Diagnosis Treatment

A manual for primary health care workers - second edition

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Diagnosis and Treatment

A training manual for primary health care workers

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Foreword

Nearly 54 million people died worldwide in 1998, the majority of them in developing countries. Many of these deaths were easily avoidable. Proven medicines or vaccines could have prevented millions of deaths from conditions such as pneumonia, malaria and tuberculosis. Iron-folate preparations could have prevented considerable maternal and child mortality by reducing anaemia in pregnancy. Treatment of sexually transmissible infections and use of condoms could have significantly reduced AIDS virus transmission. Treatment of hypertension could have prevented many cases of heart attack and stroke.

The drugs that could have prevented these deaths are commonly termed 'essential drugs'. Essential drugs together can provide safe, effective treatment for the majority of communicable and non-communicable diseases. But their potential can be realised only if the relevant drugs are accessible, affordable, of good quality, and used rationally. Unfortunately, irrational drug use (such as overuse of antibiotics and injections, and insufficient use of effective products) is common. It can lead to treatment failure, development of drug resistance; wastage of limited family and community resources, and drug shortages.

Understanding that much irrational drug use stems quite simply from lack of information and training, VSO has developed *Diagnosis and Treatment: A Training Manual for Primary Health Care Workers.* Based on extensive field experience and field testing. This manual will help primary health care workers use essential drugs to effectively combat the ill health that continues to hinder human well-being and development in the world's poorest countries.

Dr Jonathan D. Quick
Director,
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World Health Organisation, Geneva

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This book is dedicated to our teachers and our students.
It is also dedicated to Dr Raymond Birrell and Mrs Freda Birrell.

Introduction

Primary health care workers see patients before any other trained health workers. Primary health care workers diagnose common and important health problems and prescribe medicines. However, they may have little formal medical training and little access to help and advice. They often work in health centres with few medicines or resources. Good training for primary health care workers is, therefore, very important.

Who is this manual for?

This is a training manual for primary health care workers who work in first-level clinics, dispensaries and health centres in the developing world. Primary health care workers include nurses, medical assistants, doctors, health aides, village health workers and other paramedical health workers.

This manual will help to teach these primary health care workers how to diagnose common illnesses and how to prescribe rationally. The manual is based on a training course that was first developed in Tanzania by VSO doctors and their local colleagues. A wide range of health experts has helped to adapt that original training course to make it relevant to primary health care workers throughout the developing world.

The manual has been updated after working in rural Zambia in a primary health care setting to ensure that it remains relevant to the conditions and circumstances that are prevalent in modern day developing countries.

Rational prescribing means giving the correct medicine in the correct dose for the correct length of time. It means that medicine is only prescribed if it is needed. Rational prescribing helps health workers to provide good care for their patients and to make the best use of limited supplies of medicines.

The medicines recommended in this manual are based on WHO guidelines for the use of essential drugs. The care and treatment advice in this manual is also consistent with the most important aspects of WHO's Integrated Management of Childhood Illnesses (IMCl) programme.

How can you use the manual?

The manual can be used as:

- a course guide for trainers and supervisors of primary health care workers
- a self-study guide for primary health care students.

Part 1 of the manual starts with the basic skills which health workers need for rational prescribing.
Chapter 1 tells you how to use this manual.
Chapter 2 explains how triage/ recognise seriously ill patients/ how to treat very severe febrile disease
Chapter 3 explains how to take a history
Chapter 4 discusses communication.
Chapter 5 introduces you to shared decision making
Chapter 6 suggests lifestyle medicine options
Chapter 7 gives you suggestions to improve sexual and emotional health
Part 2 has 15 lessons about the most important and common health problems in developing countries.
Part 3 contains 23 appendices which include reference charts, a list of medicines and their uses, and details about health problems which are only common in some areas. They provide more detailed practical information about diagnosis, treatment and procedures. Many appendices are used during the lessons.

The lessons teach primary health care workers:

- how to diagnose and treat illness
- when to send patients to hospital
- how to give advice to prevent illness.

Trainers can use the lessons as part of a training course for primary health care workers. If you are a primary health care worker or a student of primary health care, you can use the lessons to teach yourself. Whether you are a trainer or a student, you should start with Chapter 2 and Chapter 3.

If necessary, trainers and students should adapt the manual so it is consistent with the national drug policy and clinical care guidelines in your country. The advice in this manual is not intended to replace national drug and care policy. **You should adapt the course to fit guidance in your country wherever the treatment and prescribing advice in the manual is different from your national policy.**

You can change the order of the lessons and start with the most important or most common health problems in your country. The manual does not include all illnesses. You can ask a doctor or an experienced prescriber to produce extra lessons about other illnesses that are important in your country. You can also leave out parts of lessons about illnesses that are not important where you work.

Note on language

Health workers and patients are male or female. That is why, in this manual, we sometimes use 'she' when we talk about health workers and patients, and sometimes we use 'he'. We use 'mother' to describe the carer of child patients.

Girls are often at a greater disadvantage than their brothers. However, we have decided to use 'he' when we talk about child patients with their mothers, so that it is always clear that 'he' is the child, and 'she' is the child's carer.

PART 1 Basic skills
Chapter 1 How to use this manual

Guidelines for trainers

Planning the course

If your trainees are already primary health care workers, plan the course over a minimum of 15 months. Teaching one lesson each month allows students to practise using new information and skills at their places of work. It also gives you a chance to observe your students at work to see how much they have learned and to help them improve.

If you are planning a course for student health workers, plan to teach one lesson each week. Teach in the language that students understand best.

Start with the lessons in Chapter 2 and 3 about taking a history and communication. Teach these chapters to each student individually. Show the student how to take a history and how to communicate. Use real patients. Allow the student to practise with patients and watch what he does. Tell the student what he has done well and show him what he can do better.

Next, start to teach the 15 lessons about common health problems. After each lesson, give students the opportunity to try out their new diagnosis and prescribing knowledge and skills with patients. At first, students will make many mistakes. Your job is to help the students to learn from their mistakes and to improve.

Before the lessons

You need to prepare posters and other teaching aids before each lesson. You may need to ask some students to help you in the lesson. We tell you at the beginning of each lesson what you need to do before the lesson. Practise what you are going to teach before the lesson.

Arrange for each student to visit a TB clinic and a leprosy clinic during the course. Give each student a copy of Table 1 in Lesson 12 before they visit the clinics. Ask TB and leprosy doctors at the clinics to show the students each of the symptoms in the table.

Planning the lessons

Each lesson in Part 2, except Lesson 1, starts with a quiz that the students do on their own. The quiz helps the students to find out what they know and what they need to learn more about. At the end of the lesson, the trainer repeats the quiz and gives the correct answers. Doing the quiz again helps the students to see how much they have learnt.

How to use this manual

Most teaching sessions last about 5 hours, including breaks. Plan regular breaks, with refreshments, every 2 hours.

For example, if the session starts in the morning:

- Ask students to arrive at 8.30 am. Students should start by answering the quiz.
- Start the lesson at 9.00 am.
- Break at 11.00 am for 15-30 minutes for refreshments.
- Start to teach again at 11. 30 am.
- Finish the lesson at 1.30 pm.

Teaching methods

We learn by hearing, seeing and doing - especially by doing. We also learn by repeating things. Remember the saying 'If I hear I forget, if I see I remember, if I do I know'.

The lessons use different teaching methods that involve hearing, seeing and doing. These methods include role plays, demonstrations, discussions and examination of patients. You do not have to use the methods suggested in the manual. The book *Helping Health Workers Learn* by David Werner and Bill Bower has many other good ideas about other teaching methods. If you try a different teaching method and it works well, please write and tell the authors: Dr Keith Birrell, Dr Ginny Birrell and Dr Ian Cross . c/o keithandginnybirrell@gmail.com

Encourage students to ask questions during the lesson. Make sure students are not embarrassed about giving the wrong answer. Make sure that all students are involved, not just one or two talkative ones.

How to use the posters

Before each lesson, write the number and title of each poster on a very large sheet of paper or a flip-chart. The lessons use three types of poster:

POSTER: (Prepared poster)

1 **Prepared poster:** You can complete these posters before the lesson. The information for the posters is given in the text.

POSTER: (Student answer poster)

2 **Student answer poster:** These are posters which you complete during the lesson with the participation of students. Summarise the students' correct answers on the poster as they call them out. After the students have finished giving you their answers, tell them any answers they have missed. Add the summary words for the missing answers 10 the poster. You can use pencil 10 write the summary words of the correct answers in small letters on the poster before the lesson to remind you. The summary words you need are written in the text in **bold** or are presented in a table or box.

POSTER: (Summary poster)

3 **Summary poster:** You will complete these posters yourself during the lesson as you teach. You can use pencil to write the summary words of the correct answers in small letters on the poster before the lesson to remind you. The summary words you need are written in the text in **bold.**

For example, if we ask you to summarise these sentences about feeding children:
Breastfeed children until they reach **2 years** of age. Never **use a bottle** to feed children. Bottles are very difficult to clean. The bacteria in bottles cause diarrhoea. Diarrhoea can kill children. **Use a cup and spoon** to give fluids.

Write only the important summary words in bold on the poster:

Breastfeed until 2 years
Never use a bottle
Use a cup and a spoon

Follow-up

After each lesson, the trainer should observe each student at work in her health centre or practising with patients. Repeat advice about how to diagnose and treat patients. Remind the student of what she learned in the classroom.

Use the prescriber's checklist in Appendix 22 to help you to follow up each student. Use the trainer's copy to remind you what the student was taught. Use the student's copy to write down three things she does well and three things she could do better. Discuss these things with the student. Praise her when she does something well. Show her how to improve. Tell the student that the next time you visit the health centre, you will look to see if she has improved.

If a student has problems, the trainer can role-play a patient who has an illness: tell the student what she would find if she examined such a patient. Then, help the student to ask the correct questions and to do a good examination. Ask her what illness the patient has and what the treatment is for the illness. Help her to give the correct answer. If a student is learning very slowly, there is usually a good reason. Ask her what the problem is and help her to overcome it.

Guidelines for students

If you are a health worker or a student, you can study this manual on your own and learn at your own speed. Learning will be easier if you work with an experienced prescriber. This prescriber will be your 'trainer'. Ask him to watch your work, to tell you what you do well and to correct your mistakes. You can also discuss the questions and information in the manual with other health workers and help each other to learn.

Planning your learning

The course has 15 lessons. Try to do one lesson each month. Use the new knowledge and new skills in your work after each lesson. If you do not understand something, write it down. Ask another

health worker to help you and to answer your questions. Do not be afraid to admit that you do not know something.

Start by doing the quiz at the start of each lesson. The quiz will show you what you know and do not know. Do the quiz again at the end of the lesson, to see how much your knowledge has improved. Act out the demonstrations and role plays together with other students or health workers in your health centre. Discuss the examples of patients with your colleagues before looking at the answers. If you think a table or diagram is useful, draw it and put it on the wall in your health centre so you can refer to it. Before you start the next lesson, try to answer the quiz from the last lesson. If many of your answers are not correct, perhaps you need to read that lesson again.

Chapter 2 Triage
Recognising really ill patients
Treatment for very severe febrile diseases

BEFORE THE LESSON

- Teach students in small groups to make sure that each student understands this important subject.
- Give each student a copy of this chapter to read before the lesson.
- Give each student a copy of Appendix 4. (How to give diazepam rectally.)
- If there is no malaria in your area, cross out the box in this chapter about malaria treatment.

Triage

Triage is a process for identifying sick patients. It is about sorting patients, not treating them. In a busy clinic, if patients are not triaged, they may become more sick, or die, while waiting to be seen. Triage lets you know who you should treat first. It is important that your patients understand that there is a process. They should be aware that they may have to wait longer in the queue if they are not a priority case.

You can teach and explain the basics of triage to your staff. The staff do not have to have a clinical background. The only way to implement it is to work with your staff at the front desk. It can be done without any tools. However, if available, provide them with a digital thermometer and an oxygen saturation probe.

A good system of triage is the traffic light system. Your patients can be sorted into three groups. The assessment should follow the **A**irway and **B**reathing, **C**irculation, **D**isability and **O**ther approach.

RED for danger:	Emergency signs present. Immediate assessment and treatment
AMBER warning:	Priority signs. Urgent review. Place at the front of the queue
GREEN is good:	Non-urgent. Stable and wait in queue

Airway and breathing
Weak or absent breathing
Obstructed breathing
Cyanosis (Saturation <90% or visibly blue)
Severe respiratory distress
Wheezing (with no red features)
Saturation 91-94%

Circulation
Capillary refill > 3 seconds
Weak or fast pulse
Heavy bleeding
HR<50 or >150
Vomits everything or severe diarrhoea
Unable to feed or drink
Very pale (no red features)

Bleeding (not severe, no red features)
Recent fainting

Disability
Active convulsions
Reduced conscious level (unresponsive or only responsive to pain)
High fever (>39 degrees)
Severe pain
Acute general weakness

Other
Acute severe trauma
Ingestion of poisonous substance
Snake bite
Acute chest pain or abdominal pain (if >50 years of age)
Open fracture
Visible new limb deformity
Sick infant <2 months old

Your staff will become more confident with this process over time. They will be able to make faster assessments. It is important to ensure that the staff remain in the same post for long enough to allow them to improve their skills. Every few weeks, spend some time with the staff as they are doing triage. Check their knowledge and skills.

Recognising really ill patients: General danger signs

The triage chapter teaches recognition of serious illness. If the patient has any of the following general danger signs you should treat them as if they have a very severe febrile disease.

There are four general danger signs:
1. The patient is unconscious, or lethargic (does not appear to notice what is going on around him even if someone talks or makes a noise), despite being awake.
2. The patient has had a convulsion (also called a fit).
3. The patient has vomited four times or more in the last few hours (eg this morning).
4. The patient is not able to drink or breastfeed.

A patient with any of these four general danger signs may be very ill.
He may have severe malaria, pneumonia, sepsis or meningitis. Severe malaria, pneumonia and meningitis are very severe febrile diseases. These illnesses usually cause a fever (a temperature above 37.5 in the ear, or above 37.7 in the mouth).

If a patient has a general danger sign, you will often start treatment before taking a full history. Treat him immediately for a very severe febrile disease and send him straight to hospital.

Treatment for very severe febrile diseases

1. If the patient has vomited, clear his mouth with your finger.
Lay him on his side.
2. If the patient has fever, check the temperature with a thermometer. If the fever is confirmed: take him to a warm room and remove his clothes. Wipe him with a warm, wet cloth to cool him. This is called tepid sponging.
3. If the patient is having a convulsion, give him diazepam rectally (see Appendix 4). Repeat the dose of diazepam if the patient is still having a convulsion 5 minutes after taking the first dose. Diazepam dosages are shown in Table 1.

TABLE 1 Doses of diazepam

Age	Dose
Up to 1 year	2.5mg
1-3 years	5mg
4 years or more	10mg

4. To prevent low blood sugar:
- If the patient can breastfeed, ask the mother to breastfeed.
  - If the patient is not able to breastfeed but can drink, use a cup and spoon to give him expressed breastmilk, or a breastmilk substitute or sugar water. Give 30-50 ml of milk or sugar water. To make sugar water, mix four level teaspoons (20 g) of sugar with a cup (200 ml) of clean water.
- If the patient is unable to drink, and you know how to use a nasogastric tube, give 50 ml of milk or sugar water by nasogastric tube.

5. Test for malaria if possible. If the malaria test is positive, or if no test is available, give Artesunate into a muscle (or a vein if you have been trained), 2.4 mg/kg for an adult, or 3mg/kg for children less than 20kg. Where intramuscular artesunate is not available use intramuscular artemether or, if that is not available, use intramuscular quinine.

6. Options for suspected sepsis			
Antibiotic	**Dose**	**Repeat**	**Consider: (Depending on national policy)**
Ceftriaxone	50 mg/kg up to 2g intramuscularly	Daily	No need to add gentamicin
Chloramphenicol Not suitable if pregnant, breast feeding or less than 1 month old	40mg (0.2ml) /kg intramuscularly	Repeat four times a day if patient unable to get to hospital	Add Gentamicin intramuscularly 2.5mg /kg 240mg for an adult Daily
Benzylpenicllin	0.1 million IU /kg (same as 60mg /kg) Intramuscularly	Repeat four times a day if patient unable to get to hospital	
Procaine penicillin fortified	0.1 million /kg (same as 100mg/ kg) intramuscularly	Daily	

7. After initial treatment. Ask the questions that are relevant below.
Then send the patient to hospital immediately. Carry him flat so that his head is at the same level as his legs. Write down what treatment you have given the patient on his record card.

Chapter 3 How to take a patient's history

BEFORE THE LESSON

- Remember to teach each student individually to make sure that each student understands this important subject.
- Give each student a copy of this chapter to read before the lesson.
- Give each student a copy of Appendix 4. (How to give diazepam rectally.)
- If there is no malaria in your area, cross out the box in this lesson about malaria treatment.

Start by explaining the information below to the student. Then, see patients together with each student. Show the student how to take a patient's history. Ask the student to practise talking to patients while you watch. Tell the student what they do correctly. Show the student how to improve. Do not expect the student to understand all the answers that the patient gives. Tell the student what the diagnosis is and how to treat the patient.

You do not have much time with each patient. Sometimes you may have less than 10 minutes to decide what illness the patient has and what treatment to prescribe. In this time. you must also give the patient advice to help them to use their medicine correctly and to help them stay healthy.

To diagnose and treat patients you need to:
1. ask the patient the correct questions
2. examine the correct parts of the patient
3. make sure that the patient will use the medicine correctly and follow your advice.

This lesson teaches you how to ask the right questions. This is called taking a history. Before you learn how to take a history, you need to know how to recognise and treat really ill patients. Chapter 2 teaches you that. General danger signs suggest that the patient may have a very severe febrile disease. Chapter 2 tells you how to treat patients who may have a very severe febrile disease.

Taking a history

There are nine important steps in taking a history. If the patient answers 'Yes' to any of the questions, you need to ask more questions after you have finished taking the basic history. The boxes tell you what extra questions you need to ask, or which Lesson or Appendix will tell you more about the illness.

The nine steps are:

1. Greet the patient and check their identity. (Check the date of birth and ask what they prefer to be called for example.)

2. Ask the patient what she would like to talk about.
This will normally take less than 30 seconds. Do not interrupt her until she has talked for about one minute. Check there is nothing else. For example ask: "**Was there anything else important today?**"

If the patient has an obvious common or important problem, ask the more detailed questions in step 3, then follow the advice given in the appropriate lesson.

