there is oedema of both feet and there is *no medical complication*, you should assess the child's appetite.

Anaemia

- Look for palmar pallor. If it is present, is it:
  - Severe palmar pallor?
  - Some palmar pallor?

7.5 Classification of malnutrition and anaemia

You have now seen how to assess the sick child for malnutrition and anaemia. The next step is deciding the classification of the child's illness based on the presence or absence of specific signs you have identified during the assessment process.

7.5.1 Classification of malnutrition

There are four possible classifications for malnutrition and these are set out below.

Severe complicated malnutrition

A child will be classified as having severe complicated malnutrition in the following cases:

If the child's age is below six months *and* the child has

- Visible severe wasting, *or*
- Oedema of both feet

OR

If the child's age is six months or above *and* the child has

- A MUAC less than 11 cm, *or*
- Oedema of both feet *and*
- Any medical complication.

Severe uncomplicated malnutrition

A child will be classified as having severe uncomplicated malnutrition in the following cases:

If a child's age is six months or above *and* the child has

- A MUAC less than 11 cm, *or*
- Oedema of both feet *and*
    - *No* medical complications *and*
    - Passes the appetite test.

Moderate acute malnutrition

A child will be classified as having moderate acute malnutrition in the following cases:

If a child's age is six months or above *and* the child has

- A MUAC of 11 cm to less than 12 cm *and*
- No oedema of both feet.

No acute malnutrition

A child will be classified as having no acute malnutrition in the following cases:

- No visible severe wasting *and*
- No pitting oedema of both feet *and*
- Has a MUAC greater than 12 cm.

7.5.2 Classification of anaemia

A child assessed for anaemia will have one of the following three classifications:

- **Severe anaemia:** when there is severe palmar pallor
- **Anaemia:** when there is some palmar pallor
- **No anaemia**: when there is no palmar pallor.

7.5.3 Classification of malnutrition and anaemia using a classification table

Now you have seen that when a sick child is checked for malnutrition and anaemia there will be at least two classifications: one from the four possible classifications of acute malnutrition, and another one from the three possible classifications of anaemia. Table 7.2 summarises the points you have read in this study session and shows you how to assess and classify the sick child for malnutrition and anaemia using the Assess and Classify chart.

Table 7.2 Assess and Classify chart for malnutrition and anaemia.

LOOK AND FEEL:	SIGNS	CLASSIFICATION
For children less than 6 months: – Look for pitting oedema of both feet – Look for visible severe wasting Classify age < 6 month for NUTRITIONAL STATUS	Visible severe wasting **or** Pitting oedema of both feet	**SEVERE COMPLICATED MALNUTRITION**
	No visible severe wasting **and** No oedema of both feet	**NO ACUTE MALNUTRITION**
For children aged 6 months or more – Determine if MUAC is: Less than 11.0 cm OR 11-<12 cm OR >12 cm – Look for pitting oedema of both feet – Assess appetite if MUAC <11.0 cm or oedema of both feet AND Classify age > 6 month for NUTRITIONAL STATUS	MUAC less than 11 cm **or** Pitting edema of both feet **and** **Any** medical complication: Pneumonia; Watery diarrhoea; Dysentery, Fever/low temperature **or** Fail appetite test	**SEVERE COMPLICATED MALNUTRITION**
No medical complication: Pneumonia or Watery diarrhoea or Dysentery or Fever/low temperature or measles	MUAC less than 11 cm **or** Pitting oedema of both feet **and** **No** Medical complication: Pneumonia **or** Watery diarrhoea **or** Dysentery **or** Fever/low temperature **and** Passed appetite test	**SEVERE UNCOMPLICATED MALNUTRITION**
	MUAC 11 cm to <12 cm **and** No oedema of both feet	**MODERATE ACUTE MALNUTRITION**
	MUAC ≥12 cm or more , **And** No oedema of both feet	**NO ACUTE MALNUTRITION**
CHECK FOR ANAEMIA Look for palmar pallor		
Severe palmar pallor?	Severe palmar pallor	**SEVERE ANAEMIA**
Some palmar pallor?	Some palmar pallor	**ANAEMIA**
	No palmar pallor	**NO ANAEMIA**

This study session equipped you with the knowledge and skills to make an accurate assessment of a child suffering with malnutrition and anaemia. You have also looked at how to identify different types of malnutrition and anaemia and to spot the signs or symptoms of these diseases.