For all patients do steps 4, 5, 6, 7, 8 and 9.

3. Ask the patient more detailed questions about her symptoms.

- When did your symptoms start?
- Have you had a fever?

> You will learn about fever in Lesson 3.

- Have you had any convulsions? (Convulsions are also called fits.)

> Convulsions are a general danger sign. Treat the patient for very severe febrile disease and send her to hospital immediately. You will learn about convulsions in Lesson 3 .

• Do you have a cough? Do you have difficult breathing?

> If the patient has a cough or difficult breathing, follow the instructions in Appendix 1 or Appendix 2. You will learn about cough and difficult breathing in Lesson 2.

- Do you have problems with eating or drinking? Have you vomited?

> If the patient is not able to eat or drink, she may be very ill. This is a general danger sign. Treat the patient for very severe febrile disease and send her to hospital immediately.
>
> If the patient has vomited, ask her how many times she has vomited that morning. If the patient has vomited two or three times, treat her for her illness at the health centre and ask her to wait for 30 minutes. This is so you can make sure that she does not vomit up the medicine you have given her. If the patient has vomited four times or more that morning, treat her for a very severe febrile disease.

Do you have diarrhoea? Do you have blood in your faeces? Or abdominal pain?

> If the patient has diarrhoea or blood in her faeces, follow the instructions for treating diarrhoea in Appendix 10 and for treating a patient with blood in the faeces in Appendix 18. You will learn about diarrhoea in Lesson 6 and about abdominal problems in Lesson 8.

> If the patient has pain in the abdomen, or blood in the faeces, she may have an abdominal problem. Follow the instructions for diagnosing and treating abdominal problems in Appendix 18.

- What medicines have you used in the last 2 weeks?

This question is very important, especially if you think the patient may have malaria. To decide about treatment for malaria, you need to know if the patient has taken any malaria medicines already.
The patient may experience symptoms or side effects caused by medications or herbal/ traditional treatments.

4. Ask the patient about the what the symptoms, or the problem, are stopping them from doing

- What effect, or impact, is this problem having on the way that you lead your life?
- When relevant ask about smoking, alcohol intake, sexual practices, occupation and activities.
- It is important to know if a women of child bearing age might be pregnant. Ask her when her last period was and whether it was normal.
- In areas where HIV is common ask when the patient last had an HIV test and if the test was positive. Offer an HIV test if they have not had a test in the last 3 months and might be at risk.

5 Examine the patient.
Feel the patient's forehead for a fever, or check the temperature. Look for anaemia on the inside of the patient's lower eyelid.
6. Check the growth chart if the patient is a child aged 5 years or less. Make sure young children have had all their **vaccinations.**

7. Test for malaria if a fever, or muscle soreness, or a headache, suggest that malaria is possible**.**

8. Write up your notes. Summarise what you have found. This will help you to decide what is wrong with the patient and how to treat her.

For example:

Name and age:	*Chandan Patel. age 4 years*
History:	*Fever for 3 days, vomited one time*
Examination:	*Fever, pale, no fast breathing, growing well*
Investigations:	*Malaria rapid antigen test please*
Diagnosis:	*Malaria and anaemia*
Treatment:	*Artemether+lumefantrine 20mg+120mg twice daily for 3 days then review* *Safety netted for general danger signs*

9. Give the patient (or relative) a safety net. Tell them to come back if the patient fails to get better after the expected time to recover, or if they get a general danger sign.
Tell them what the general danger signs are. Even better: write the general danger signs down.

If you do not know what the diagnosis is:
- send the patient to hospital if she is very ill
- ask the patient to come back on another day if she is not very ill. Time will often help you to make a diagnosis.

You will learn how to make sure that the patient takes the medicine correctly and follows your advice in the next chapter.

Chapter 4 Communication

BEFORE THE LESSON

- Remember to teach each student individually to make sure each student understands this important subject.
- Give each student a copy of this chapter and ask them to read it before the lesson.

Start by explaining the information below to the student. Then, see patients together with each student. Show the student how to communicate with patients. Ask the student to practise talking to patients while you watch. Tell the student what she does correctly. Show her how to improve. Tell the student what the diagnosis is and how to treat the patient. Make sure that the student follows the seven rules of communication.

Primary health care workers can only help patients to get better and to stay well if they can communicate.

The health worker must be able to communicate with a patient so that:

- the patient can explain what is wrong
- the patient understands the questions the health worker is asking him and the health worker can learn what the problem is
- the patient understands what his illness is and what caused it
- the patient knows how to use his medicine correctly and how to stay well.

To be a good communicator, a health worker needs to ask questions and to listen carefully. He must also use simple language and explain things clearly. Avoid giving too much information at once. Check that the patient understands your advice.

To help you remember, use the seven rules of good communication each time you see a patient:

1. Respect privacy
See patients in a quiet, private place. Patients find it easier to talk if they are not worried about someone else listening to what they say. This helps the patient to give you better information so you can make a better diagnosis. It also helps the patient to understand what you tell him about the treatment.

2. Use simple language
You should use simple, clear language that the patient understands. Use local words and avoid medical terms. If the

patient does not understand, he may become confused or may not follow your advice.

3. Give enough time

Give the patient enough time to explain his problems. If you do not give enough time to hear the patient's history, you will not know what is wrong or how to treat him. If you do not listen, the patient may ignore your advice.

4. Show interest

Show the patient that you are interested in his problem. If the patient thinks that you are interested, he is more likely to trust your advice. Use ways of showing interest that are acceptable in your culture. For example, sit close to the patient and look at him while you are speaking. Do **not** sit on the other side of a table from him.

5. Explain

Explain to the patient what you think the problem is. Explain the treatment. Tell him how long it will take to get well. Explain when he should come back to the health centre. Tell the patient to return if they don't get better after the expected time, or if certain danger symptoms develop.

6. Give one medicine

Explain to the patient how to take the medicine. Try to only give the patient one medicine when possible. If a patient has too many medicines to take, he may forget your advice or get confused. If the patient does not need any medicine, tell him why (see also Rational Prescribing in Lesson 1). If the patient has more than one illness, treat the most important illness first. Explain to the patient that he needs to come back for treatment for his other illnesses.

7. Check understanding

Make sure that the patient fully understands his illness and the treatment. Ask the patient to repeat what you have told him. Correct anything which he has not understood correctly.

Chapter 5 Shared decision making

BEFORE THE LESSON

- Remember to teach each student individually to make sure that each student understands this important subject.
- Give each student a copy of this chapter and ask them to read it before the lesson.

Start by explaining the information below to the student. Then, see patients together with each student. Show the student how to talk with patients. Share decisions with patients. Ask the student to practise talking to patients while you watch. Tell the student what she does correctly. Show her how to improve.

Patient centred care and shared decision making are closely linked.

The days of going to see a health care worker and expecting to be told what to do are numbered. Every patient has choices. There are almost always options. The decisions that are made are no longer made by health care workers without patient input.

The history that you take from a patient will help you to make some educated guesses about which treatment options might suit them.

- Show interest. Listen. You need to know what the patient believes before you can even consider trying to dispel any myths or false beliefs.

- Try to understand what the patient does at work and at home, and how the illness impacts upon that. Their activities may even have caused the illness. These factors may influence what treatment might work for the individual.

- Most patients come in with at least a thought of what might be wrong. Find out what this is. At the end of the consultation you may agree with them, or explain why you don't agree.

- Many patients will be worried that a symptom could mean something drastic. If you don't address this worst fear the patient will not be able to work with you on the reality.

- When you agree on a probable diagnosis with a patient: ask what they would like to know, so that they are in a position to decide, with your support, what to do next.

- Knowing about the patient's background, occupation, beliefs and fears will put you in a good position to guess what treatment options might work for them. Offer choices when available, but be prepared to advise why each choice might not work well for this individual. Emphasise the potential benefits of each viable choice.

First do no harm:

- Some medications are particularly dangerous for certain patients. For example: patients with high blood pressure, diabetes or peptic ulcer disease should not regularly take ibuprofen or diclofenac. This family of anti-inflammatory tablets (NSAIDs) can irritate the stomach and cause dangerous bleeding from inside the bowel. NSAIDs also put the blood pressure up, cause kidney damage, heart attacks or strokes, especially if used for a long time. Many of these medications are available over the counter and we should guide some patients to avoid such medications.

- Your job may be made more difficult by shortages of medicines, investigations and treatment options. Share you own uncertainties with your colleagues in advance of a more informed conversation with the patient. You may not have this luxury in an emergency. You are more likely to be more doctor centred in your decision making in an emergency. When there is no emergency you should share decisions with patients when possible. Remember that it is ultimately the patient's decision how to treat their illness but try to put them in a position to make an informed decision, with your support.

Invite your student(s) to share examples of shared decision making that they have already seen. Many students will have experience of this as a patient, relative or student. Perhaps ask them for situations where shared decision making was not used when it might have been. Add examples of your own where it has been appropriate for you to share decisions with your own patients.

Examples of shared decision making in developed countries:

- Isaac, a muslim gentleman declined to be given an injection of gentamicin to treat his gonorrhoea. Oral ciprofloxacin was out of stock from our clinic pharmacy. I gave him a single dose of azithromycin in the clinic to treat possible chlamydia. Having worked in a predominately Muslim country previously, I thought that this gentleman might have misunderstood what his Imam had told him. But he was fixed in the belief that he could not have an injection. Isaac was happy to buy ciprofloxacin from a local private pharmacy. He knows to come back after 2 weeks if his symptoms have not settled. He initially did not want to let his wife know about his gonorrhoea but he was happy to advise that his casual partner get treatment. Our specialist nurse managed to persuade him that his wife needed treatment to avoid his own re-infection and harm to his wife. He was willing to have another HIV test after 2 months.

- Lucy was agitated and not sleeping. In all probability she has bipolar disorder. She admitted to being stressed by family issues. Family and personal illness have been a trigger. She was over confident and had pressure of speech. There was a suggestion of paranoid thought patterns. The first time I saw Lucy she was too agitated to sit and wait to be seen. I sought support from a trusted friend of hers to get her back into the clinic and to build a trusting relationship. Our conversations focused on what I might be able to do to help her to sleep and to help her cope with stress. Lucy chose a small dose of antipsychotic medication (haloperidol) at night to allow her to sleep and to feel calm enough for her to concentrate on dealing with her health issues and family stress. Our shared plan is to use this medication for as short a period as possible.

- Lucy later decided with my support to take a small dose of carbamazepine to stabilise her mood to prevent her mood becoming too high or too low. Lucy knows about the tiny risk of carbamazepine affecting her immune system and knows to come back urgently if she has symptoms that might be caused by an infection.

- Daniel sustained a nasty left ring finger injury. The finger bones were badly crushed. The finger was almost severed and there was a high risk of bone infection or amputation. Daniel's job and home-life involved a lot of manual work. Being able to use his hands was important to him. Daniel declined the option of amputating much of the finger. He preferred to have the finger stitched back together, to take a prolonged course of antibiotics and to have a longish period of rehabilitation to get the finger and hand working again. He understood that the end of the finger might need to be amputated if the blood supply did not survive or if the infection was unmanageable.

- Kumwenda presented with symptoms that might mean an early COVID-19 infection. We did not have access to PCR tests. She was happy to watch and wait for more worrying symptoms, but to also return on day 2 of the illness to have a lateral flow test done at a time when the test is much more reliable (sensitive). In the mean time she decided not to work face to face with clients and to self isolate until she got the result of the test.

- Precious presented with heart failure at the age of 4 months. Her mum was very poor. There was no local expert in cardiology to guide her care. Mum agreed to try some medicines to help with her symptoms, without the usual blood tests and scans. She was unable to travel for tests. She knew that not having those tests made planning Precious' care more risky. I somehow managed to scan Precious' heart but I didn't have the expertise to understand what the pictures meant. I sent the pictures to a colleague with mum's consent. I monitored Precious' care with expert advice given by this distant colleague. Precious' mum was happy for us to minimise travel to experts at distant clinics.

- Kennedy had blood in his urine. He lives in an area where there has been bilharzia (schistosomiasis haematobium). Our laboratory microscope was broken and we had no tests to confirm the diagnosis. Kennedy knew that bad reactions to praziquantel are very rare and that it is usually effective in killing the adult parasites. He also knew that he might continue to pass blood in his urine for a few weeks. He also knew to return if he was vomiting or unwell, for example with a fever. I planned to see Kennedy after 3 months to test his urine.

- Max had had 3 grand mal seizures followed by post ictal periods. He has not been a drinker (alcohol) and had no fever, or signs of any other illness. I told Max that he almost certainly had epilepsy. I offered him a choice of treatments. He was not keen on the possibility of being drowsy or sedated with medication, even if the medicine was only to be taken at night. He had young children in his house. I offered him a medication called carbamazepine. Carbamazepine at low doses has a small risk of causing nasty sores in the mouth, or a rash. Carbamazepine can very rarely affect the immune system and potentially make him more prone to serious infections. Max was keen to stop the convulsions so that he might be able to drive again in the future. He accepted the small risk of side effects and he knew to come to clinic urgently if he had a fever or a severe sore throat.

- Alice and Janet had scabies. They were 5 year old twins. They came from a big family of 8. No one else had symptoms of scabies. The clinic only had 2 bottles of benzyl benzoate left. I told mum that they would both need to be treated twice. Usually we would suggest that the whole family should be treated at the same time to avoid re-infestation with the scabies mite. Mum could not afford to buy more medicine from the local private pharmacy. We agreed to treat both girls and also treat mum who had the most direct contact with the girls. I went through where and how to apply the emulsion in detail. Mum knew that the rash would probably remain for 2 weeks even after successful treatment. But she would come back if the rash was not better after 3 weeks. Mum was happy not to use any medication to treat the symptoms of the rash knowing that they should be better after 2 weeks.

- Suleiman is 54. He had had his blood pressure checked 3 times. On average his blood pressure was 164/104. He had no chest pain on exertion, nor pain in his calves (lower legs) when he walked. He had no family history of early heart attacks or strokes (in siblings or parents less than 60 years olds). He did not smoke or drink alcohol. He had no protein, glucose or blood in his urine and his kidney and bladder ultrasound was normal. He weighed 94 kg and was 175 cm tall. His heart sounds were normal, his pulse was regular and the back of his eyes looked normal (his retinas). His future 10 year risk of having either a heart attack or a stroke was 7%. I told him that if 100 men like him took a blood pressure tablet at this stage for the next 10 years, 2 people out of those 100 would avoid having a heart attack or stroke during that time. Hearing this Suleiman decided not to take any blood pressure tablets just yet. Suleiman asked for my help to lose weight through healthy eating and my help to get him more active. We think that these 2 changes together might prevent 4 people like him in a 100 from having a heart attack or stroke in the next 10 years. I gave him some homework and we agreed to meet after a week to work together to see how he could achieve that with the support of my team.

- Suleiman’s brother Othuman had just been diagnosed with Type 2 diabetes. He was very unhappy with his weight (he weighed 97kg and was173cm tall) and he knew that diabetes was dangerous for his eyesight. He worked as a guide and his eyesight was very important. He wanted to know how he might make his diabetes go away. I advised him to consider all of his options at another appointment, since diabetes is linked to a high risk of future heart attacks and strokes. I promised to look at all the options together with him to minimise his future risk of heart attack and stroke. I advised him that if we could bring his weight down by 15-20% (14-19kg) that there was a 86% chance that his diabetes would go into remission (be cured). We also spoke about him perhaps taking a medication called metformin before meals to help him with his sugar levels and perhaps with his appetite.

Shared decision making does not need to happen in a single appointment. You may wish to give the patient some homework to allow them to understand their choices better. Then the patient, with the support of the health care team and the patient's family, or friends, can make decisions that best suit the patient. Resources for shared decision making will be available via www.patientcentre.org

Chapter 6 Lifestyle medicine

BEFORE THE LESSON

- Remember to teach small groups of students to make sure that each student understands this important subject.
- Give each student a copy of this chapter and ask them to read it before the lesson.
- Share local examples of the lifestyle options that are available to manage illnesses that are common or important. We give some examples from practice in Zambia and Tanzania below.

Start by explaining the information below to the student. Then, see patients together with each student. Show the student how to talk with patients. Lifestyle medicine is an extension of shared decision making. Ask the student to practise talking to patients while you watch. Tell the student what she does correctly. Show her how to improve.

Lifestyle medicine highlights that the way that people lead their lives affects their health as much as, and often more than, medication can. In many countries medication is often not available to treat some illnesses. When this happens lifestyle changes might be the only way to improve peoples quality of life or life expectancy.

Here are some example questions and answers:

I've just been diagnosed with type 2 diabetes. I am over weight. My clinician tells me that if I lose a little weight that my diabetes symptoms will improve and if I lose 15kg of my weight healthily my diabetes will almost certainly go away. How might I lose weight with healthy lifestyle measures?

- There are options of healthy diet that make weight loss much easier.
- One example is the low GI diet. Low GI foods release energy into the blood stream more slowly. This keeps you full for longer and prevents your blood level from going so high.
- Two other examples that are proven to be healthy for the heart are the Mediterranean diet and the DASH (Dietary Approaches to Stop Hypertension) diet.
- A diet high in protein and low in carbohydrates is effective to help weight loss because it makes you feel full for longer.
- Moving more and sitting less will protect your heart and will also help you to lose weight. For example walking for 90-150 minutes per week or running/ cycling for 75 minutes per week. Thirty minutes of High Intensity Interval Training (HIIT) and 10 minutes of strength training per week are an alternative.

My clinician says that I have sleep apnoea syndrome. I stop breathing at night and fall asleep a lot during the day. What can I do that doesn't involve wearing special equipment at night?

- Hazardous and harmful drinking of alcohol makes sleep apnoea much worse. Drinking less than 14 units of alcohol per week and less than 4 units in any day improves symptoms of sleep apnoea and makes weight loss easier.
- Losing as little as 5kg of weight, if you are overweight, will improve or cure sleep apnoea symptoms.
- Sleep apnoea is a common cause of heart attacks and strokes in people who are overweight. Treatment can lower your relative risk of heart attacks etc by more than 50%.

My Therapist tells me that my behaviour is affected by my alcohol consumption. I keep having arguments with my family. My wife has threatening to divorce me unless I drink sensibly. How can I drink safely?

- If you are currently drinking harmfully it may be dangerous to stop drinking suddenly. If in doubt half your alcohol consumption each week.
- Some people are addicted to alcohol. If you think you may be addicted you will need probably help from an expert to stop drinking completely.
- One option is to drink less than 14 units of alcohol per week and to not drink more than 4 units in any day.