Summary of Study Session 7

In Study Session 7, you have learned that:

1 The two main types of malnutrition are protein-energy malnutrition and micronutrient deficiency.

2 A sign of chronic protein-energy malnutrition is stunting which is shortness of height for the child's age

3 A sign of acute protein energy malnutrition is severe wasting of the body muscles, which is more visible in the shoulders, arms, legs, and the buttocks; or an oedema, which is swelling of the body due to fluid build-up in the tissues.

4 To check for oedema, you have to press your thumbs gently for three seconds on the **dorsal** part (top) of the feet. If after removing your thumb a dent is visible, then the child has pitting oedema.

5 A micronutrient deficiency such as a lack of iron in the blood causes a type of anaemia that can result in increased exposure to infections, fatigue, short attention span and poor concentration

6 Monitoring weight is crucial in treating malnutrition and anaemia; it enables you to monitor the growth of a child over time and helps you to evaluate the progress of a child who is under nutritional treatment in an outpatient therapeutic programme (OTP) or a supplementary feeding programme. It also helps you to determine the dose of a drug to give a sick child

7 It is necessary to do an appetite test when a child is 6 months or more, has a MUAC less than 11cm or has pitting oedema of both feet, and no medical complications.

8 It is not necessary to do an appetite test for a child with severe acute malnutrition when the child's illness requires inpatient care (for example, if the child has pneumonia, persistent diarrhoea, measles, dysentery, malaria, open lesions or vitamin 'A' deficiency, or if the child is less than 6 months of age).

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 these questions. 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 Outcomes 7.1, 7.2, 7.4 and 7.5)

A mother asks you what it means when you say a child is malnourished. How would you explain this term?

SAQ 7.2 (tests Learning Outcomes 7.1, 7.2 and 7.3)

What is the difference between malnutrition and anaemia? What signs would you look for in each case?

SAQ 7.3 (tests Learning Outcome 7.1, 7.2, 7.4 and 7.5)

How can you be sure that a child does not have acute malnutrition?

Study Session 8 Treatment of a Child with Malnutrition and Anaemia

Introduction

In the previous study session you learned how to assess and classify a sick child suffering from malnutrition and anaemia. This session is more practice focused and equips you with knowledge and skills that build on what you learned from Study Session 7, so that you will be able to treat and manage severe uncomplicated malnutrition and anaemia. In addition, you will be taught *when* and *how* to refer a sick child with uncomplicated malnutrition or anaemia for hospital treatment, and how to give advice to parents/carers of a sick child with one of these conditions.

Learning Outcomes for Study Session 8

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

8.1 Define and use correctly all of the key words printed in **bold**. (SAQs 8.1, 8.2, and 8.3)

8.2 Correctly treat children with severe uncomplicated malnutrition and anaemia. (SAQs 8.1, and 8.3)

8.3 Correctly identify when to refer children who need referral to the next health care level. (SAQs 8.1, 8.2, and 8.3)

8.4 Give advice to the caregiver of a child with severe uncomplicated malnutrition, moderate acute malnutrition and anaemia. (SAQ 8.2)

8.1 Treatment of a child with malnutrition or anaemia

After assessing and classifying a child with malnutrition or anaemia it is critically important that you treat the child correctly. Identifying and managing the treatment of a malnourished child will help you to promote a healthy life and may even help to save a child's life.

8.1.1 Treatment of severe complicated malnutrition

Children classified as having *severe complicated malnutrition* are at risk of death from pneumonia, diarrhoea, measles, and other severe diseases. Children with severe complicated malnutrition must always be referred urgently to hospital. They may need special feeding, antibiotics or blood transfusions which cannot be provided at the health post. Before the child leaves for hospital, you should treat the child to prevent low blood sugar. You should also give the child the first dose of vitamin A if you do not identify any oedema, and the child has not received vitamin A in the past six months.

A child with severe complicated malnutrition is at risk of death and must always be referred urgently to hospital.

Figure 8.1 A child with severe uncomplicated malnutrition.

8.1.2 Treatment of severe uncomplicated malnutrition

If a child has *severe uncomplicated malnutrition* (Figure 8.1), and there is an out-patient therapeutic programme (OTP) service in your health post, then you can manage the child according to the OTP protocol. You will read more about the OTP below. If the service is not available in your health post you should refer the child to a health facility where there is one.