I have trouble getting off to sleep and I am not keen to take medication. What might help me get off to sleep and to sleep better?

- Avoid drinking alcohol to get off to sleep. It causes poor quality, un-refreshing sleep and sleep apnoea symptoms.

- Sleep hygiene measures help. One example is to take exercise early in the day. Avoid caffeinated drinks such as coffee and tea in the afternoon and evening. Avoid smoking or eating in the late evening. Relaxation techniques and sleep cognitive behavioural therapy (SCBT) work for many too.

What lifestyle options are available to Martin? Martin has high blood pressure.

- Martin is 64. He had had his blood pressure checked 3 times. On average his blood pressure was 160/100. He had no chest pain on exertion, nor pain in his calves (lower legs) when he walked. His father had an early heart attacks (less than 60 years olds). He does not smoke or drink alcohol. He had no protein, glucose or blood in his urine and his kidney and bladder ultrasound was normal. He weighed 94 kg and was 175 cm tall. His heart sounds were normal, his pulse was regular and the back of his eyes looked normal (his retinas). His future 10 year risk of having either a heart attack or a stroke was 10%.
- We told Martin that if 100 men like him took a blood pressure tablet at this stage for the next 10 years, 3 people out of those 100 would avoid having a heart attack or stroke during that time. Hearing this Martin decided not to take any blood pressure tablets just yet.
- Martin asked for my help to lose weight through healthy eating and my help to get him more active.
- We would expect that a healthy diet (eg the Mediterranean diet or the low GI diet) might prevent 3 people like him in a 100 from having a heart attack or stroke in the next 10 years. An important part of a healthy diet is drinking a safe amount of alcohol. 14 units of alcohol or less.
- We would expect that regular physical activity might prevent 3 people like him in a 100 from having a heart attack or stroke in the next 10 years.
- We think that these 2 changes together might prevent 5 or 6 people like him in a 100 from having a heart attack or stroke in the next 10 years.
- There are several ways to achieve both a healthy diet and a healthy amount of activity. Some homework to share the options available is a good start. Martin might need some support to achieve both of these changes.

More examples here?

- More answers here.

Chapter 7 Sexual and emotional health

BEFORE THE LESSON

- Ask each student to write down their questions about sexual health, menstrual health, family planning, sexual abuse and equality before the start of the lesson. Give them examples if they are struggling for ideas.
- You will need support from a local leader with knowledge of protecting young people from abuse, including sexual abuse, at this lesson.
- It may be culturally appropriate in your area for learners to be one gender per lesson.
- Below you will find some example questions and answers. These are the sort of questions from learners and answers from experts that are useful to improve knowledge and awareness. This type of question and answer group is useful to promote positive attitudes to sexual and emotional health.
- Give each expert participant a copy of this chapter and ask them to read it before the lesson.
- The lesson might take 2 hours.

Here are some example questions and answers:

What should I do if I find out that someone is being sexually abused?
- Believe them. Support them. Seek their consent to take action on their behalf. Taking action will protect the person and also the community. The appropriate action may depend on the organisations in your community that are able to take action to protect individuals. Your social leaders will guide you regarding how to approach this in your community.

What do you think about masturbation?
- Different cultures have different attitudes to masturbation. Even in a long term relationship partners can have different attitudes to masturbation. Masturbation may help people though a long period of sexual abstinence. At least masturbation does not expose you to a risk of HIV or any sexually transmissible infection.

How can I protect a friend who is HIV positive from being bullied?
- Do not accept negative attitudes to long term health conditions or diversity. Report negative behaviours to social leaders. Encourage your friends to take action too.

What can we do to allow women to function whilst they are having their period?
- Periods are normal and should not stop you from working or playing.
  - Brightly coloured washable pads are discrete and reusable. They soak up vaginal bleeding and allow you to be active and sociable during your period.
- Periods can sometimes be painful or heavy.
  - If you might want to become pregnant: If you are not allergic to ibuprofen you can take 400mg three times a day (after food) on the day you expect your period and until the period is expected to be less painful or lighter. This method is suitable for you if you might want to become pregnant. Alternatively you can take Tranexamic acid 1g three times a day when menstruation has started, for up to 4 days.
  - If you don’t want to become pregnant. The combined pill is suitable for women under the age of 50. If you have migraine headaches with aura, or if the pill makes your migraines worse, it should be stopped at the end of 21 days and swapped for another form of contraception. You should not use the pill if you have had breast cancer or a clot (a deep vein thrombosis for example).

What choices do I have to protect me from contracting HIV and other sexually transmissible infections?
- Waiting until you and your partner are ready to have sex together. For many this means both having an HIV test before starting a sexual relationship. Remember that it can take up to 3 months before HIV shows on a blood test after infection.
- Condoms give good (but not perfect) protection against sexually transmissible infections (including HIV) and getting pregnant. They must be put on after foreplay but before sexual penetration.
- Circumcision offers some protection against becoming infected with HIV. It also offers some protection against other sexually transmissible infections. Condoms are much more effective at preventing HIV and other sexually transmissible diseases but condoms must be used consistently. Circumcision is safe with excellent long term satisfaction results from men.

What choices do I have to prevent me from becoming pregnant?

- Condoms give good (but not perfect) protection against sexually transmissible infections (including HIV) and getting pregnant. They must be put on after foreplay but before sexual penetration.
- The contraceptive injection (progesterone - given every 8 or 12 weeks) prevents almost all pregnancies as long as you get your injections within the recommended time limit. Some women tend to find that it can stimulate their appetite and cause them to gain weight. Many women find that after 3 injections, their periods stop.
- The contraceptive implant requires a very minor procedure and is placed on the inside of your upper arm under local anaesthetic. It lasts for 5 years. It provides excellent contraception but does not tend to help painful or heavy periods and can lead to irregular vaginal bleeding.
- The intrauterine system (for example Mirena) is excellent for managing heavy or painful periods and it provides excellent contraception. It requires a minor procedure and is put in via your vagina.
- The combined pill (for example Microgynon) is not suitable for women who are over the age of 50, women who have clots or a high risk of clots (for example a deep vein thrombosis or a pulmonary embolus), women who have had breast cancer, or for women who's migraines get worse with the pill. This is a method that relies on you remembering to take the pill regularly. It provides excellent period control, making periods lighter and less painful.
- The progesterone only pill (for example Cerazette) is taken every single day. It is extremely safe and has little in the way of side effects. But some women can have light irregular vaginal bleeding at inconvenient times. Other women stop having their periods and others find that their periods are unchanged by this pill. This is a method that relies on you remembering to take the pill regularly.

I have become pregnant (possibly through rape or abuse), is it possible to have a termination?

- Yes. It is important that you seek support from a health practitioner as early as possible.

My brother goes to school but my family can't afford to send me too. Is there any way that I can go to school?

- Schooling can be expensive. It may not be possible for your parents to afford to send all of their children to school, even if the children want to go to school. There are organisations that can help to ensure that your opportunities for getting education are similar regardless of your gender. Ask a social leader for more information.

Can I catch syphilis from a toilet seat?

- No. There is no evidence that any sexually transmissible infection can be caught from a toilet seat.

Can a girl get pregnant if she uses a condom or takes the pill?

- Unfortunately, both of these methods of contraception depend on the correct usage of the method. Condoms can rip (pregnancy rate 2 % in one year, if used consistently). Women can miss pills and some medical problems can cause failure (eg diarrhoea, vomiting, some medications) (pregnancy rate 1-9 % in one year).

Is it OK to have sex before marriage?

- Right, or wrong, sex happens outside of marriage. Only have sex when it feels right for you. That will usually be in a loving relationship. Be aware that it is very difficult for you to know for sure that your partner does not have a sexually transmissible infection including HIV.
- For many this means both having an HIV test before starting a sexual relationship, Remember that it can take up to 3 months before HIV shows on a blood test after infection. Condoms can give you good protection from HIV, and other sexually transmissible infections, if used consistently.

Can I get advice from the clinic without my parents permission?

- Yes, in most countries you are able to see a clinician without your parents permission. Although your clinician will often encourage you to discuss your actions with a parent. You must be able to demonstrate that you understand the options available to you in the clinic.

How do I stop bullying?

- Be aware what bullying is. This includes spoken and written words, physical violence, and emotional actions. Talk about bullying with your peers and teachers.
- Report bullying behaviour to your parents, relatives and social leaders.

I have a sore on, or discharge from, my private parts (penis or vagina). What should I do?

- These are sometimes symptoms and signs of sexually transmissible infections. You should see a clinician to get treatment and your partner should also get treatment. Sores might be caused by herpes or by syphilis. Discharge might be caused by gonorrhoea or chlamydia. If your partner has symptoms and you do not, you should both receive treatment. Consider also having a test for HIV. HIV can take unto 3 months after infection to show in a test. HIV is often asymptomatic.

Should I get circumcised?
- Circumcision offers some protection against becoming infected with HIV. It also offers some protection against other sexually transmissible infections. Condoms are much more effective at preventing HIV and other sexually transmissible diseases but condoms must be used consistently. Circumcision is safe with excellent long term satisfaction results from men.

I'm very shy. Is there anything that I can do?
- Your parents, your aunt or uncle or a trusted teacher might be good people to help you. Shyness is much more common than you would imagine. Shyness is natural but it can sometimes stop you from enjoying life. Perhaps you need some support the first time that you do a new thing?

I am sad and I don't have any support. Who can help me?
- Some people say that you can't be happy unless you can be sad at times. All of us face challenges and need support at times. Your parents, relatives and friends will usually support you when you are sad or you face a challenge. Your community leaders can also help. Find out from others who you can trust to support you locally.

When should I get married?
- The age of legal marriage varies according to your country. In most countries these days you will not get married until you feel ready to be married.

My friends all drink alcohol but I'm not interested. How can I avoid drinking harmfully?
- There is a lot of social pressure to drink alcohol. You should make your own choices. But it sometimes takes a lot of personal strength to say no when your peers are drinking and encouraging you to drink too. More than 14 units of alcohol a week is hazardous and more than 35 units of alcohol per week is harmful drinking. Binge drinking is hazardous too. 6 units of alcohol counts as a binge. People who have had experience of the harm that alcohol can cause amongst their family and friends are often able to share tips on how to drink safely.

My parents smoke. I want them to stop. It is affecting their health and I am worried that I will lose them. What can I or they do to help them to stop?
- Smokers die on average 10 years earlier than non smokers. It is never too late to stop smoking when it comes to improving your life expectancy. But smoking is addictive and your parents may need help to stop smoking. There are several options for helping your parents to stop smoking, but first of all they need to be motivated to stop. Cytisine seems the most effective aid to stopping smoking. It is cost effective and safe. Temporary adverse effects include nausea, vomiting and sleep disturbance. Some people find nicotine replacement helpful.

My friend has an older boyfriend who gives her presents and money. Is she being sensible?
- No. This is likely to be a form of prostitution unless the relationship is truly based on mutual love and respect.

M*y teacher expects me to sleep with him to pass my exams. What should I do?*
- This is sexual abuse. You are not likely to be the first person that your teacher has abused. You would be at risk of contracting HIV and other sexually transmissible infections. Seek support from a social leader to help you to take appropriate action to protect yourself and other students.

My boyfriend is controlling over my behaviour. What should I do?
- Share your concerns with a friend or a family member.
- Consider leaving the relationship and how you might do this safely in an emergency.
- This type of behaviour may go along with physical, sexual or verbal abuse. Consider asking a social leader for guidance.

My brother has a knife. He takes it with him when he goes into town. Can I do anything? I am worried for him and other people.

- Although your brother may feel safer carrying a knife for personal protection, in reality he is making himself a target for others who want to prove themselves. Your brother is almost certainly at a higher risk of harm when carrying a knife. If your brother won't listen to this argument: you may wish to share your dilemma with a social leader.

My friend wants us to smoke cannabis. Should I give it a go?

- Cannabis can make people paranoid and unwell. It can sometimes lead to long term psychiatric conditions like psychosis. Smoking cannabis causes lung cancer and other physical illnesses. Make your own choices. Do not feel under peer pressure to do what other people are doing.

My parents have bought CBD oil because they read that it might help with long term pain. Are they being deceived?

- CBD oil, and other CBD preparations, are not first line evidence based treatment options for pain, or for any other condition. For many they work as a placebo. It is hard to know what you are buying because in many countries CBD production is not regulated.

I lost a pregnancy recently (or I had a termination of pregnancy recently). I don't feel well. Should I go to the clinic or get support?

- If you have a fever, excessive vaginal bleeding (blood soaks through your pads consistently), or have lower abdominal cramps that are not made better with ibuprofen (400-600mg threes times a day) - see a clinician urgently. It is fairly normal to experience fairly heavy bleeding and cramps for up to 6 days after the procedure, or the loss of the pregnancy.
- You may have been advised not to have sexual intercourse (or use tampons) until 2 weeks after a termination of pregnancy.
- Start contraceptive protection on the day of the termination of pregnancy if you want to avoid pregnancy at this time.
- You may need emotional support. This is usually available from your clinician or from a close friend or relative.

PART 2 The lessons

Lesson 1 Rational prescribing

BEFORE THE LESSON

- There are three posters in this lesson. (See p. 4 for information on how to use the posters.)
  Prepared poster: 2
  Student answer posters: 1 and 3
- Give each student a pen and a notebook.
- Choose five students to help you with the demonstrations. Give them copies of the demonstrations and practise with them before the lesson.
- Give each student a copy of Chapter 4. “How to take a history.”
- Prepare one copy of the questions for the practical activity in section 3 for every five students. If you have 20 students, you will need four copies of the questions.
- Give each student a copy of Appendix 23.

Start by reading the story in section 1 to the students. (Some of the concepts of this story are very loosely based upon *Essential Drugs,* a slide set available from TALC, see List of useful resources, p. 258.)

SECTION 1: A story

This is a story about Baki. the health assistant in the village of Bilaelimu. Baki has never been trained to diagnose and treat illnesses. but he lives in the village and cares about the health of its people. Baki’s story and the story of some of his patients will teach you how to choose the correct medicine for your patients and how to avoid wasting medicines. by prescribing rationally.

First patient

Baki’s first patient is Mkulima, a 24-year-old farmer. Mkulima had a cough. but was unable to go to the health centre because he had to plant his fields. He asked his friend to buy him some antibiotics from a shopkeeper.

Ask your students: What are the problems of buying medicines from a shop? Look for the following answers:

Answer — No diagnosis is made, so the patient may be treated for the wrong illness. No advice is given about how to take the medicine.

Answer — The patient receives the wrong medicine.

Answer — The wrong dose of medicine is used.

Answer — The patient uses the medicine for the wrong length of time.

Mkulima had an upper respiratory infection. Upper respiratory infections are usually caused by viruses and get better without medicine. However, the shopkeeper gave Mkulima an antibiotic called co-trimoxazole. Antibiotics are *only* used to treat illnesses caused by bacteria.

Co-trimoxazole can sometimes cause side effects, including a painful mouth and eyes. (Side effects are unwanted effects caused by medicines.) Unfortunately, this happened to Mkulima after he had taken the medicine for 2 days. He should stop taking the medicine.

Ask your students: What medicines can cause side effects? Which side effects have you seen or heard of? Look for the following answers:

Answer Antibiotics are commonly used medicines that can cause side effects. These side effects include skin rashes, diarrhoea and nausea.

Answer All medicines sometimes cause side effects. Only give a medicine if it is more likely to help the patient than to harm him.

POSTER 1: (Student answer poster)

Patient advice

Ask the students: What advice can you give a patient so that he will be happy if you do not give him medicines?

Answer **Teach** the patient **about** his **illness**. Tell him that he will get better without using medicine. Tell him that using the **wrong medicine may make** him very **ill.** The wrong medicine may kill him.

Answer Give advice to encourage healthy practices: eat a **mixed diet,** drink **clean water** and **wash hands** after going to the toilet and before preparing food.

Answer Tell him how to avoid catching infectious diseases.

Second patient

A mother brings her 11 month old son, Surua, to see Baki. Surua has had a cough and fever for 5 days. Baki notices a slightly raised rash on Surua's face and neck. Surua's mother tells Baki that this rash appeared yesterday.

Show the students the picture of a child with measles (Picture 1).

PICTURE 1 *A child with measles*

Baki asks Surua's mother questions to check for general danger signs. He finds out that Surua has had no convulsions, has not vomited and is able to feed a little. Surua has passed loose faeces three times this morning, but there is no blood in the faeces. Surua has not had any medicine in the last 2 weeks.

Next, Baki examines Surua. He finds that Surua has a fever, but is not anaemic or dehydrated and does not have pneumonia. He notices that Surua has conjunctivitis (an eye infection). Baki cannot test for malaria.

Baki decides that Surua has measles. Unfortunately, Baki does not know about rational prescribing.

He decides to give Surua:
co-trimoxazole to try to prevent pneumonia
tetracycline eye ointment to treat the conjunctivitis
paracetamol to treat the fever
the first-line malaria treatment, in case the fever is caused by malaria. Malaria is common in Bilaelima.

Ask your students: Can you remember the treatments Baki gave to Surua? What do you think about the treatment that Baki gave? Look for the following answers:

Answer Baki gave Surua four different medicines. Surua's mother may not remember how to give Surua all the medicines correctly.

Answer Baki gave Surua three medicines that he does not need. This is wasteful because it means that Baki will not be able to give these medicines to other patients who may need them.

Before Surua and his mother leave the health centre, Baki's new trainer, Mzee. arrives. Mzee is teaching Baki about rational prescribing. He tells Baki what he has done well. Baki has taken a good history, done a good examination and decided on the correct diagnosis of measles and possible malaria. Mzee tells Baki that only two medicines will help Surua get better.

Ask the students to tell you which two medicines are most important for Surua. Help them to give you the following answers:

Answer **First-line malaria treatment**
Surua has fever. He may have malaria. Surua needs the first-line malaria treatment because Baki cannot test for malaria.

Answer **Vitamin A**
Vitamin A helps to prevent eye problems and blindness. Patients with measles need extra vitamin A.

Explain to the students why the other medicines are not needed:

Possible answer **Co-trimoxazole**: patients with measles do sometimes get pneumonia. Antibiotics such as co-trimoxazole can *treat* pneumonia but *will not prevent* pneumonia. Surua does not have pneumonia so he does not need co-trimoxazole.

Possible answer **Tetracycline** eye **ointment:** measles causes conjunctivitis. But measles is a virus, and tetracycline eye ointment will not cure conjunctivitis if it is caused by a virus.

Possible a*nswer* **Paracetamol:** paracetamol is used to treat the *symptoms* of an illness, such as fever, *not the cause* of an illness. Paracetamol can help to reduce fever, but it will not help an illness get better.