You should give all children with a classification of severe uncomplicated malnutrition the following treatment:

- Vitamin A (unless there is presence of oedema or they have already received vitamin A in the past six months)
- Amoxicillin for seven days
- A dose of folic acid 5 mg
- Ready-to- use therapeutic food (RUTF) such as Plumpy'nut® or BP-100®.

If the child is aged two years or above, you should also give mebendazole or albendazole, preferably at the second out-patient visit which should take place seven days after the first visit to your health post. You will need to advise the mother that she should return for a follow-up visit within seven days, so that you can see whether the child has made progress.

8.1.3 Treatment of moderate acute malnutrition

A child classified as having *moderate acute malnutrition* has a higher risk of severe disease. You would need to assess the child's feeding and counsel the mother about the best way to feed her child (you can find the recommendations for feeding children in the Food Box on the Counsel the Mother chart in your chart booklet).

If there is a supplementary feeding programme in your area you should refer the child to this. You should advise the mother that she should come back to the health post with the child for a follow-up visit after 30 days.

8.1.4 Treatment when there is no moderate acute malnutrition

If the child is below two years of age, you should assess for feeding and then counsel the mother about feeding her child. There is more information about this in the *Nutrition* Module. (You can also look at the recommendations in the Food Box on the Counsel the Mother chart in your chart booklet.) Children below two years of age have a higher risk of feeding problems and malnutrition than older children.

8.1.5 Treatment of severe anaemia

Children who have severe anaemia must be referred urgently to hospital.

Children classified as having *severe anaemia* are at risk of death from congestive heart failure, **hypoxia** (acute shortage of oxygen in the blood), or severe bacterial infections. All children with severe anaemia must be referred urgently to hospital. They may need blood transfusions or antibiotics. You need to explain to the mother the reasons for and the advantages of the child going to the hospital and do everything you can to facilitate the referral. Look back at Study Session 4 in this Module if you need reminding how to refer a child to hospital.

8.1.6 Treatment of anaemia

A child with some palmar pallor (which you read about in the previous study session) may have anaemia and should be given iron (see Table 8.1 below). When there is a high risk of malaria, an antimalarial drug should also be given to a child with signs of anaemia. A child should also receive treatment for hookworm and whipworm where these infections are common.

Table 8.1 Iron treatment table.

Give one dose daily for 14 days		
AGE or WEIGHT	**IRON TABLET** Ferrous sulphate 300 mg (60 mg elemental iron)	**IRON SYRUP** Ferrous fumarate 100 mg per 5 ml (20 mg elemental iron per ml)
2 months up to 4 months (4–6 kg)		1.00 ml (15 drops)
4 months up to 12 months (6–10 kg)		1.25 ml (20 drops)
12 months up to 3 years (10–14 kg)	½ tablet	2.00 ml (30 drops)
3 years up to 5 years (14–19 kg)	½ tablet	2.5 ml (35 drops)

8.1.7 Treatment when there is no anaemia

There is no specific action or additional treatment that you need to give the child for this classification. Reassure the mother and praise her for good care of the child.

8.2 The out-patient therapeutic programme (OTP)

An OTP is a programme that provides home-based treatment and rehabilitation for children with severe uncomplicated malnutrition. These children can be admitted directly into an OTP, treated with routine drugs, and as you read in the previous study session, given ready-to-use therapeutic food (RUTF) to eat at home. The children attend the OTP every week for a medical check-up, receive additional medical treatments if required and are given a one-week supply of RUTF. Box 8.1 below describes RUTF.

Box 8.1 Ready-to-use food (RUTF)

RUTF is therapeutic food that can be consumed easily by children straight from the packet or pot without any cooking. It is a high-energy, nutrient-dense food. It is easy to use and store. It can be kept in simple packaging for several months without refrigeration. It can be kept for several days even when opened.

BP-100® and **Plumpy'nut**® are the commonly known RUTF preparations. If you have both products available, you should give children under two years of age either Plumpy'nut, or crush BP-100 and make this into *porridge* for the child. Children above the age of two years can take the BP-100 biscuit and

you may not need to make porridge. The amount of RUTF that should be given to severely malnourished children is based on their weight as indicated in Table 8.2 below.

Table 8.2 RUTF amounts based on weight of child.

Class of weight (kg)	**PLUMPY'NUT®**		**BP-100®**	
	sachet per **day**	sachet per **week**	bars per **day**	bars per **week**
3.0–3.4	1¼	9	2	14
3.5–4.9	1½	11	2½	18
5.0–6.9	2	14	4	28
7.0–9.9	3	21	5	35
10.0–14.9	4	28	7	49
15.0–19.9	5	35	9	63

Box 8.2 below summarises the key messages for mothers and caregivers of children admitted to an OTP.