Ask the students: What advice can you give to Surua's mother about preventing illness and keeping Surua well? Look for the following answers:

Answer Feeding can help a child to get better more quickly and to stay well. Advise Surua's mother to continue to breastfeed him. Advise her to give him small amounts of a mixed diet five times a day until he is well and for a week after he gets better.

Answer Advise her to mash Surua's food. Sick children find it easier to eat if their food is mashed.

Mzee explains to Baki the difference between symptomatic medicines and curative medicines:
Symptomatic medicines are used to treat symptoms. For example, paracetamol and aspirin are used to reduce pain or fever.
Curative medicines are used to cure an illness. For example, vitamin A cures vitamin A deficiency. Chloroquine and quinine are examples of medicines that cure malaria.

Mzee is still worried about giving Surua's mother two medicines to use at home. The mother may become confused about how to give each medicine. Mzee advises Baki that he should only give more than one medicine for the patient to take at home if he is sure that the patient knows how to take both medicines.

Mzee and Baki agree to give Surua the first-line malaria treatment and vitamin A. The dose of malaria treatment depends on which drug is used (the national drug policy in each country gives guidelines on first-line malaria treatment). Vitamin A is usually given in three doses, one at the health centre, one the next day and one on day 14. Baki will give Surua the first dose of a malaria treatment and the first dose of vitamin A before he leaves the health centre.

Mzee asks Baki what advice he can give Surua's mother to prevent convulsions. Baki tells him about tepid sponging for fever.

Ask the students to tell you what tepid sponging is. Look for the following answers:

Answer To tepid sponge: The mother takes the child to a warm room and removes the child's clothes. She puts a cloth in some slightly warm water and wipes the child's whole body so that it is wet.

She repeats this until the fever has gone. This will take less than 30 minutes.

Answer Tepid sponging can prevent a child from having convulsions and it can make a child with a fever feel better. A child who feels better will be more likely to eat or breastfeed.

Demonstrations: Mzee teaches Baki about rational prescribing

Ask one student to play the part of Baki. You will play the part of his trainer Mzee. Baki and Mzee sit together by a table. Ask four other students to play the two patients and the patients' mothers. Practise the demonstration before the lesson. The role-players should say their lines slowly in a loud voice so that the other students can hear.

A woman comes in with an 18-month-old girl.

Third **patient**

Baki: *Good morning.*
Mother: *Good morning.*
Baki: *Please take a seat.*
Mother: *Thank you.*
Baki: *Who is ill today?*
Mother: *My child Mapafu.*
Baki: *How old is she?*
Mother: *18 months.*
Baki: *What would you like to talk about today?*
Mother: *She has had a cough and a fever for 3 days.*
Baki: *Was there anything else that you wanted to talk about today?*
Mother: *No, thank you.*
Baki: *Do you mind me asking what her HIV status is?*
Mother: *That's fine. She hasn't been exposed to HIV.*
Baki: *Has she had a convulsion?*
Mother: *No.*
Baki: *Is she having problems feeding well or drinking well?*
Mother: *Yes. She is not feeding well.*
Baki: *Has she vomited?*
Mother: *No.*
Baki: *Does she have diarrhoea?*
Mother: *No.*
Baki: *What medicines have you used in the last 2 weeks?*
Mother: *Only traditional medicine.*
Baki: *Has she had all her vaccinations?*
Mother: *Yes.*
Baki: *May I see her growth chart?*
Mother: *Here it is.*

Baki looks at the growth chart.

Baki: The growth chart shows that Mapafu is growing well.

Mzee now examines Mapafu as he talks to Baki.

Mzee: Mapafu does not have any general danger signs. There is no chest in-drawing. She breathes more than 40 times in one minute, but there is no noise when she breathes in and out. Mapafu has a fever. She is not anaemic. Because she has fast breathing, we will treat her for pneumonia. Because she has a fever and we cannot test for malaria, we must treat her for malaria.

Baki writes a summary of what they have found on the chalkboard:

Name and age: Mapafu, 18 months
History: Fever and cough for 3 days
Examination: Fever, more than 40 breaths in one minute
Diagnosis: Pneumonia and possible malaria.

Mzee: *You are very good at taking a history. What treatment are you going to use?*
Baki: *I am going to treat Mapafu with Septrin.*
Mzee: *The real name for Septrin is co-trimoxazole. Co-trimoxazole will treat pneumonia. Co-trimoxazole is also a treatment for possible malaria. However, I am worried that you call co-trimoxazole by its brand name Septrin. What happens at the end of the month after you have no co-trimoxazole left?*
Baki: *If I have no more medicine, I tell patients what medicine they need to buy.*
Mzee: *Co-trimoxazole is the same medicine as Septrin. Septrin is the manufacturer's name or* ***brand*** *name for the medicine. Co-trimoxazole is the medicine's real or* ***generic*** *name. Septrin is much more expensive than co-trimoxazole. When you prescribe or advise people to buy medicines, you should always use the medicine's generic name and not the brand name.*
Baki: *So, I will treat Mapafu with co-trimoxazole. not* Septrin.
Mzee: *Very good. That's right.*

Ask the students to suggest other brand name medicines. Here are some examples of possible answers:

Answer Panadol is a brand name for the generic medicine paracetamol. Panadol costs about two times as much to buy as paracetamol.

Answer Brufen is the brand name for the generic medicine ibuprofen. Brufen costs more than two times as much as ibuprofen.

A mother and her 8-year-old boy come into the room.

Fourth patient

Baki: *Good morning.*
Mother: *Good morning.*
Baki: *Please take a seat.*
Mother: *Thank you.*
Baki: *Who is ill today?*
Mother: *My child Upele.*

Baki: *How old is he?*
Mother: *8 years.*
Baki: *What would you like to talk about today?*
Mother: *He has a problem with his skin.*
Baki: *Was there anything else that you wanted to talk about today?*
Mother: *No, thank you.*
Baki: *When did this problem start?*
Mother: *Two months ago.*
Baki: *Does he have a fever?*
Mother: *No.*
Baki: *Has he had a convulsion?*
Mother: *No.*
Baki: *Does he have a cough? Or does he have difficult breathing?*
Mother: *No.*
Baki: *Is he having problems feeding well? Is he having problems drinking?*
Mother: *No.*
Baki: *Does he have diarrhoea?*
Mother: *No.*
Baki: *What medicines has he used in the last 2 weeks?*
Mother: *None.*
Baki: *Do you mind me asking if he has ever been exposed to HIV?*
Mother: *That's fine. No he hasn't.*

Baki examines Upele as he talks to Mzee.

Baki: *Upele does not have a fever. He* is *not pale. I think he has scabies.*

Baki writes a summary of what he has found on the chalk board:

Name and age: Upele, 8 years
History: Rash for 2 months
Examination: Scaly wrists and between fingers
Diagnosis: Scabies

Mzee: *What is the treatment for scabies?*
Baki: *A course of injections of procaine penicillin fortified.*
Mzee: *I agree that Upele has scabies. However,* ***injections and antibiotics are the wrong treatment for scabie****s. Antibiotics treat infections caused by bacteria. But scabies is caused by a very small insect that lives under the skin. You should:*
● *Treat the patient for scabies with benzyl benzoate emulsion.*
● *If the skin is ulcerated or hot. there is also a bacterial infection. Paint the skin with gentian violet every day for 5 days before giving benzyl benzoate emulsion.*
● *If a very large area of skin is infected or if the skin is painful when pressed, give the patient a course of co-trimoxazole before giving benzyl benzoate emulsion.*
Can you tell me why injections can be dangerous, Baki?
Baki: *I've seen quite a few patients with big abscesses that are very difficult to treat.*
Mzee: *Injections can cause abscesses. Needles that have not been properly sterilised can also give patients serious illnesses like tetanus, HIV or hepatitis. Tablets are much safer than injections.*

Baki: Doctor Mzee. can I ask you what 'rational prescribing' means?

Mzee: Excellent question! Rational prescribing is what we have been talking about today. It means only prescribing medicine when medicine is needed. It also means giving patients the correct dose of medicine for the correct length of time.

Baki: So, rational prescribing is giving patients the correct medicine, in the correct dose for the correct length of time, but only if patients need a medicine.

Mzee: Correct. Can you tell me three ways to make buying medicines cheaper?

Baki: The first way is to only give patients one medicine. The second is to use the generic medicine instead of a brand name medicine. *I am not sure about the third.*

Mzee: The third way is to only give patients medicines which cure illnesses rather than symptomatic medicines, which only help them feel better. Remember. Baki: Each time you prescribe a medicine for a patient, you should ask yourself:

- Does the patient need this medicine?
- Is the dose of the medicine correct?

Tell your students:

If you do not know the correct dose of the medicine, *do not guess.* Look up the correct dose in the list of medicines and their uses in Appendix 23.

Give each student a copy of Appendix 23.

Refreshment break

SECTION 2: Do patients take their medicine?

Discussion

This discussion will help students to think about what patients need to know about their treatment and medicine. Ask the students to tell you what they would do in the following examples.

DISCUSSION 1: You are a 60-year-old man. The doctor has sent you to collect your medicine from the pharmacy. The pharmacy has a small window. It is very noisy in the pharmacy and your hearing is not very good. You cannot hear what the person behind the window is saying. The health worker gives you ten white tablets. What will you do with the medicine after you get home?

Look for the following answers:

Answer You may take the tablets in the way that you think is correct. You may not take the tablets at all because you do not know how many tablets to take or when to take them.

Answer After you feel better. you may stop taking the medicine. Because of this the illness may come back.

The person who gives out medicines must make sure that patients understand how to use their medicines.

POSTER 2:
(Prepared poster)

What to tell patients

Tell the patient:
- what his illness is
- how to take his medicine at home
- when to come back to the health centre.

Ask the patient to repeat what you have told him. Make sure he understands and correct anything he has not understood.

DISCUSSION 2: You are a 26-year-old mother of five children. Your daughter, who is 4 years old, has pneumonia. The doctor took a history from you and examined your daughter. He told you she has a chest infection. The doctor has given you one medicine. The doctor's assistant tells you to give the girl one tablet three times a day until all the tablets are finished. He also asks you to bring the girl back after 2 days if the girl is not much better. You said that you would give your daughter all the medicine. You give the medicine correctly for 2 days and your daughter starts to feel better.

POSTER 3:
(Student answer poster)

Reasons why patients take their medicine correctly

Ask the students: Will you continue to give her the medicine? Why will you?

Answer

You will give her the medicine because the **doctor listened** to what you said about your daughter. You **believe** what the **doctor** said. You believe that the **treatment** will work.

Answer

You understood that it is important to **finish all the medicine** even if the girl feels better.

Answer

The doctor and the doctor's assistant are good communicators.

SECTION 3: Practical - Deciding on the best treatment for patients

This practical activity helps students to decide on the correct treatment for patients, using the examples below. Ask the students to form small groups of five or six. Give each group a copy of what Baki and Mzee found out about another three patients.

Activity

Ask each group to discuss each patient and to:

- talk about why Baki and Mzee have decided on the diagnosis for each patient
- decide if a patient needs a medicine

- decide what medicine to give, the correct dose and the correct length of time
- decide what advice to give the patient.

Give the students 20 minutes to do this activity.

Patient 1 The first patient is a boy aged 2 years who has fever and cough. He boy looks quite well. He breathes 30 times in one minute. He makes no noise when he breathes in and out. He weighs 12 kg.

Diagnosis: Baki and Mzee decide that he has an upper respiratory infection and possible malaria.

Patient 2 The second patient is a 6-year-old boy who has had diarrhoea for 3 days. He is still able to eat. There is no blood in his faeces. He has no fever. He is not dehydrated.

Diagnosis: Baki and Mzee decide that he has gastroenteritis.

Patient 3 The third patient is a 4-month-old boy who has had a fever since yesterday. Today he had one convulsion that lasted for 15 minutes. He has a high fever and looks ill.

Diagnosis: He has a general danger sign. Baki and Mzee decide that he has a very severe febrile disease, possibly meningitis or cerebral malaria.

Answers

Ask each group of students to give their answers. Praise the students if their answer is a correct treatment that is rational and cheap. If their answers are not correct, tell them what the best answer is and why.

Patient 1 Give him the first-line malaria treatment unless you can test for malaria. Teach the mother how to reduce the fever by tepid sponging. She should bring him back to the health centre if he becomes more ill.

Patient 2 Advise the mother to give him plenty of fluids and a mixed diet. He should eat five times a day until he is better and for one week after he is better. She should bring him back to the health centre if he becomes more ill or develops a fever.

Patient 3 The mother should remove the child's clothes and treat the fever by tepid sponging. Give the child 30-50 ml of milk, or sugar water, to prevent low blood sugar. Test for malaria (in malaria areas) and give him an injection of artesunate intramuscularly if positive (or treat if you can not test), and an intramuscular injection of ceftriaxone (or chloramphenicol or benzylpenicillin and possibly gentamicin). Next, send him to hospital.

Ask each group to present their answers. The class can discuss the answers. Explain the correct answers.

Lesson 2 Chest illnesses

BEFORE THE LESSON

- There are seven posters in this lesson. (See p. 4 for information on how to use the posters.)
  Prepared posters: 1, 2, 3 and 4
  Student answer posters 5, 6 and 7.
- Give each student a copy of Appendix 1, Appendix 2 and Appendix 3.
- Ask three students to act out the demonstration in the section 'Children aged 5 years or less'. Practise with them before the lesson.
- Ask two students to act out the demonstration in the section 'Adult or a child aged 6 years old or more'. Practise with them before the lesson.
- Give each student a copy of Tables 3, 4, 5 and 6.
- Bring a metered-dose inhaler of salbutamol if possible. Also bring a 1-litre plastic bottle and a knife so that you can make a spacer.
- You need to find seven patients with whom the students can practise in section 4. If possible, teach section 4 in a hospital. You can ask patients you have seen in the week before the lesson to come to the class. Patients are often willing to help new doctors to learn. Find three children aged 5 years or less: one with an upper respiratory infection, one with pneumonia and one with asthma. Also find four adults or children aged 6 years or more: one with an upper respiratory infection, one with bronchitis, one with pneumonia, and one with asthma.
- Ask the patients to arrive at 11.00 a.m. Section 4 starts after refreshments at about 11.30 a.m. Tell the patients that they will receive a small payment for coming. Do not forget to bring some money to the lesson.
- You need to ask six students to help you before the lesson and in the practical in section 4. For each of the seven patients you have asked to come to the lesson: write on a piece of paper a list of the symptoms, signs, diagnosis and treatment. Write one piece of paper for each patient. Give one piece of paper to each student and discuss it with them. You can use Appendices 1 and 2 to decide what the diagnosis is and what treatment to give each patient.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. A patient who is ill may breathe fast. How many breaths in 1 minute is fast breathing:
• for a child under the age of 2 months?

continued)

- for a child over 2 months but under a year of age?
- for a child over a year but under 5 years of age?
- for a child 6 years or more but under 12 years of age?
- for an adult?

2. What would make you think that a patient has a severe illness which may be pneumonia or asthma?

3. Patients who find it very difficult to breathe have respiratory distress. What would you expect to see when you look at a patient with respiratory distress?

4. A patient has a cough. She is eating well. She does not have chest in drawing or fast breathing. There is no noise when she breathes in or out. She has a fever. When she coughs there is no pain in the side of her chest. She is not anaemic.

- What illness(es) does she have?
- What treatment should you give her?

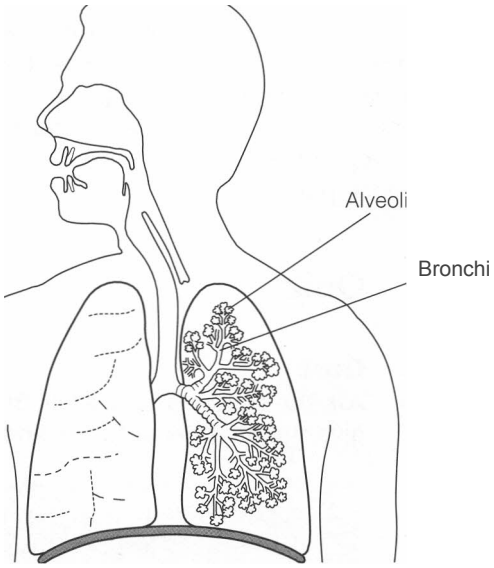
SECTION 2: Diagnosis and management

In this section, you provide information about chest illnesses and how to diagnose and treat them.

POSTER 2:
(Prepared poster)

Bronchi and alveoli

Copy Picture 2 onto Poster 2.



PICTURE 2 *Bronchi and alveoli*

Show the students a picture of the bronchi and alveoli and explain:

Two important things in our lungs must work so that we do not die:

- **Bronchi** - Air must be able to pass down the tubes in our lungs to reach the alveoli. These tubes are called bronchi.
- **Alveoli** - The air in the alveoli must mix with blood. Alveoli are very small pockets or sacs at the end of each tube.

Chest illnesses

1. Pneumonia

Pneumonia causes the alveoli to fill with fluid. If many alveoli fill with fluid, the patient may die. Pneumonia is often caused by a bacterial infection. The patient has one, or all, of these symptoms: fever, cough, pain in his ribs when he coughs, and difficult breathing.

2. Asthma

Asthma causes the bronchi to become narrow, so air cannot get into the lung easily. The patient has difficult breathing. If the bronchi become very narrow, the patient may die. A patient with difficult breathing caused by asthma may make a noise when he breathes out. This is called a wheeze. It takes longer to breathe out than to breathe in. People with asthma have wheeze or difficult breathing repeatedly. Smoking, other chest illnesses, exercise or anxiety can make a person with asthma wheeze. Sometimes patients who do not have asthma may wheeze. Pneumonia and bronchitis can also cause wheeze.

3. Bronchitis

Bronchitis is sometimes caused by a bacterial infection. Almost all patients with bronchitis are aged 13 years or more. A patient with bronchitis has a cough and coughs up sputum for 8 days or more. The sputum may be yellow, green or red. If the sputum is red, the patient may have tuberculosis.

4. Upper respiratory infection

Upper respiratory infections are very common. They are normally caused by viruses. Upper respiratory infections may cause a fever and cough. A patient may cough up sputum that is clear, white, green or yellow. Upper respiratory infections usually get better without medicines. Test for COVID-19 from day 2 onwards. It is very difficult to tell the difference between COVID-19 and any other upper respiratory infection. And the tests for COVID-19 are not perfect.