Box 8.2 Key messages for caregivers of children in OTP

- RUTF is a food and medicine for malnourished children only. It should not be shared.
- For breastfed children, breastmilk should always be given before the RUTF and on demand.
- RUTF should be given before other foods. The child should have small regular meals of RUTF and be encouraged to eat often, every three to four hours.
- Plenty of clean water to drink should always be offered to the child when he or she is eating RUTF.
- The caregiver should wash their hands with soap and water before feeding the child.
- Food must be kept clean and covered.
- A sick child gets cold quickly so should be kept covered and warm.

A child with severe uncomplicated malnutrition should also receive routine drugs. These drugs are very important for the child to recover quickly. Table 8.3 sets out what routine medicines should be given to severely malnourished children and the correct dosage according to their age and previous treatment history.

Table 8.3 Routine medicines for severely malnourished infants and children.

Drug	Treatment
Vitamin A	1 dose at admission for all children *except* those with oedema or those who received vitamin A in the past six months
Folic acid	1 dose at admission
Amoxicillin	1 dose at admission + give treatment for seven days to take home. The first dose should be given in the presence of the supervisor
Deworming	1 dose on the second week (second visit)
Measles vaccine (from nine months old)	1 vaccine dose on the fourth week (fourth visit)

The following four tables refer specifically to vitamin A, folic acid and Amoxicillin and show what dose should be given to severely malnourished children and when.

Table 8.4 Vitamin A.

Age in months	Vitamin A IU orally
6–11	One blue capsule (100,000 IU)
12 (or 8 kg) and more	Two blue capsules (200,000 IU)

Table 8.5 Folic acid.

When	Amount
At admission	5 mg

Table 8.6 Amoxicillin.

Weight in kg	Dosage twice per day	250 mg capsule/tablet
<5 kg	125 mg	½
5–10	250 mg	1
10–20	500 mg	2
20–35	750 mg	3
>35	1000 mg	4

Table 8.7 Deworming drugs.

	Age up to 2 years
Albendazole 400 mg	1 tablet once
Mebendazole 100 mg	5 tablets once

8.3 Follow-up care of the child with malnutrition and anaemia

In this section you are going to look about what you need to do at a follow-up visit for a child who has been in the Outpatient Therapeutic Programme (OTP) for severe malnutrition or who has been assessed as having anaemia.

8.3.1 Follow-up care for severe malnutrition

Follow-up care for a child assessed as having severe malnutrition is an important part of the OTP and the mother or caregiver should be advised to come to the health post every week for two months, so that follow-up care can be provided.

You should remember that the mother or caregiver may be feeling very anxious about her child's health. Ask questions and praise the mother when she tells you about the positive things she is doing to help the child. You can base your assessment of the child's progress on a number of signs and these are set out in Box 8.3 below.

Box 8.3 Checklist for follow-up of a child with severe uncomplicated malnutrition

Follow-up should be done every seven days for at least two months as follows:

Ask about

- Diarrhoea, vomiting, fever or any other new complaint or problem
- Whether the child is finishing their weekly RUTF ration.

Check for

- Complications
- Temperature, respiration rate
- Weight, MUAC and oedema
- Appetite (do the appetite test).

Decide on action

Refer if there is any one of the following:

- Development of any new complication
- Failed appetite test
- Increase/development of oedema
- Weight loss for two consecutive visits
- Failure to gain weight for three consecutive visits
- Major illness or death of the main caregiver so that the child can't be managed at home.

If there is no indication for referral, give:

- De-worming and measles vaccination
- Weekly ration of Plumpy'nut® or BP-100®
- Appointment for next follow-up and record the information on the OTP card.

If the child is absent for any follow-up visit:

- Ask the community volunteer to do a home visit and report back to you as the Health Extension Practitioner.

Discharge

A child stays in the programme until they meets the discharge criteria or have been in the programme for a maximum of two months. The discharge criteria depend on the admission criteria.

- For those who were admitted based on oedema: discharge if there is no oedema for two consecutive visits (14 days)
- For those who were admitted without oedema: discharge when the child reaches the discharge target weight (as indicated in your chart booklet).

The child who fails to reach the discharge criteria after two months of OTP treatment, must always be referred to a hospital.