5. COVID-19

Most people who catch COVID-19 have symptoms very similar to an upper respiratory tract infection, with a cough and /or a fever. They may also lose their sense of smell or taste. People with other long term illnesses, or who are older than say 50, may become very ill in the second, or third week, of a COVID-19 infection if the immune system becomes too active. We suggest that you see these patients again at the beginning of the second week of the illness to check their oxygen saturations if possible. Teach these patients to return urgently if they seem more poorly in the second or third week. It is important to check their oxygen level and respiratory rate. If the oxygen level is less than 92%, or they have fast breathing (consistently more than 25 breaths per minute) they need urgent steroid treatment and specialist assessment. For these people COVID-19 is very dangerous. Please read appendix 22 to learn more about COVID-19 illness.

Tuberculosis is a separate type of chest problem and is covered in Lesson 12.

Chest illnesses in children aged 5 years or less

Make sure that each student has a copy of Appendix 1.

Taking a history and examining the patient

Ask the questions in Appendix 1. Make sure that the child does not have a general danger sign. Next, examine the child.

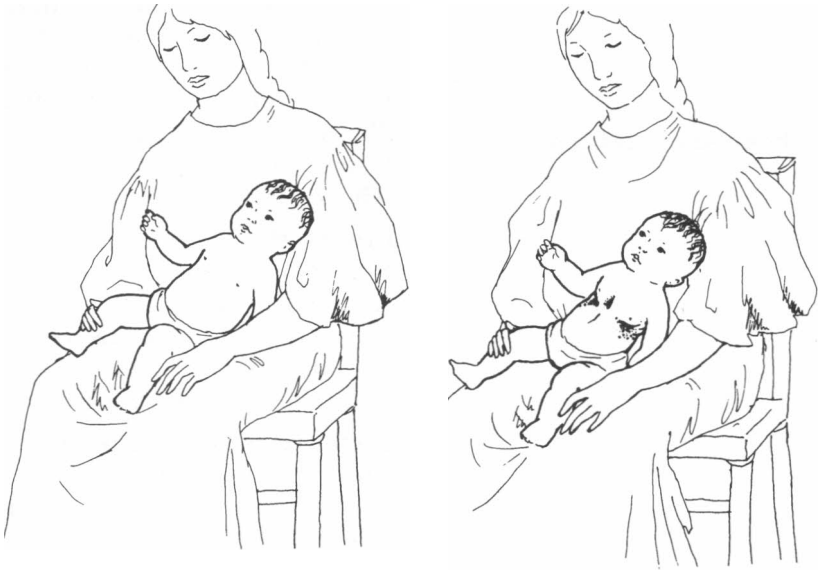
The demonstration that we will now do will tell you how to examine the patient and what to look for.

Ask three students to act out the demonstration as you read it to the class. Ask one student to play the role of the doctor, one to play the mother and a third student to play the child. Ask the students to sit at the front of the classroom. Tell the class who each student is pretending to be.

Demonstration

1. Make sure that the child is not crying or moving when you examine him. If the child is crying, ask the mother to breastfeed him or to hold him close. Do not touch the child.
2. Wait until the child is calm. Count how many times he breathes in one minute. This is called the respiratory rate.
3. Ask the mother to lift the child's clothes from his chest. Look below the ribs to see if the skin is pulled in when the child breathes in. This is called chest in-drawing.

Show the students a picture of a child with chest in-drawing.



PICTURE 3 *Chest in-drawing*

4. Listen for a noise when the child breathes *in.* If there is a hard noise, this is called stridor. If the child has stridor when he is calm, he may have epiglottitis (see Lesson 14).
If this noise came on suddenly in a well child they may have inhaled a foreign body. Learn how to deal with a choking child in appendix ??
If he has stridor and a fever or cold symptoms give him an intramuscular injection of ceftriaxone (50/mg/kg up to 2g maximum (or chloramphenicol or benzylpenicillin). Next, send him to hospital immediately.
Do not put in a nasogastric tube.

5. Listen for a noise when the child breathes out. If there is a soft whistling noise, or it is difficult for him to breathe out, he has wheeze.
6. Next, feel the child for fever and look for anaemia.

Thank the students who acted out the role play.

Diagnosis and treatment

Appendix 1 tells you how to diagnose and treat chest illnesses in children aged 5 years or less.

A severe illness which may be pneumonia or asthma

- If the child has chest in drawing or looks uncomfortable with fast breathing, he has a severe illness which may be pneumonia or asthma.
- If the child is aged less than 2 months and has stopped feeding well or breathes 60 times or more in one minute, he has a severe illness which may be pneumonia.

Give the child an injection of benzylpenicillin. Give 0.1 million IU (60 mg) for each kg of body weight. If the child has a fever, test for malaria or give the first-line malaria treatment in malaria areas. If the child has a wheeze, give a rapid acting bronchodilator. Next, send the child to hospital immediately.

Pneumonia which is not severe

- If a child has fast breathing he probably has pneumonia.
- If he does not have a general danger sign or a severe illness which may be pneumonia or asthma, the pneumonia is not yet severe.

Fast breathing in children

Copy Table 1 onto Poster 3.

POSTER 3:
(Prepared poster)

TABLE 1 Fast breathing in children

Age	Child has fast breathing if
Up to 2 months	60 breaths or more in one minute
2 months up to 12 months	50 breaths or more in one minute
12 months up to 5 years	40 breaths or more in one minute

If the child has fast breathing but looks comfortable, give co-trimoxazole or amoxicillin for 5 days. If the child has a fever in a malaria area and you cannot test for malaria, give co-trimoxazole. This is because co-trimoxazole can treat both pneumonia and malaria. (Artemether with Lumefantrine (Coartem) or Sulphadoxine and Pyrimethamine (Fansidar) are better treatments for malaria if a malaria test is positive.) Teach the mother about home care for a child with a

chest illness (see below, p35). Ask her to bring the child back after 2 days if they have not improved.

If, after 2 days, the child has not improved or is worse, give an injection of benzylpenicillin and send him to hospital immediately.

No pneumonia

- **Upper respiratory infection**

If the child does not have fast breathing, he does not have pneumonia. He probably has an upper respiratory infection. He may have a cough. Do not give an antibiotic. Teach the mother about home care of children with chest illnesses.

- **Wheeze**

If this is the first time the child has had a wheeze, treat him for pneumonia. If the child has a wheeze and has had wheeze before, he probably has asthma. Treat the wheeze.

- **Ear or throat infection**

If the child has an ear or throat problem, he may need an antibiotic (see Lesson 14).

- **Fever**

If the child has a fever and there is malaria in your area, give the first-line malaria treatment.

Chest illness in an adult or a child aged 6 years or more

Make sure each student has a copy of Appendix 2.

Taking a history and examining the patient

Make sure that the patient does not have a general danger sign. Ask the questions in Appendix 2. Make sure that you also:
1.Ask the patient to cough. When the patient coughs, ask her to tell you if and where this causes pain.
2.Ask a patient who is aged 13 years or more: 'What colour is your sputum?'

Next, examine the patient. Appendix 2 tells you how to examine the patient and what to look for.

Ask two students to act out the following steps as you read them out. Ask one to play the doctor and one to play the patient. Ask the two students to sit at the front of the classroom. Tell the class who each student is pretending to be.

Demonstration

1. Feel for fever and look for anaemia.
2. Count how many times she breathes in one minute.
3. Look for chest in-drawing.
4. Listen for stridor. If the patient has stridor (a hard noise when she breathes in), she may have epiglottitis. If she has stridor, give her an intramuscular injection of ceftriaxone

(or chloramphenicol or benzylpenicillin). Next, send her to hospital immediately. **Do not put in a nasogastric tube.**

5. Listen for a wheeze. If the patient has wheeze and her record card tells you that she has asthma, give a rapid acting bronchodilator. Wait 15 minutes. Take a history and examine the patient. Then, treat the patient in the same way as any other patient with a chest illness.
6. If the patient has pain in the side of the chest (ribs) when she coughs, listen carefully to that part of the chest with a stethoscope. If you hear a crackle when she breathes in, she probably has pneumonia.

Diagnosis and treatment

Appendix 2 tells you how to diagnose and treat chest illnesses in patients aged 6 years or more.

A severe illness which may be pneumonia or asthma

- If the patient has a general danger sign, treat her for a very severe febrile disease.
- If the patient has stridor when calm, chest in-drawing, looks uncomfortable with fast breathing or has blue lips, she has a severe illness which may be pneumonia.

Give the patient an injection of benzylpenicillin. Give 2 million IU (1200 mg). If the patient has a fever and there is malaria in your area, give a first-line malaria treatment. If the patient has wheeze, give a rapid acting bronchodilator. Next, send the patient to hospital immediately.

Pneumonia which is not severe

- If a patient has fast breathing and fever, she has pneumonia.
- If she has crackles in her lungs, she probably has pneumonia.

Give the patient amoxicillin or co-trimoxazole for 5 days. Tell the patient to come back to the health centre after 2 days, or before 2 days if she becomes more ill. If she is no better or gets worse, give her an injection of benzylpenicillin and send her to hospital immediately. If the patient's breathing is then slower but she has a fever, treat her for malaria in malaria areas. If the patient is taking co-trimoxazole, do not give her another malaria treatment.

POSTER 4:
(Prepared poster)

Fast breathing in patients over 6 years old

Copy Table 2 onto Poster 4.

TABLE 2 Fast breathing in patients over 6 years

Age	The patient has fast breathing if
6 years up to 12 years	30 breaths or more in one minute
13 years or more	25 breaths or more in one minute

No pneumonia

If the patient has no signs of very severe illness or pneumonia, she may have:

- **Wheeze**

If this is the first time the patient has had a wheeze, treat her for pneumonia. If the patient has a wheeze and has had wheeze before, she probably has asthma. Treat the wheeze.

- **Bronchitis**

If a patient aged 13 years or more has been coughing up yellow or green sputum for 8 days or more, treat her for bronchitis. Bronchitis often gets better without treatment.

If a patient has red sputum which is not caused by a nosebleed, treat her for bronchitis with an antibiotic. If the red sputum does not improve within a week send her to the tuberculosis clinic or examine the sputum for acid fast bacilli (AFB). (Tuberculosis is covered in Lesson 12.)

Consider treating the bronchitis with amoxicillin 250 mg three times a day for 5 days. If you do not have amoxicillin use co-trimoxazole. Use co-trimoxazole if the patient has a fever and might have malaria.

- **Upper respiratory infection**

If the patient has a cough but no pneumonia, asthma or bronchitis, she probably has an upper respiratory infection. She may cough up coloured or clear sputum, but will not have fast breathing. Do not give an antibiotic. Teach the patient about home care for chest illnesses and advise her to eat a mixed diet.

If the patient has an ear or throat problem, she may need an antibiotic.

- **Fever**

If the patient has a fever and there is malaria in your area, give the first-line malaria treatment.

Give each student a copy of Tables 3, 4 and 5 and encourage questions.

If your students need a way to measure liquid medicines, teach Appendix 5.

TABLE 3 Antibiotics for pneumonia: amoxicillin

Age	Dose of amoxicillin
Up to 2 months	62.5 mg 3 times a day for 5 days (2.5ml or 1/4 tablet)
2 months up to 12 months	125 mg 3 times a day for 5 days (5 ml or 1/2 tablet)
12 months up to 10 years	250mg 3 times a day for 5 days (l0ml or 1 tablet)
11 years and over	500 mg 3 times a day for 5 days (2 tablets)

TABLE 4 Antibiotics for pneumonia: co-trimoxazole

Age	Dose of co-trimoxazole
Up to 6 months	2.5 ml 2 times a day for 5 days (l/4 tablet)
6 months up to 6 years	5 ml 2 times a day for 5 days (1/2 tablet)
6 years up to 13 years	1 tablet 2 times a day for 5 days
13 years and over	2 tablets 2 times a day for 5 days

TABLE 5 Antibiotics for severe pneumonia: benzylpenicillin

Age	Dose of benzylpenicillin
Up to 2 months	0.1 million IU for each kg of body weight then send to hospital
2 months up to 5 years	Only if severe pneumonia. 0.1 million IU for each kg of body weight but no more than 2 million IU
6 years up to 12 years	
13 years and over	Only if severe pneumonia. 2 million IU

How to treat wheeze

If a patient has wheeze, you must decide first if she has respiratory distress. Patients with respiratory distress find it very difficult to breathe. Respiratory distress can be caused by pneumonia and asthma.

POSTER 5: (Student answer poster)

Respiratory distress

Ask the students to tell you if they have seen patients with respiratory distress. Ask what they have seen.

Answer

The patient looks **uncomfortable** and has **fast breathing** (fast breathing in a patient who looks comfortable is *not* a sign of respiratory distress).

Answer

There is **chest in-drawing**.

Answer

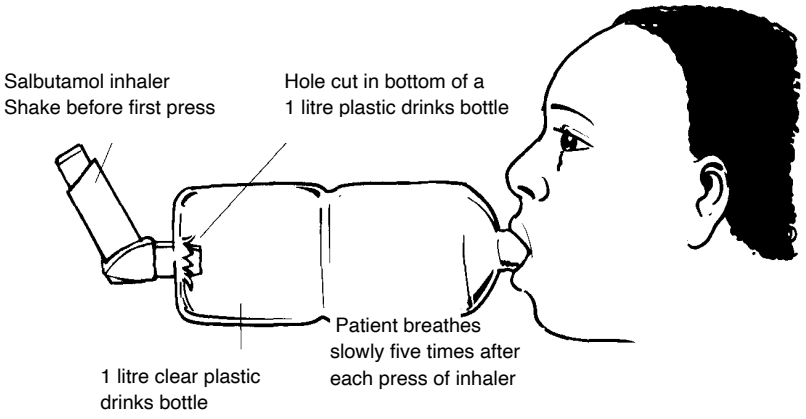
The patient is **not able to talk or feed**.

Treating wheeze when the patient has respiratory distress

If a patient with *a wheeze* has any signs of respiratory distress, give her a rapid-acting bronchodilator, an injection of benzylpenicillin and send her to hospital immediately.

Commonly used rapid-acting bronchodilators are inhaled salbutamol or epinephrine injections. Give salbutamol from a metered-dose inhaler through a spacer. Shake the inhaler. Press the metered dose inhaler once for each time the patient breathes in five times. Repeat this ten times. Shake the inhaler each time. Give epinephrine (for severe asthma) by injection under the skin. The doses are given in Table 6. Both treatments will usually make the pulse go faster.

Show your students how to make a spacer from a plastic bottle. Next, show them how to use it to give salbutamol (Picture 4). Give each student a copy of Appendix 3 'How to give injections'.



PICTURE 4 *How to use a salbutamol inhaler*

Treating wheeze when the patient has no respiratory distress

- If a patient with a wheeze has fast breathing, treat her for pneumonia which is not yet severe. These patients will not normally need a bronchodilator.
- If a patient who is not given antibiotics has a wheeze, give her a bronchodilator to use at home for 5 days. Teach the patient about home care for chest illnesses.
- Bronchodilators for use at home: aminophylline or oral salbutamol are slow-acting bronchodilators. The doses are given in Table 6. If possible, give treatment with a salbutamol metered-dose inhaler, used with a spacer, instead. Show the patient how to use the inhaler. Explain that she needs to press the metered dose inhaler two times every 4 hours.
- If this is the second time the patient has had a wheeze with no other signs of pneumonia, tell her that she has asthma. Do not forget that patients with asthma may become ill with severe asthma or pneumonia.

Give each student a copy of Table 6 and encourage them to ask questions.

TABLE 6 Bronchodilators

Age	**Dose of aminophylline 100mg tablet (slow-acting)**
Up to 12 months	l/4 tablet 3 times a day for 5 days
12 months up to 5 years	1/2 tablet 3 times a day for 5 days
6 years and over	1 tablet 3 times a day for 5 days
Age	**Dose of oral salbutamol 2 or 4mg tablet (slow-acting)**
Up to 12 months	1 mg 3 times a day for 5 days
12 months up to 5 years	2 mg 3 times a day for 5 days
6 years and over	4mg 3 times a day for 5 days
Age	**Dose of epinephrine (1: 1000 = 0.1 %) (subcutaneous) (rapid-acting)**
Up to 12 months	0.1 ml
12 months up to 5 years	0.25 ml *(1/4* vial)
6 years and over	0.5 ml *(1/2* vial)

Other emergency options for moderate and severe asthma

- Hydrocortisone 100mg (4mg/kg if less than 25kg) can be injected intravenously for severe asthma if you have been taught intravenous injection skills.
- Moderate and severe asthma can be treated with oral steroid tablets. For example prednisolone 30mg daily after food for 3 days for patients weighing 15kg or more (2mg/kg per day if less than 15kg).

Options for moderate and severe asthma

When possible treat patients who have had a moderate or severe attack with a preventative treatment for asthma. Steroid inhalers taken via a spacer are a commonly used preventative treatment for asthma. If the patient has had no asthma symptoms for 3 months considering weaning the preventative treatment.

Home treatment for chest illnesses

POSTER 6: (Student answer poster)
Answer

Answer

Answer

Home treatment for chest illnesses

Ask the students what patients can do at home for chest illnesses.

Give the patient **plenty of fluids**.

Continue to **feed** the patient **at least four times a day**. Feed children aged 5 or less **at least five times a day**.

Tell the patient to come back to the health centre if she has one of the following problems:

- **not able to drink**
- **breathing** becomes **difficult or fast**
- becomes **more ill**
- develops a **fever**.

POSTER 7: (Student answer poster)

Answer
Answer
Answer
Answer
Answer

SECTION 3: When to send patients to hospital

When to send patients to hospital
Ask the students which patients must go to hospital.

1. patients with a **general danger sign**
2. patients with a **severe illness which may be pneumonia or asthma**
3. patients who have **stridor when calm**
4. patients with **respiratory distress**
5. patients with an **oxygen saturation** of **less than 92%** or suspected COVID-19 complications.

Refreshment break

SECTION 4: Practical: examining real patients

In this section, the students practise their skills on the seven patients you have asked to come to the lesson.

- You and the six students who have discussed each patient's symptoms, signs, diagnosis and treatment are the helpers.
- Each helper and her patient will sit in a different part of the classroom.
- Each helper will work with a small group of students to ask questions and examine one patient. The helper's job is to make sure that each group of students correctly finds the patient's symptoms and signs and decides on a diagnosis and treatment.
- Divide the class into seven groups. Give the groups 20 minutes to see each patient. After they have examined one patient, ask the groups of students to move on to the next patient. All the groups should examine all seven patients.
- Tell the students to use Appendix 1 and Appendix 2 to help them to ask questions, look for general danger signs, examine and decide how to treat each patient.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz. If the answers show that some students do not understand a point, ask a student who does understand to explain the point to the other students. Summarise the answer next to the questions on Poster 1.