On discharge make sure:

- Counselling on child feeding and care is given to the mother or caregiver
- A discharge certificate is given to the mother or caregiver and referral to the Supplementary Feeding Programme is made (whenever one is available)
- A child is registered appropriately in the registration book on date of discharge.

8.3.2 Follow-up care for moderate acute malnutrition

If a child was classified with moderate acute malnutrition and referred to a supplementary feeding centre, or the mother has been given counselling to help her improve feeding and care of her child, she should be advised to return for a follow-up visit after 30 days. If there was a feeding problem as judged by the feeding recommendations in your chart booklet, the mother should be advised to return with the child earlier than 30 days.

You may have specially scheduled sessions for nutritional counselling, and mothers with a malnourished child can be asked to come for a follow-up visit at this time. A special session allows you to devote the necessary time to discuss feeding with several mothers and perhaps demonstrate some good foods for young children.

When the mother attends your health post for a follow-up visit after 30 days for a child with moderate acute malnutrition, you should take the steps set out in Box 8.4 (on the next page). As you read above, you should praise the mother and encourage her to continue good home care for her child. This will ensure that she feels supported by you.

Box 8.4 Follow-up care for moderate acute malnutrition

After 30 days

- Measure the child's MUAC and determine if the child still has moderate acute malnutrition
- Reassess feeding.

Treatment

- If the child no longer has moderate acute malnutrition, praise the mother and encourage her to continue her good care of the child
- If the child still has moderate acute malnutrition, counsel the mother about any feeding problems you have identified. Ask the mother to return again in one month. Continue to see the child monthly until the child is feeding well and no longer has moderate acute malnutrition.

Exception

A child for whom you do not think that feeding will improve, or whose MUAC is not improving, must always be referred to a health centre or hospital for better management.

Box 8.5 below sets out the steps you need to follow to assess the child's feeding. It will help you judge what advice and support you can give the mother or caregiver of the child.

Box 8.5 Checklist for feeding assessment

Assess the child's feeding

Ask questions about the child's usual feeding behaviour. Compare the mother's answers against the feeding recommendation for the child's age.

Do you breastfeed your child?	Yes_____ NO_____
How many times during the day?	_____ times
Do you also breastfeed during the night?	Yes_____ NO_____
Do you empty one breast before you shift to the other one?	Yes_____ NO_____
Does the child take any other food or fluids? (Density and Variety)	Yes_____ NO_____
What food or fluids?	_____
How many times per day? (Frequency)	_____ times
What do you use to feed the child?	Cup _____ Bottle _____ Other _____
If child is underweight: How large are servings?	(Amount) _____
Does the child receive his own serving?	Yes_____ NO_____
Who feeds the child and how?	(Active feeding) _____
During this illness, has the child's feeding changed?	Yes_____ NO_____
If yes how? (Feeding of sick child)	_____

8.3.3 Follow-up care for anaemia

When a child who had palmar pallor returns for a follow-up visit after 14 days, you should take the steps set out in Box 8.6 below.

Box 8.6 Follow-up care for a child with anaemia

After 14 days:

- Reassess feeding
- Give the child iron and advise the mother to return to your health post in 14 days for more iron
- Continue giving iron to the child every 14 days for two months
- If the child has palmar pallor after two months, refer for assessment.

You have now covered all the important points that deal with proper management of a child with malnutrition and anaemia. Some of the points, such as assessing, feeding and counselling the mother on proper feeding practices, together with specific feeding recommendations, will be dealt with in more detail later in this Module, and are also covered in the *Nutrition* Module.

Summary of Study Session 8

In Study Session 8, you have learned that:

1 Children classified as having severe uncomplicated malnutrition are at risk of death from pneumonias, diarrhoea, measles and other serious diseases. They *must* be referred *urgently* to a hospital because they may need specialist care or treatment that cannot be provided at the health post.

2 Children classified as having severe anaemia are at risk of death from heart failure, hypoxia or bacterial infection and *must* be referred *urgently* to hospital.

3 Children classified as having severe uncomplicated malnutrition can be treated at the health post using the OTP service and treatment protocol.

4 Children classified as having moderate acute malnutrition have a higher risk of serious diseases. You should address the child's feeding pattern and advise the parent or caregiver the best way to feed the child.

5 Children with some palmar pallor may have anaemia and should be given iron.

6 RUTF is a food and medicine for malnourished children *only* and should *not* be shared.

7 Follow-up care for a child with uncomplicated malnutrition should include a visit to the health post every seven days for two months.

8 A child with moderate acute malnutrition should be referred to a complementary feeding centre and the parent or caregiver should be given counselling to help improve the feeding and care of the child.

9 Follow-up care for a child with anaemia includes a visit the clinic every 14 days.

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 Outcomes 8.1, 8.2 and 8.3)

Read Case Study 8.1 and then answer the questions that follow.

Case Study 8.1 for SAQ 8.1

Negash is a 13-month-old child presenting to the health post with cough. The Health Extension Practitioner assessed him and found the following signs: pitting oedema of both feet; MUAC was 12.5 cm; some palmar pallor. The HEP also identified fast breathing and classified Negash as having pneumonia.

(a) Describe how you would classify Negash's type of nutritional problem and explain what you would do to manage him.
(b) Write down what you think might be the concerns of Negash's mother and two or three things you could say or do to advise and reassure her.

SAQ 8.2 (tests Learning Outcomes 8.1, 8.3 and 8.4)

Read Case Study 8.2 and then answer the questions that follow.

Case Study 8.2 for SAQ 8.2

Jemal is a 22-month-old boy and weighs 6.5 kg. His mother has brought him because he has had swollen feet for three days. When you assessed Jemal, you found pitting oedema of the feet, MUAC of 10 cm, no palmar pallor and no other problems. Jemal passed an appetite test. You are in a facility where there is an OTP, and there is an SFP in your *kebele*.

(a) Describe how you would classify Jemal's illness.
(b) Describe the management you are going to give him.

SAQ 8.3 (tests Learning Outcomes 8.1, 8.2, 8.3 and 8.4)

What are the advantages of having an OTP in your area?

Notes on the Self-Assessment Questions (SAQs) for *Integrated Management of Newborn and Childhood Illness*, Part 1

Study Session 1

SAQ 1.1

It is important because Ethiopia has a very high infant mortality rate. Most children die from pneumonia, diarrhoea, malaria, measles or malnutrition and the IMNCI strategy is a way of reducing these deaths. The way it does this is by bringing together all the different ways illnesses can be prevented and treated, in the home and the health centre. You need to understand how it works because you will be the person who will be using the strategy and explaining to parents the reasons for everything you do.(Don't worry if you didn't say this exactly — there are many ways of explaining your role within the strategy.)

SAQ 1.2

The four main steps are assessment, classification, identify treatment and follow-up care.

Assessment is important in order to get an overall picture of the child's health. Classification enables you to decide what exactly is wrong with the child. (This may include several illnesses.) Treatment is what will get the child better and may include referral to a hospital. And finally, follow-up is to ensure the child continues to improve.

SAQ 1.3

(a) Salem has the general danger signs of 'not being able to feed' and 'lethargic and unconscious'.

(b) You need to complete the rest of the IMNCI assessment and refer her urgently after giving the necessary pre-referral treatments for her classifications, including treatment to prevent low blood sugar.

Study Session 2

SAQ 2.1

You need to start resuscitation immediately. Clear the baby's mouth and nose and position her correctly. Then start bag and mask ventilation.

SAQ 2.2

Kangaroo mother care is best because it means the baby is always in contact with the mother and feeds frequently so it will grow stronger. It also means the mother is able to carry on with her usual life as much as possible.

SAQ 2.3

These visits are important because lack of care just after the baby is born can result in death or disability. So danger signs need checking for. You also need to counsel and give advice to the mother on how to look after the child. The baby will also need immunizations, and mother and baby will need vitamin A.

Study Session 3

SAQ 3.1

(a) You should have classified Shashie as having a local bacterial infection that can be treated by giving her antibiotics. You should have noted that Shashie also needs treatment at home for the pustules on her buttocks.

(b) Your advice to the mother would include telling her that it is always important to wash her hands when treating Shashie's skin pustules. You would explain to her that she should treat Shashie twice a day and show her how to gently wash the pus and crusts with soap and water then dry the area before painting it with 0.5% gentian violet. Tell the mother that she should wash her hands again after giving this treatment to prevent spreading the infection to herself or anyone else she comes into contact with. You might also have remembered that you should tell the mother to breastfeed Shashie exclusively at least eight times in every 24 hours on demand and that it is important for her to keep Shashie warm. If the weather is cool, the mother can keep her young infant warm by covering her head and feet and dressing her in extra clothing.