1. If a patient is ill, he may breathe fast. How many breaths in one minute is fast breathing:

For a child up to 2 months?
60 breaths or more in one minute

For a child aged 2 months up to 12 months?
50 breaths or more in one minute

For a child aged 12 months up to 5 years?
40 breaths or more in one minute

For a child aged 6 years up to 12 years?
30 breaths or more in one minute

For an adult?
25 breaths or more in one minute

2. What would make you think that a patient had a severe illness which may be pneumonia or asthma?
The patient has: chest in drawing, **stridor when calm, respiratory distress.**
The patient is a child less than 2 months old who is breathing 60 times or more in one minute.

3. Patients who find it very difficult to breathe have respiratory distress. What are the signs of respiratory distress?
The patient looks uncomfortable and has fast breathing, or
There is chest in-drawing, or
The patient is not able to talk or feed

4. A patient has a cough. She feeds well. She does not have chest in-drawing. She does not have fast breathing. There is no noise when she breathes in or out. She has a fever. When she coughs there is no pain in the side of chest. She is not anaemic.
What illness(es) does she have?
Upper respiratory infection. She may also have malaria, if there is malaria in the area.
What treatment should you give her?
The patient does not need an antibiotic, unless she has an ear or throat problem. Treat for malaria if there is malaria in the area (unless the test is negative. Teach the patient or the mother about home treatment for chest illnesses.

Lesson 3 Fever, malaria, convulsions and meningitis

BEFORE THE LESSON

- There are eight posters in this lesson. (See p. 4 for information on how to use the posters.)

Prepared posters: 1, 4, 8
Student answer posters: 2, 5, 6, 7
Summary poster: 3

- Give one student a copy of the demonstration in this lesson. Practise the demonstration before the lesson. You need a pen, a patient record card and a child growth chart.
- Give each student a copy of Tables 1 and 2, summarising the doses of artemether-lumefantrine (Coartem) or Sulfadoxine 500mg + Pyrimethamine 25mg (Fansidar).
- Prepare one copy of the discussion about patients in section 5 for each group of five students. For example, if you have 25 students, you will need five copies.
- Ask the students to bring their copy of Chapter 2 to the lesson.
- Cross out the box of advice about the first-line malaria treatment that does *not* apply in your country.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Cross out the first-line malaria treatment that is *not* used in your country. Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. What are the four general danger signs?

2. If the patient has a general danger sign, Kernig's sign or a fever with a stiff neck, what seven things will you do?

3. What is severe, or cerebral, malaria?

4. The following patients all have meningitis. What could you find when you take a history or examine them?
   - a child aged 2 months
   - a child aged 3 years
   - a woman aged 31 years

Section 2: Diagnosis and management of malaria

Section 2 starts with a demonstration. Ask a student to play a woman with a baby. You will play the doctor. Make sure you have a pen, a patient record card and a child growth chart. Say the lines slowly and loudly so that the class can hear.

The doctor sits near to a mother with her child in a health centre.

Demonstration

Doctor: Good morning.
Mother: Good morning.
Doctor: Please take a seat.
Mother: Thank you.
Doctor: Who is ill today?
Mother: My child Pili Tatu.
Doctor: How old is she?
Mother: One year old.
Doctor: What would you like to talk about today?
Mother: She has had a fever for two days.
Doctor: Was there anything else?
Mother: She is not feeding well and she vomited once this morning.
Doctor: Has she had a convulsion?
Mother: No, she's just not herself
Doctor: Does she have a cough?
Mother: No.
Doctor: Does she have diarrhoea?
Mother: No.

The doctor examines the child.

Doctor: She has a high fever. Your child may have malaria. May I see her growth chart? I see she has had all her vaccinations. She weighs 9 kg.

Cross out the box below that does not apply in your country.

If the first-line malaria treatment in your country is artemether-lumefantrine:
Doctor: Since we don't have any tests here today for malaria: Your child needs to take artemether-lumefantrine (Co-artem). Give her one tablet two times a day for 3 days.
Mother: Yes I will.
Doctor: Can you tell me what I have asked you to do?
Mother: Give two tablet once a day for 3 days.
Doctor: Not quite. Give her one tablet two times a day for 3 days.
Mother: Oh. I give her one tablet two times a day for 3 days.
Doctor: That is correct. And we can give her the first dose here and watch her for half an hour to make sure that she can keep the medicine down.

If the first-line malaria treatment in your country is Sulphadoxine and Pyrimethamine (Fansidar):

Doctor: Since we don't have any tests here today for malaria: and your child may have malaria. I am going to give her half a tablet of Sulphadoxine and Pyrimethamine (Fansidar) before she leaves the health centre.

Mother: Thank you.

Doctor: Now I will show you how to bring her temperature down. It is important that the child does not get very hot. If the child gets hot, take her clothes off. Put a cloth in warm water. Wipe her body to keep the skin wet until the fever has gone. This will take less than 30 minutes. If the child vomits within one hour of taking the medicine, bring her back to the health centre. If she is still hot after two days, bring her back to the health centre.

Mother: Thank you.

Doctor: Now we will give her the first dose of her malaria medicine before you leave the health centre.

Ask your students: What did you think about that consultation? Look for the following answer:

Answer The communication was very good.

Ask your students: Why do you think the communication was good? Look for the following answers:

Answer The doctor and the child's mother sat close to each other.
Answer The doctor greeted the mother.
Answer The doctor was interested in the patient's problem.
Answer The doctor explained the medicine and the treatment.

Ask your students: What will be the result of this good communication? Look for the following answers:

Answer The mother will understand how to give the medicine.
Answer If the child does not get better after 2 days, the mother will bring the child back to see the doctor.
Answer The mother knows how to do tepid sponging.
Answer The mother is now less worried.

Fever

Fever is usually caused by the patient's body fighting against an infection.

- If fever is caused by a serious infection, for example malaria or pneumonia, the infections must be treated.
- If fever is caused by an infection that is not serious, for example an upper respiratory infection, the infection does not need treatment.
- If fever is caused by COVID-19 the majority of people do not need treatment. Learn more about COVID-19 in appendix 22.
- Fever, tiredness and/or swollen lymph nodes occur in 50-70% of people newly infected with HIV. Consider arranging an HIV test in at risk patients. And perhaps repeat the HIV test after 2-3 months, since it may take some time for HIV to show positive.

In many areas of the world, malaria is the most common serious cause of fever. Malaria is caused by malaria parasites. The parasites get into the body if a person is bitten by a mosquito that has malaria parasites.

If you live in an area where there is no malaria, do not treat patients with a malaria treatment. If the patient has been in an area where there is malaria, then follow the advice given below.

Treatment of fever

The most important thing to do is to treat the cause of the fever. Check first to see if a patient has a general danger sign, Kernig's sign or a stiff neck. These signs mean that the patient may have severe malaria, pneumonia or meningitis. These serious infections may be causing his fever. If there is a general danger sign, Kernig's sign or a stiff neck, treat the patient for a very severe febrile disease.

POSTER 2:
(Student answer poster)

The four general danger signs

Ask your students: What are the four general danger signs?
(The correct answers are in Chapter 2, see p. 7.)

POSTER 3:
(Summary poster)

Treat the cause of the fever

1. Take a history and examine the patient. If you think that the patient has pneumonia, **treat** the **pneumonia immediately** in the health centre.

2. **(a) In areas where there is *no malaria:***

- If the patient does not have a general danger sign, **treat** the **cause of** the **fever.** Bring down a **high fever** (38.5°C or more under the arm) by **tepid sponging** and give a single dose of **paracetamol** in the health centre. Tell the patient to go to hospital if the fever is no better after 5 days.
- If the patient has recently been in an area where there is malaria, treat for malaria immediately.

(b) **In areas where there is *malaria:***

- **Treat for malaria** (or examine the blood for malaria parasites immediately) if a patient is a **child under 5 years old** or a **pregnant woman** and has had a **fever** in the **last 3 days**.
- **Treat** all other patients **for malaria** only **if** you can find **no other cause for** the **fever**.
- Bring down a high fever by **tepid sponging** and give a single dose of **paracetamol at** the **health centre**. After the fever has come down, give the first-line malaria treatment (either **Coartem** or **Fansidar** tablets).

(*continued)*

- If you think a child or a pregnant woman has pneumonia and malaria, treat with co-trimoxazole instead of Coartem or Fansidar. Co-trimoxazole can treat both pneumonia and malaria.
- If you have done a blood test to confirm a malaria diagnosis, and the patient also has pneumonia, give the first-line malaria treatment and an antibiotic for the pneumonia.

3. **Teach** mothers to treat a fever by **tepid sponging**.

4. **If** the patient **vomits less than one hour after** taking the **tablets**, bring down the fever by **tepid sponging**. Next, give him the **same dose again**.

5. Look for the measles rash. A patient who has fever and a rash all over his body may have measles. The rash does *not* itch. Diagnose measles if the patient also has red eyes *or* a cough *or* fluid coming from the nose.

- If a patient has **measles**, **give** him **vitamin A**.
- If a patient has had measles in the last 3 months, give him vitamin A.

If a patient has measles, look at the corneas in the eyes. If a **cornea is not clear**, treat the eyes with **tetracycline eye ointment**, give an intramuscular injection of benzylpenicillin, and send the patient to **hospital**.

First-line malaria treatment

The first-line treatment for malaria is either artemether-lumefantrine (Coartem) or pyrimethamine and sulfadoxine (Fansidar). The national drug policy in each country will prescribe what the first-line malaria treatment is. Artemether-lumefantrine (Coartem) is given in six doses on 3 days. Pyrimethamine and sulfadoxine (Fansidar) is given as one dose.

Cross out the box below that does not apply in your country.

POSTER 4:
(Prepared poster)

Dose of artemether-lumefantrine (Coartem)

or Pyrimethamine and sulfadoxine (Fansidar)

If **artemether-lumefantrine (Coartem)** is the first-line malaria treatment used in your country, give each student a copy of Table 1. Encourage them to ask questions about the table.

If **Pyrimethamine and sulfadoxine (Fansldar)** is the first-line malaria treatment used in your country, give each student a copy of Table 2. Encourage them to ask questions about the table.

Coartem is the first line treatment for malaria in the 2nd and 3rd trimesters of pregnancy and for breast feeding mothers. Fansidar is the first line treatment for malaria in the first trimester (the first 3 months of pregnancy.

TABLE 1 Dose of artemether-lumefantrine (Coartem)

Age (years)	Weight (kg)	Number of tablets per dose 0h, 8h, 24h, 36h, 48h, 60h	Artemether (A) + Lumefantrine (L) per dose
<1	<5	Not recommended	
1 -5	5-14	1	20mg A + 120mg L
6 -8	15-24	2	40 mg A + 240mg L
9 -12	25-34	3	60mg A + 360mg L
Over 12	>35	4	80mg A + 480mg L

For the child weighing 5kg or below the drug of choice is Sulphadoxine 500mg + Pyrimethamine 25mg for simple uncomplicated malaria. Give half a tablet for this age group.

TABLE 2 Dose of Sulfadoxine 500mg + Pyrimethamine 25mg (Fansidar)

Wt (kg)	Age (years)	Number of Tablets
5-10	2-11months	0.5
10.1-14	1-2	0.75
14.1-20	3-5	1
20.1-30	6-8	1.5
30.1-40	9-11	2
40.1-50	12-13	2.5
>50	14+	3

Fansidar is given in one dose, immediately. The dose of Fansidar depends on the age, or the weight, of the patient.

Fever which persists after treatment with the first-line malaria treatment

Some malaria parasites are resistant to the first-line malaria treatment. If parasites are resistant, this means the treatment will not kill all of them. This is extremely rare with Coartem but more common with Fansidar.

Malaria of course is not the only cause of a fever. Many viral infections, including COVID-19 cause a fever in the first few days. Typically, new variants of COVID 19 cause a sore throat, a runny nose and a headache. Fatigue and sneezing are also common. Early variants of COVID cause either a cough (70% or less) and / or a loss of the sense of smell or taste (approx. 40%). COVID-19 can also cause a headache (25%), widespread muscle pain (17%), tiredness (30%), a sore throat (16%), sputum production (18%), diarrhoea or vomiting (20%) or a runny nose (8%).

Near patient (lateral flow) tests are typically not good at picking up COVID-19 in the first day of symptoms. So test on day 2 onwards. False negative tests are common. If there is a lot of COVID about and the lateral flow test is negative do not be confident that it is not COVID.

PCR tests are more sensitive than lateral flow tests, but even PCR tests can still give a falsely negative result! Whilst COVID-19 is common: If the history suggests COVID-19 and a malaria test is negative and you can find no other cause for a fever tell the patient that they probably have COVID-19 (fever is present in 77% of COVID patients with early variants). Treat them with the national treatment for COVID-19 and advise them when to come back. They should watch for complications of COVID-19 and come back urgently if they have any of the complications. A PCR test will remain positive for some time after the patient recovers from COVID-19 even though they are no longer infectious. After a mild infection there is usually no need to repeat a COVID test.

Read appendix 23 to learn more about COVID-19.

The next box tells you what to do if fever
does not get better with Coartem or Fansidar treatment.

Ask your students what they should do if a patient with fever is treated with Coartem or Fansidar but does not get better. Look for the following answers:

Answer First, look again for another cause of the fever. Take the patient's history. Examine the patient.

Answer If you can find no other cause for the fever, send the patient to have a malaria test. Consider treating the patient with a second-line malaria treatment.

Answer If the malaria blood test shows that the patient has malaria give him a second-line malaria treatment, for example Fansidar, Coartem or quinine.

Answer If a patient still has a fever 2 days after treatment with a second-line malaria treatment, send them to hospital. The patient may have typhoid fever, relapsing fever, kala azar or another infection which is causing the fever.

Fansidar-resistant malaria

Ask the students what Fansidar-resistant malaria is. Look for the following answer:

Answer Some malaria parasites have learned how to defend themselves against Fansidar. This means that Fansidar does not kill all of the malaria parasites. To kill these malaria parasites, you need to use another malaria treatment.

Ask the students if this means that every time that this patient gets malaria, he needs to be treated with quinine. Look for the following answer:

Answer No. Each mosquito bite can carry either normal or Fansidar-resistant malaria parasites. If a patient does not have a fever for 2 weeks or more, the Fansidar-resistant malaria parasites are all dead. If the patient gets malaria again, it is usually the result of more malaria parasites entering the body from a new mosquito bite. Treat the patient with Fansidar first.

Ask the students how they can tell if a patient has Fansidar-resistant malaria.

Answer A patient has Fansidar-resistant malaria if he has a fever caused by malaria for more than 2 days *and* less than 14 days after starting Fansidar.

Ask your students what they should do if a patient with fever is treated with Fansidar but does not get better. Look for the following answers:

Answer First, look again for another cause for the patient's fever. Take the patient's history. Examine the patient.

Answer If you can find no other cause for his fever, treat the patient with second-line malaria treatment.

Answer If possible, send the patient to a hospital where he can have a blood test to look for malaria parasites. If this blood test shows that the patient has malaria, he has Fansidar-resistant malaria. Give him a second-line malaria treatment, for example quinine or Coartem.

Answer If a patient still has a fever 2 days after treatment with a second-line malaria treatment, send him to hospital. He may have typhoid fever. relapsing fever, kala azar or another infection which is causing the fever.

SECTION 3: Diagnosis and management of convulsions, meningitis and cerebral malaria

Convulsions

Cerebral malaria, meningitis or a high fever can cause convulsions. A patient having a convulsion becomes stiff and may shake. She is not able to stop the stiffness or shaking.

POSTER 5:
(Student answer poster)

Causes of convulsions

Ask the students: What causes convulsions?

Answer **Cerebral malaria**.

Answer **Meningitis**.

Answer **A high fever**. Many illnesses cause a high fever. A child may have a febrile convulsion if her fever becomes high very quickly. Only children less than 5 years old have febrile convulsions.

Answer **Low blood sugar.** This is called hypoglycaemia. Patients with very severe febrile disease get hypoglycaemia. A patient with diabetes may also get hypoglycaemia if she takes too much insulin or too many diabetes tablets.

Epilepsy. (See Lesson 11.)

Ask your students: How can we prevent a patient with a fever or a general danger sign from having a convulsion? Look for the following answers:

Answer **Tepid sponging** can prevent some convulsions caused by fever, because tepid sponging cools the body.

Answer A single dose of **paracetamol** in the health centre helps to cool the body.

Answer **Treat** a patient with a general danger sign **to prevent low blood sugar**.

Ask your students how they would treat a patient who has had a convulsion in the past 24 hours. Look for the following answer:

Answer The convulsion may be caused by severe malaria or meningitis. Treat in the same way as you would treat a patient who has a very severe febrile disease (see Chapter 2). This treatment may cure severe malaria, pneumonia or meningitis.

Cerebral malaria

Cerebral malaria is a serious illness that damages the brain. It is caused by a type of malaria called f*alciparum malaria.* Giving the correct treatment as soon as possible will save many lives.
Children less than 5 years old and women who are pregnant for the first time get cerebral malaria more than other patients.
(In many countries pregnant women are given preventative medication for malaria eg fansidar 3 tablets are give after 16 weeks gestation and twice more in the 2nd and 3rd trimester)
The symptoms of cerebral malaria may be the same as symptoms of meningitis. You do not need to know whether a patient has cerebral malaria or meningitis to decide about treatment.

Ask your students how they would treat a patient with symptoms of cerebral malaria or meningitis. Look for the following answer:

Answer Both illnesses are treated in the same way as a very severe febrile disease. If you can test for malaria immediately: do so. If an immediate malaria test is negative you can omit the malaria part of the treatment.

Meningitis

Meningitis is a serious illness that damages the brain. It can be caused by infection with bacteria or a virus. Giving the correct treatment as soon as possible will save many lives. However, some patients will die from meningitis, even if they get the correct treatment.

POSTER 6:
(Student answer poster)

Signs of meningitis in patients aged under 6 months

A patient aged under 6 months has meningitis. Ask your students: What might you find when you take a history or examine him?

Answer **Convulsions**.
Answer **Fever**.
Answer The child is **unable to breastfeed**.
Answer **Vomiting**.

POSTER 7:
(Student answer poster)

Signs of meningitis in patients aged more than 6 months

A patient aged more than 6 months has meningitis. Ask your students: What might you find when you take a history or examine her?