(c) The mother should return for a follow-up visit immediately if Shashie shows signs of feeding poorly, becomes sicker, develops a fever or feels cold to touch, develops fast breathing, difficult breathing, blood in stool, deepening of yellow colour of the skin, redness, swollen discharging eyes, redness, pus or foul odour around the cord. Otherwise, she should return for a follow-up visit two days after the initial one.

SAQ 3.2

(a) You should have classified Robel's illness as possible serious bacterial infection or very severe disease and severe jaundice. He will need urgent hospital treatment. However, before sending Robel to the health centre or hospital there are life-saving actions that you would take (i.e. give Robel pre-referral oral Amoxicillin and Gentamycine injection as well as treat him to prevent low blood sugar). You would need to explain to the mother the need for referral and that her baby will receive better care at the health centre or hospital. You would also need to advise the mother how to keep her young infant warm on the way to hospital.

(b) Show Robel's referral form to your clinical skills mentor.

MANAGEMENT OF THE SICK YOUNG INFANT AGE FROM BIRTH UP TO 2 MONTHS

Name: **Robel** Age: **5 days** Weight: **3kg** Temperature: **38.5°C**

ASK: What are the infant's problems? **Difficult breathing, stopped feeding** Initial visit? √
Follow-up visit? __

ASSESS (Circle all signs present)		CLASSIFY
ASSESS FOR BREATHING PROBLEM (immediately after birth) Not breathing at all, gasping, breathing poorly (less than 30 breaths per minute)		
ASSESS FOR BIRTH WEIGHT AND GESTATIONAL AGE Gestational age: <32 wks, 32-37 wks > 37 wks, Birth wt: <1500g, 1500-2500g, > 2500g		Term and Normal Birth weight
CHECK FOR POSSIBLE BACTERIAL INFECTION AND JAUNDICE		
• Has the infant had convulsions? • Is the infant not feeding at all?	• Unable to feed • Count the breaths in one minute. 80 breaths per minute Repeat if elevated 80 Fast breathing? • Look for severe chest in-drawing. • Look and listen for grunting. • Look for the young infant's movement. Does the infant move only when stimulated? Does the infant does not move even when stimulated? • Look at umbilicus. Is it red or draining pus? • Measure temperature (if axillary temperature 38°C or above (or feels hot to touch) or temperature less than 35.5°C (or feels cold to touch) • Look for skin pustules or boil • Look for, jaundice Are the palms and soles yellow? Is the age less than 24 hours or more than 14 days	*VERY SEVERE DISEASE* *SEVERE JAUNDICE*

Study Session 4

SAQ 4.1

The table below shows you the information you should have included on Getu's record form. Check this against the one you completed for SAQ 4.1 to see if you have written down the same information and in the right boxes.

MANAGEMENT OF THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS

Child's Name: Getu Age 6 months Sex Male Weight: 5.5 kg Temperature 38^{0}C

ASK: What are the child's problems? Cough of 2 days Initial visit? √ Follow-up visit? ____

ASSESS (Circle all signs present)	**CLASSIFY**
CHECK FOR GENERAL DANGER SIGNS NOT ABLE TO DRINK OR BREASTFEED LETHARGIC OR UNCONSCIOUS VOMITS EVERYTHING CONVULSING NOW CONVULSIONS	General danger sign present? **Yes** ____ **No** √ **Remember to use danger sign when selecting classifications**
DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? Yes √ No____ • For how long? 2 Days • Count the breaths in one minute. 58 breaths per minute. Fast breathing? • Look for chest indrawing. • Look and listen for stridor.	Pneumonia

SAQ 4.2

(a) You should have classified Askale as having severe pneumonia or very severe disease. This is because she has had a cough for three days and her breathing can be assessed as 'fast breathing'. She also has stridor and trouble breathing. You would need to refer Askale urgently to hospital, giving her a first dose of antibiotic (cotrimoxazole) before she leaves the health post.

(b) You will recall that there are four steps for referral, including calming the mother's anxieties, as she may fear that her child will die in hospital or be worried about who can help her at home while she is away. It would be important for you to give the mother advice about keeping the child warm on the way to hospital, and tell her that she should continue breastfeeding.

SAQ 4.3

If you classify a child as just having cough or a cold, then all you need to do is to encourage the carer to give fluids to soothe the throat. The child should also return to the heath post for a follow-up in two days time.

Study Session 5

SAQ 5.1

All children must be checked because diarrhoea can lead to dehydration and is the second most important cause of death among children under five in Ethiopia.

SAQ 5.2

You should have thought of some of the following circumstances:

- If you have classified the child as having severe dehydration, the child is unable to take fluids by mouth, and you are not able to treat him yourself with an IV line or naso-gastric tube
- If you are able to rehydrate the child but his hydration condition does not improve after three hours
- If you have classified the child as having severe persistent diarrhoea (i.e. some dehydration and diarrhoea lasting more than 14 days)
- If a child has persistent diarrhoea and it has not stopped five days after treatment
- If a child with dysentery does not improve or gets worse after treatment
- If a young infant has diarrhoea for 14 days or more.

SAQ 5.3

(a) The classification for Sora is dysentery. This is because he has had blood in his stool. Sora has only had diarrhoea for three days so he does not come within the classification of persistent diarrhoea. He does not have any of the signs for some or severe dehydration, so he would be classified as no dehydration.

(b) You should have written down the treatment for Sora as being the following:

- Cotrimoxazole: half adult tablet, or two paediatric tablets, or 5 ml syrup, twice daily for five days
- Give follow-up care after two days according to the guidelines in Box 5.9. Advise the mother to bring the child sooner if the symptoms get worse.

Study Session 6

SAQ 6.1

You need to decide the cause of the fever: whether it is due to malaria, meningitis, measles, or another cause. This is because the treatment you give in each case will be different and may involve urgent referral.

SAQ 6.2

(a) You should have noted that the signs present in Abdi's case are: fever, cough and fast breathing.

(b) Therefore you should have classified his illness as pneumonia because he has cough and fast breathing. And malaria because he has fever and he is living in a high risk malaria area.

SAQ 6.3

(a) You should have classified Lemlem's illness as pneumonia because she has a cough and fast breathing; and measles because she has fever, generalized rash and red eyes.

(b) The treatment for Lemlen is:

- Cotrimoxazole: one adult tablet or three paediatric tablets or 7.5 ml syrup twice daily for five days
- Vitamin A: give 200,000 IU on Day 1, repeat same dose on Day 2 and Day 15
- Paracetamol: one tablet of 500 mg every six hours for reducing the fever.

Study Session 7

SAQ 7.1

You might say that a child is malnourished if he or she is not getting enough nutrients. (You might want to explain what a nutrient is.) This may be because their diet is inadequate or because they are frequently ill. The nutrients they are lacking may be proteins or micronutrients such as vitamin A or iron. (Again, you might want to explain protein and micronutrient.)

SAQ 7.2

Malnutrition occurs when a person does not get enough nutrients. Anaemia can be caused by a lack of *specific* nutrients in the diet (as well as by infections or blood loss). And the signs are different. To assess for malnutrition you would look for signs of severe wasting, measure the MUAC, and look for oedema (depending on the age of the child). But you would check for anaemia by looking for palmar pallor.

SAQ 7.3

You can be sure a child is not suffering from acute malnutrition if there is no visible severe wasting, no pitting oedema of the feet, and the MUAC is greater than 12 cm.

Study Session 8

SAQ 8.1

(a) Negash has severe complicated malnutrition as he has pitting oedema of both feet and a complicating illness — *pneumonia.* The first thing you would need to do is give Negash a first dose of amoxicillin, or cotrimoxazole if there is no amoxicillin. You would then need to refer him urgently to the health facility with in-patient care. Because Negash has pneumonia you do not need to carry out an appetite test.

(b) Negash's mother is likely to be very anxious and reluctant to go to hospital. Explain to her that the necessary drugs and care to help her child recover from his health problems are available in a hospital. Tell her that you will give her a referral note that will explain Negash's problems and that the hospital will give Negash the necessary care.

SAQ 8.2

(a) In your answer you would have classified Jemal's nutritional status as severe uncomplicated malnutrition. This is the correct classification for a child aged six months and above, with either pitting oedema of the feet or MUAC less than 11 cm, and no medical complication, and who passes an appetite test.

(b) You would admit Jemal to the OTP and manage him using the standard OTP protocol. You need to advise the mother to return immediately if the child's condition worsens.

SAQ 8.3

The advantage of an OTP is that a child with severe uncomplicated malnutrition can be treated without having to go to hospital. They can be given the appropriate drugs and also therapeutic food to eat at home. They will also receive follow-up care.