Answer

A **stiff neck**. If a child can move and bend her neck, she does not have a stiff neck. Tickle the patient's toes to encourage her to look down.

Answer

Look for **Kernig's sign**. Kernig's sign is a pain felt in the back, neck or head when the patient's hip is bent and the knee straightened.

Answer

Convulsions, **fever** or **vomiting**.

Ask the students how they would treat a patient with symptoms of meningitis. Look for the following answer:

Answer

Treat all patients who have a general danger sign, a stiff neck, or Kernig's sign with the treatment for a very severe febrile disease.

Show the students how to look for Kernig's sign. Ask your students to tell you what six things they should do if a patient has a very severe febrile disease, or a stiff neck or Kernig's sign. The answers are in Chapter 2.

Refreshment break

SECTION 4: When to send patients to hospital

POSTER 8:
(Prepared poster)

Send patients with a fever **to hospital**:
1. if the patient has one of the four **general danger signs**, **Kernig's sign** or a **stiff neck**
2. if the patient has **severe anaemia**
3. if the patient has **jaundice**
4. if the fever is **no better 2 days after treatment** with the first-line malaria treatment - for a malaria blood test
5. if a patient still has a f**ever 2 days after treatment with a second malaria treatment**.

When to send patients to hospital

SECTION 5: Practical - discussion about patients

Divide the students into groups of five or six. Give each group of students a copy of the following questions. Tell the students that this activity will show them how to treat three patients with common illnesses. The students have 30 minutes to decide what illness each patient has and what treatment to give each patient. (If there is no malaria in your country give patients 1 and 2 in the following examples other illnesses that cause a fever.)

Activity

Patient 1 A 2-year-old girl has had a fever and diarrhoea for the last 2 days. Today she has had diarrhoea three times, but she does not have a fever. The girl is not anaemic and not dehydrated. She weighs 13 kg.

1. What test would you ask for if it was available to you?
2. What illness is important to diagnose urgently?
3. How might you treat her depending on the result?
4. What advice will you give her mother?

Patient 2 A 5-year-old boy was treated with the first-line malaria treatment 9 days ago. The boy has a fever and a cough. He is able to drink. He breathes 30 times in one minute. He does not have chest in-drawing. There is no noise when he breathes in or out. He is not anaemic. He weighs 17 kg.

1. What illness does the boy have?
2. How will you treat him?
3. What advice will you give his mother?

Patient 3 A 4-month-old boy has had a fever for one day. He has had a convulsion. He has vomited once. He is not breastfeeding well. He has a high fever. He moves less than usual when awake but he is not having a convulsion now.

1. What illness does he have?
2. How will you treat him?

Answers

Ask the students to call out their answers. Give them the correct answers:

Patient 1 1. What test would you ask for if it was available to you?
malaria rapid antigen test.

2.What illness is important to diagnose urgently?
Malaria

3. How might you treat her depending on the result?
Coartem 1 tablet twice a day for 3 days or Fansidar 3/4 tablet on one occasion.

4. What advice will you give her mother?
Advise her to do tepid sponging to reduce the fever. If the patient vomits within one hour of taking the medicine, the mother should bring her back to the health centre. If she is still hot after 2 days, return to the health centre.

Patient 2 1. What illness does the boy have?
The boy may have malaria which is resistant to the first-line malaria treatment.

2. How will you treat him?
Send him to hospital or do a malaria blood test.

3. What advice will you give his mother?
Advise her to do tepid sponging. She should give the

child a mixed diet five times a day or more until he is well again and continue to feed the child five times a day for a week after he gets well.

Patient 3 1. What illness does he have?
A very severe febrile disease.

2. What should his treatment be?
If he has vomited, clear his mouth with your finger. Lay him on his side.
Use tepid sponging to reduce the fever.
Treat the patient to prevent low blood sugar: give 30-50 ml of expressed breastmilk or milk or sugar-water, using a cup and spoon.

If there is malaria in the area, give him an intramuscular injection of artesunate or quinine.

Give the patient an intramuscular injection of ceftriaxone, chloramphenicol, benzylpenicillin or procaine penicillin fortified.
Send him to hospital immediately.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. What are the four general danger signs?
See answers in Chapter 2, see p. 7.

2. If patient has a general danger sign, a stiff neck or Kernig's sign what seven things will you do?
See answers in Chapter 2, see p. 8.

3. What is severe, or cerebral, malaria?
Malaria parasites can cause brain irritation. The symptoms of cerebral, or severe, malaria can be very similar to the symptoms of meningitis or sepsis. Test for malaria or treat with for example an artesunate injection.

4. The following patients all have meningitis. What might you find when you take a history or examine the patient?
2-month-old child: **a general danger sign, fever**
3-year-old child: **a stiff neck, Kernig's sign, a general danger sign, fever**
31-year-old woman: **a stiff neck, Kernig's sign, a general danger sign, fever**

Lesson 4 Malnutrition and anaemia

BEFORE THE LESSON

- This is a long lesson. Make sure that the students can stay for 6-7 hours. Plan to have at least one refreshment break during the lesson in addition to a lunch break.
- There are 13 posters in this lesson. (See p. 4 for information on how to use the posters.)
  Prepared posters: 1,3,6,7,10,12,13.
  Student answer posters: 2, 4, 5, 8, 9, 11.
- Prepare a copy of Appendix 6 for each student.
- Prepare five copies of Appendix 7.
- Prepare the role plays. Write the information for the patient, the doctor and the observer on separate pieces of paper. Use a paper clip to keep each role play together. You need six copies of each role play, one copy for each of six groups of students. Prepare six copies of the growth charts in Pictures 11, 12 and 13 using real growth charts.
- If the direct recording scale is used in your country, you will need a direct recording scale, a pen, a bucket of water, two cups and some string.
- If you *do not* use direct recording scale, fill in the last two weights in the growth chart for role play 4 (Picture 13). Juanita Garcia Lopez's growth line has gone down on the two most recent weighings.
- Cut out 10 triangles and 7 circles from paper for the activity in section 3.
- In Table 3 cross out the box of advice about the first-line malaria treatment that does not apply in your country.
- If tablets that combine ferrous sulphate 200 mg (60 mg iron) and folic acid 0.25 mg are available, recommend this combination to neat anaemia instead of ferrous sulphate 200mg.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Copy the *growth lines only* from the growth charts in Pictures 5, 6, 7 (see page 56) into the poster below question 1. Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1.What do the following growth lines mean? What will you do for each child?
2.What are the six rules of good nutrition?
3.What happens to a child who is not given food which follows the six rules of good nutrition?
4.What are the causes of anaemia?

SECTION 2: Diagnosis and management of malnutrition

People need to eat a mixed diet that includes different types of food. A mixed diet helps people to work, grow and fight illness. People get malnutrition if they do not eat enough of the right foods.

Eating a mixed diet is very important for children aged less than 5 years. Children with malnutrition do not grow and are more likely to get ill. A mixed diet is also important for young women and women who are pregnant or breast feeding. A mixed diet helps them to stay well and to have healthy babies. As well as a good diet, it is also good to advise women to wait for 2 or 3 years between pregnancies. During this time, a mixed diet will help their bodies become strong again to have a healthy baby and to produce nutritious breast milk.

Eating a mixed diet

People need food that gives them energy, protein, vitamins, minerals and carbohydrate.

Energy

Children need food containing energy when they are growing.

You can make sure children get enough energy by:

- giving them four or more meals of carbohydrate food every day
- adding foods that contain large amounts of energy to some or all of a child's meals.

Protein

Children must eat protein at least one time every day to help them to grow.

Vitamins and minerals

Vitamins and minerals help children to grow and help adults and children to fight infections. Iron is a mineral we need in order to make haemoglobin. Vitamin C and folic acid are important vitamins. Vitamin C helps our bodies to use the iron in food. Unfortunately, drinking tea or coffee with meals prevents our bodies from using iron.

POSTER 2:
(Student answer poster)

Examples of nutritious foods

Ask the students what local foods contain large amounts of energy, protein, vitamins, minerals and carbohydrate.
Table 1 below gives examples of correct answers. Choose the foods from Table 1 which are available in your area.

TABLE 1 Examples of nutritious foods

Nutritional benefit	Examples of foods
Energy	Cooking oil, sugar, palm oil, groundnut oil and fried foods
Protein	Breast milk, beans, lentils and fish. Liver, kidney, blood, eggs, grasshoppers, locusts, crickets and termites
Vitamin C	Fresh fruit, lightly cooked vegetables and green leafy vegetables
Folic acid	Breast milk, beans, groundnuts, lentils, green leafy vegetables, liver and kidney
Iron	Small whole fish, fish and dark green leafy vegetables. Liver and kidney, blood, eggs, grasshoppers, locusts, crickets and termites
Carbohydrate	Maize, cassava, rice and potatoes

POSTER 3:
(Prepared poster)

How to prevent malnutrition

Advise:

- **Children** and **pregnant women to eat four meals a day**
- **Everyone to eat protein** foods at least **one time every day**
- **Everyone to eat** dark green leafy **vegetables, fruit** or lightly cooked vegetables at least **two times a day**

Six rules of good nutrition

People have malnutrition because they are poor or because they do not know how to eat a mixed diet. Health workers cannot prevent poverty, but they can tell people how to eat a mixed diet to prevent malnutrition.

If you are a health worker you can:

- Teach by example, by giving your own family a mixed diet.
- Arrange cooking demonstrations to how people how to make nutritious meals.
- Advise people about good local foods that are not expensive.
- Help people to grow local crops that are part of a mixed diet.
- Teach people about the six rules of good nutrition.

The six rules of good nutrition

POSTER 4:
(Student answer poster)

Ask the students: What are the six rules of good nutrition?

Answer

1. Continue to **breastfeed** children **until** they are **2 years** old. Breastfeed **at least six times a day**.

Answer

2. Give some **soft foods**, (for example cassava or maize porridge) **in addition to breastmilk after** the child is **6 months old.**

Answer

3. Give **protein foods** (for example beans, little fish or groundnuts) **in addition to breastmilk** after the child is **6 months old**. Mash or crush these foods until the child is 12 months old, to help him to eat them.

Answer

4. Give **vegetables and fruit in addition to breastmilk after** the child is **6 months old**. Mash or crush these foods until the child is 12 months old.

Answer

5. Give **all children over** the age of **9 months** at least **four meals a day in addition to breastmilk**.

Answer

6. **Give ill children more food t**han usual. Feed ill children who are more than 9 months old five times a day. Breastfeed all ill children who are less than 2 years old at least eight times a day. Continue to feed the child more often until the child is well again and for one extra week.

Mothers will learn more if you help them to prepare foods which follow the six rules of good nutrition. Ask mothers to repeat the rules of good nutrition to you.

When do children get malnutrition?

Children are more likely to get malnutrition at particular times. We have called these danger times. If we know when children are in danger of getting malnutrition, we can teach mothers how to prevent it.

Malnutrition danger times for children

POSTER 5:
(Student answer poster)

Ask the students when children are in danger of getting malnutrition.
Table 2 lists the danger times.

TABLE 2 Malnutrition danger times for children

Danger time	Reason
Before birth	If the **pregnant woman** has a **poor diet**, the baby does not grow well inside the woman. The woman is also not able to make enough breastmilk to feed her new baby.

Answer

POSTER 5:
(Student answer poster continued)

Answer

Answer

Answer

Answer

Answer

Answer

TABLE 2 *(continued)*

Danger time	Reason
8 to 10 months	If a child is **only** fed with **breastmilk** he will not grow as well as he should. He needs other foods in addition to breast milk from six months of age.
If the mother gets **pregnant again**	She **may stop breastfeeding**. Breastfeeding when pregnant does not harm the child or the unborn baby.
After the mother stops breastfeeding.	Breast milk contains protein, energy, vitamins and minerals. If the child does not eat a mixed that he **will not get** enough **protein, energy, vitamins** and **minerals**.
The baby is **bottle-fed**	Breast milk is free, clean and protects children from diarrhoea. Milk from a **bottle** often has **bacteria** in which cause **diarrhoea** and weight loss.
Another baby is born	The mother has less time for the older child and **stopped breastfeeding** him.
The family is not able to get **food** because of famine, war or poverty	The child receives **less food**. The food that child receives is **not** a **mixed diet**.

Diagnosing and treating early malnutrition can save a child's life. It prevents the child from getting more severe malnutrition. Early malnutrition is easier to treat than severe malnutrition.

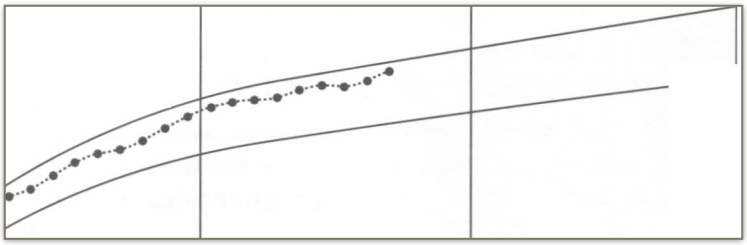
Growth charts Growth charts show the mother and the health worker how well children are growing. A child's growth chart tells you if a child has early malnutrition.

If direct recording scales are used in your country, show the students what they look like. Explain how the direct recording scales work.

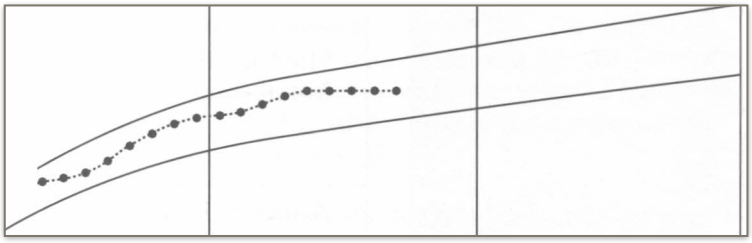
POSTER 6:
(Prepared poster)

Growth lines

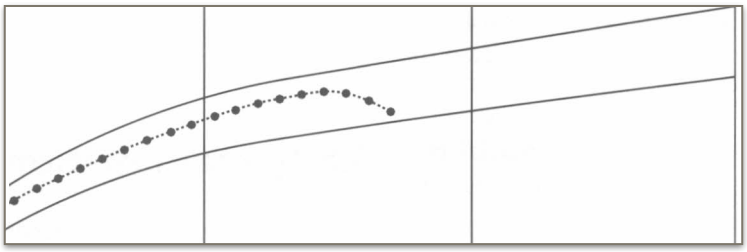
Copy Pictures 5, 6 and 7 onto poster 6.



PICTURE 5 *Growth chart of* a *child who is growing*



PICTURE 6 *Growth chart of* a *child who is not growing*



PICTURE 7 *Growth chart of* a *child who is losing weight*

Explain to the students that the line on a growth chart tells the health worker and the mother how well the child is growing. Tell the students that it is the ***direction*** of the line that is important .

- If the line is going up: the child is gaining weight and growing.
- If the line is flat: the child is not gaining weight and is not growing.
- If the line is going down: the child is losing weight and is not growing.

Diagnosing malnutrition early

POSTER 7:
(Prepared poster)

Diagnosing malnutrition early

1. Weigh all children under 5 years of age at the Maternal and Child Health clinic. **Weigh children under** the age of **2** years **every month**. **Weigh children over** the age of **2** years **every 3 months**.

2. Each time you see a child **under** the age of **5** years at your health centre, **look** at the child's **growth chart**.

3. If the growth line is flat or going down, treat the child for early malnutrition.

4. If the **growth line has gone down at the two most recent weighings**, or the child has swelling of the legs, he may have severe malnutrition. Send him to the nutrition clinic.

Treating early malnutrition

• Take the patient's history.

• Ask the mother if she has stopped breastfeeding or if the child is not eating a mixed diet.
• **Treat** any **illness** that you find.
• Teach the child's mother the **six rules of good nutrition**.
• If the child is 1 year old or more, give him 100 mg **mebendazole** two times a day for 3 days. Mebendazole is a treatment for worms. Do not give mebendazole if the child has been given mebendazole in the last 6 months.

Severe malnutrition

Diagnosing severe malnutrition

POSTER 8:
(Student answer poster)

Signs of malnutrition in children

Ask the students What do children with severe malnutrition look like?

Answer They have wasted and **thin muscles**.

Answer They have little fat underneath the skin and it is easy to see the **bones**.

Answer They have **thin**, straight, and sometimes red **hair**.

Answer They have mouth and skin **ulcers**.

Answer

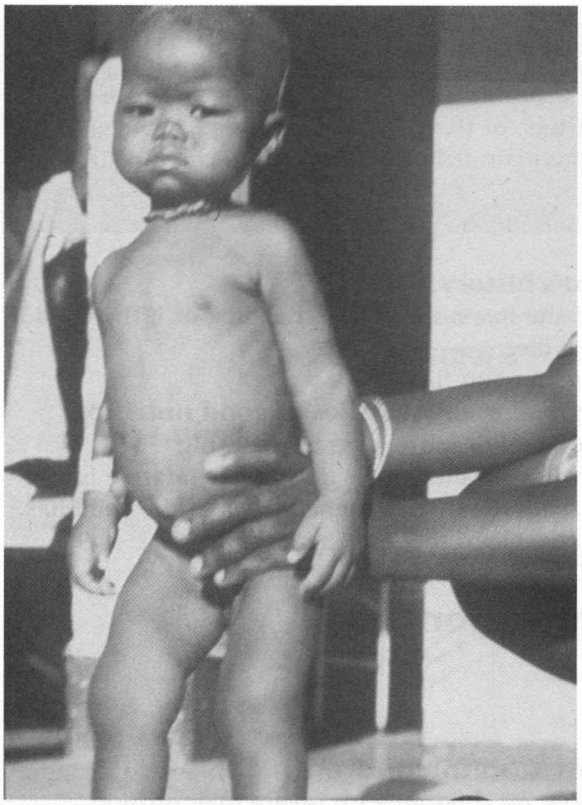
They look sad, **do not** smile, and have **no interest** in what is going on around them.

Answer

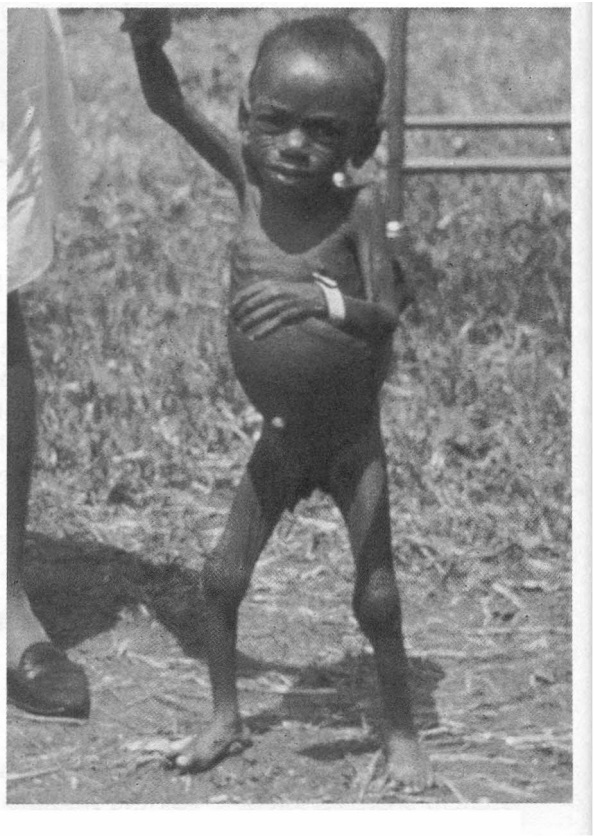
They may have **swelling** of the **legs** and **under** their eyes. This is called **kwashiorkor.** The swelling is caused by fluid under the skin which hides the thin muscles and bones.

Kwashiorkor To tell if child has kwashiorkor, press the front of the lower part of the child's leg with your finger for 10 seconds. If, after you remove your finger, you can see where you were pressing, the child has fluid under his skin. Send all patients with fluid under the skin to **hospital immediately.** Without treatment most children with kwashiorkor will die.

Show Pictures 8 and 9 to the students. The child on the left has kwashiorkor. The child on the right has another type of severe malnutrition, and does not have swelling on the legs or under the eyes.



PICTURE 8 *Child with kwashiorkor*



PICTURE 9 *Child with severe malnutrition*

Treating severe malnutrition

Send all children with severe malnutrition to the nutrition clinic. Send children with kwashiorkor to hospital. The nutrition clinic may be in the community or at a hospital.

Children with severe malnutrition usually stay at the clinic for a week or longer.

Tell the students to come and talk to you in the refreshment break if they want to know more about how to run a nutrition clinic. Give them a copy of Appendix 7. This Appendix also describes how to feed children with severe malnutrition.

Refreshment break

SECTION 3: Diagnosis and management of anaemia

Anaemia is a lack of haemoglobin. Haemoglobin is found in red blood cells. Haemoglobin is a protein that contains iron. Anaemia is caused by illnesses that stop the body making haemoglobin or illnesses that damage or waste red blood cells.

Patients with anaemia are weak and are not good at fighting infections. They often have fast breathing. Pregnant women with anaemia may die or give birth to small, weak babies.

POSTER 9:
(Student answer poster continued)

Causes of anaemia

Causes of anaemia

Divide Poster 9 into two areas. Give one area the title 'Prevent making haemoglobin'. Give the other area the title 'Damage or waste red blood cells'.

Ask the students: What are the most common causes of anaemia in our country?

If sickle cell disease is a problem in your area, teach Appendix 8 at another time.

Answer

*Problems that **prevent** the body **making haemoglobin***

- Patients with **malnutrition** or who **do not eat** a **mixed diet** are not able to make haemoglobin
- **Children** grow very quickly between the ages of **6 months and 3 years**. Children should grow very quickly if they are **born very small**. If they do not eat foods containing a large amount of **iron** and **folic acid** they will not be able to make haemoglobin

Answer

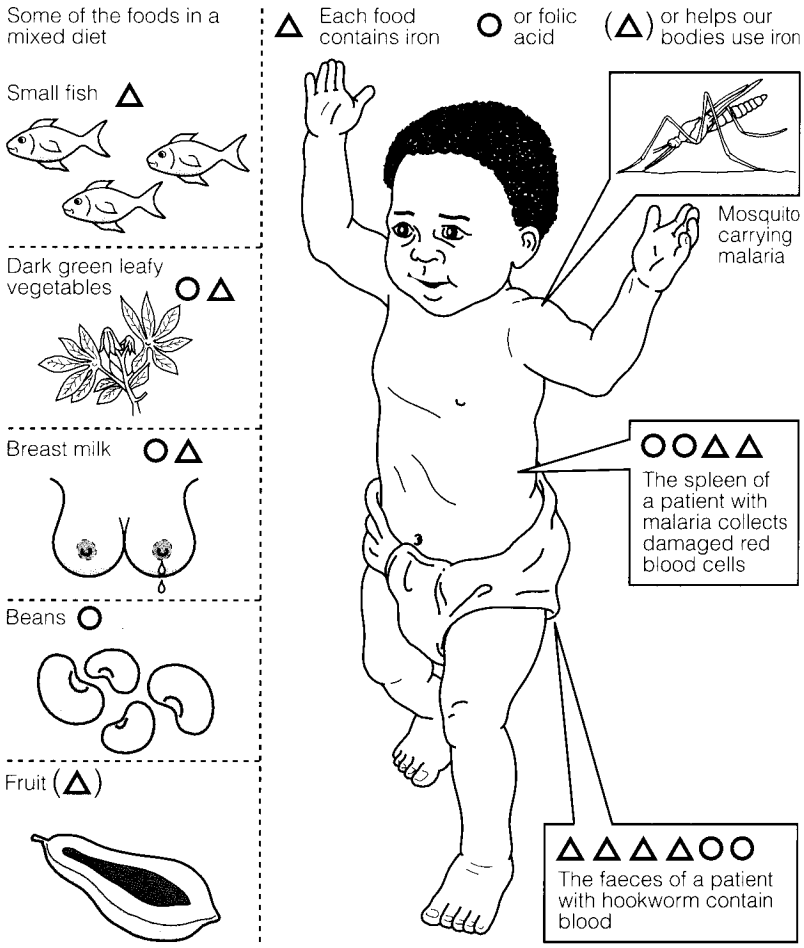
*Problems that **damage** or **waste red blood cells***

- **Malaria** damages red blood cells
- **Hookworm** cause bleeding into the bowel. A large number of hookworm cause anaemia
- **Pregnancy** uses a lot of iron and folic acid from the woman's body for the baby. If the woman does not eat a mixed diet to replace this iron and folic acid, she will become anaemic. Having many pregnancies in a short time causes anaemia
- Women who **bleed heavily every month** lose a lot of blood (see Lesson 7).
- **Sickle cell disease**.

POSTER 10:
(Prepared poster)

Foods to prevent anaemia

Copy Picture 10 onto Poster 10. Do *not* draw the circles and triangles on the poster.



PICTURE 10 *Foods to prevent anaemia*

Give the 10 paper triangles and 7 paper circles to 17 students. Put sticky tape or Blu-tak on the back of each piece of paper or give the students pins to stick the pieces of paper onto Poster 10.

- Explain to the students that **haemoglobin** is made from **iron, folic acid** and protein. Tell them that the paper triangles represent iron and the circles represent folic acid.
- Tell the students that the foods on the left of the picture are examples of foods which prevent anaemia. Ask three students to put a triangle on a food that they think contains **iron.** These

students should put a triangle on the small fish, dark green leafy vegetables and the breastmilk.

• Tell the students that fruit does not contain iron but it contains Vitamin C. **Vitamin C** helps our bodies use the iron in other food. Ask one student to put a triangle on the fruit. Draw brackets ( ) around the triangle.

• Ask three students to put a circle on a food that they think contains **folic acid**. These students should put a circle on the dark green leafy vegetables, the breastmilk and the beans.

If a person or child eats these foods as part of a mixed diet he will be able to make haemoglobin and prevent anaemia. This child eats all of these foods.

Mosquitoes carry malaria. Malaria damages red blood cells and can cause anaemia. The spleen is a rubbish bin for damaged red blood cells. Children who often get malaria may have a large spleen.

•Tell the students that the picture shows a mosquito on the child's skin. Ask four students to put two triangles and two circles near the spleen.

This child also has many hookworm inside his bowel. Hookworm cause bleeding into the bowel. Folic acid and a large amount of iron are lost into the faeces. If a patient has a large number of hookworm in his bowel. he will become anaemic.

•Ask six students to put four triangles and two circles near the faeces.

Preventing anaemia

We can do two things to prevent anaemia:
- help patients to make haemoglobin
- prevent illnesses that damage or waste red blood cells.

POSTER 11:
(Student answer poster)

Answer

Answer

Answer

Answer

How to prevent anaemia

Ask your students how we can prevent anaemia.

1. Eat a **mixed diet**.

2. **Wear shoes** to **prevent hookworm infections**.

3. Use **latrines**.

4. Use **mosquito nets to prevent malaria**, especially in children under the age of 5 years and pregnant women. Dip nets in permethrin every 6 months or deltamethrin every 12 months. Dip the nets just before the time of year when most people get malaria.

Answer

5. Advise women to wait until their youngest child is 2 years old before having another baby. This helps women to build up a store of folic acid and iron in their bodies. Breastfeeding helps to delay the next pregnancy.

Answer

6. Advise women to eat a mixed diet. In areas where iron deficiency is common, give **all pregnant women tablets** of **ferrous sulphate** 200 mg and folic acid 0.4 mg every day (or one tablet of ferrous sulphate 200 mg and one tablet of folic acid 0.25 mg every day).

Answer

7. Advise girls to wait until they are at least 17 years old before having a baby.

Answer

8. Treat heavy periods (see Lesson 7).

Diagnosing and treating anaemia

Anaemia may have more than one cause. Take the patient's history:

1. Look for general danger signs. Treat serious illnesses like pneumonia immediately.
2. Look for a fever. In malaria areas, treat patients with anaemia, who have a fever, with the first-line malaria treatment immediately.
3. Look for anaemia in the patient's conjunctiva (the inside of the eyelid).
4. Look for fast breathing or fluid under the skin.

- If the inside of the eyelid looks less red than usual, or you cannot see the lines on the palm of the hand, the patient has anaemia.
- If the patient also has fast breathing or fluid under the skin, he may have severe anaemia. Give him the first-line malaria treatment if there is malaria in the area. Send him to hospital immediately.
- If a patient with anaemia does not have fast breathing or swollen legs, the patient has moderate anaemia. Treat patients with moderate anaemia with ferrous sulphate for 3 months if possible.
- If a woman with moderate anaemia is pregnant, measure her haemoglobin or send her to hospital. If her haemoglobin is less than 7 g/dl give her the first-line malaria treatment (or test her for malaria) and send her to hospital.

POSTER 12:
(Prepared poster)

How to treat anaemia

Copy Table 3 onto Poster 12.

TABLE 3 How to treat anaemia

Priority	Illness	Treatment
1	***Malaria**, in malaria areas, **if the patient has a fever or a positive test for malaria.***	***If first line malaria treatment is coartem**: Coartem twice a day for 3 days (see the malaria lesson for the dose). Or if the patient has a very severe febrile disease (if they have a general danger sign) treat with Artesunate by injection and send to hospital. In the first 3 months of pregnancy use quinine, rather than coartem or Artesunate, if possible.* *Give advice about tepid sponging.* *Return after finishing the medicine for further treatment.*
1	***Malaria,** in malaria areas, **if the patient has a fever or a positive test for malaria.***	***If the first line malaria treatment is Fansidar**: Fansidar at health centre (see the malaria lesson for the dose).* *Give advice about tepid sponging.* *Also treat and give advice about hookworm.* *Return after finishing the medicine for further treatment.*
2	**Hookworm**	Ask if the patient may be pregnant. Mebendazole for 3 days. Do not give mebendazole to patients less than 1 year old or women in the first 3 months of pregnancy. Give patients advice about wearing shoes and using latrines. Return after finishing the medicine for further treatment.
3	**Poor diet**	Ferrous sulphate for 3 months if possible. Give advice about eating mixed diet.
4	**Other causes of anaemia**	Treat the cause. The patient may be pregnant, have heavy periods or an infection goes on for long time.
5	***Frequent malaria***	*If patient patient continues to have anaemia after 3 months, examine the abdomen. If you can feel the spleen, give the patient medicine to prevent malaria and ferrous sulphate (at the low-dose) for 3 months.*

Table 4 summarises the normal doses of ferrous sulphate to use to treat anaemia. If you do not have enough ferrous sulphate, or if your patient gets side effects (such as constipation) with the normal dose, (or prefers to take a lower dose) give a lower dose for 3 months.

Doses of ferrous sulphate

Copy Table 4 onto Poster 13.

TABLE 4 Doses of ferrous sulphate

Patient's weight	Dose of ferrous sulphate to treat anaemia (200 mg tablets) for 3 months	
	Best dose	**Lower dose**
15 kg or less	1/4 tablet 2 times a day	1/4 tablet 1 time a day
16-29 kg	1/2 tablet 2 times a day	1/2 tablet 1 time a day
30-44 kg	1 tablet 2 times a day	1 tablet 1 time a day
45 kg and above	1 tablet 3 times a day	1 tablet 1 time a day

SECTION 4: When to send patients to hospital

Give each student a copy of Appendix 6. Make sure that the students know how to use Appendix 6.

Ask your students which patients we should send to a hospital or a nutrition clinic. Look for the following answers:

Answer Children with fluid under the skin

Answer Children with a growth line that has gone down at the two most recent weighings

Answer Patients (including pregnant women) with very pale conjunctivae and fast breathing or fluid under the skin

Answer Pregnant women with a haemoglobin of less than 7 g/dl

Lunch break

SECTION 5: Practical

Tell the students that the four role plays will help them practise diagnosis and treatment of malnutrition or anaemia. Divide the class into six groups, with at least three students in each group. In each group, one student will play the doctor, one student will play the patient or the patient's mother, and a third student will be the observer. For each role play:

- Give the patient (or patient's mother) a piece of paper which describes the patient's symptoms and what food he normally eats. If the doctor asks the correct questions, the patient will tell the doctor what symptoms he has and what he normally eats.
- Give the patient's mother the appropriate growth chart if the patient is less than 5 years old.
- Give the doctor a piece of paper which tells the doctor what she will find when she examines the patient. The doctor will find out the patient's age and take the patient's history. The doctor will look at the growth chart. She will also use Appendix 6 to decide what the diagnosis and treatment are.
- Give the observer a piece of paper. This piece of paper tells the observer: (1) The diagnosis, (2) The treatment, (3) Advice for the patient, and (4) Whether the patient should be sent to hospital. After each role play the observer will tell the group what the doctor did correctly and what the doctor could have done better.

Role plays

Tell the students that they have 30 minutes to do the first three of the four role plays. A different student should pretend to be the doctor, patient and observer in each role play. Tell them to use Appendix 6. Stop the activity after the third role play.

• Give each group the four role plays.

ROLE PLAY 1:

You are the **mother** of a I5-month-old child, Sunday Otala. You are pregnant again. You stopped breastfeeding your child a week ago because you think that breastfeeding will harm the unborn baby. You feed the child two times a day, normally rice, maize meal or bread.

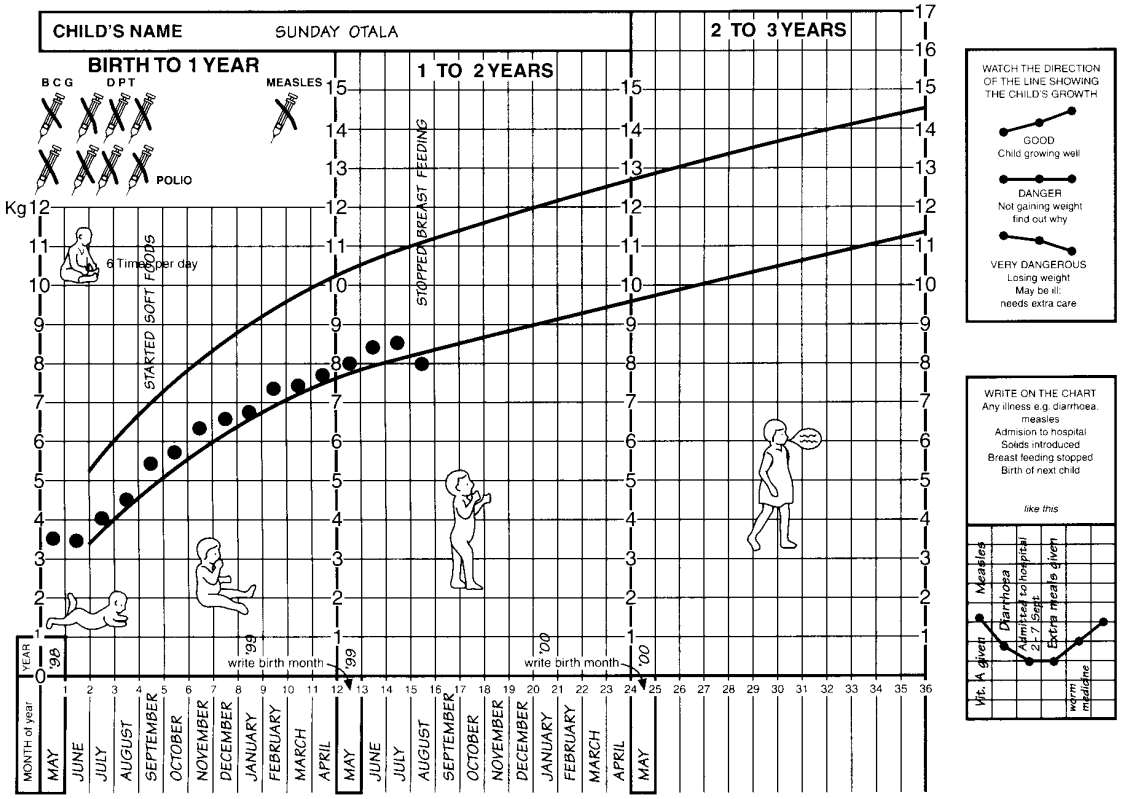
You are the **doctor.** You see that the child's conjunctivae are not pale. He does not look unwell but he is crying. There is no fluid under the skin. Ask to look at the growth chart (Picture 11).

You are the **observer**. The child has early malnutrition. The doctor should take a quick but good history. The doctor should give mebendazole and advise the mother to follow the six rules of good nutrition. The doctor should also advise the mother to start breastfeeding again immediately. Breastfeeding will not harm either the unborn child or the patient.

ROLE PLAY 2:

You are the **patient**. You are a mother aged 28 years. You are 5 months pregnant. You feel dizzy and you have a headache.

You are the **doctor**. You see that the woman's conjunctivae are pale. She does not have a fever. The patient has a swelling in her abdomen which is the correct size for a 5-month pregnancy. She breathes less than 25 times in a minute and she does not have swollen ankles. You measure her haemoglobin. Her haemoglobin is 8 g/dl.



PICTURE 11 *Growth chart of child in role play 1*

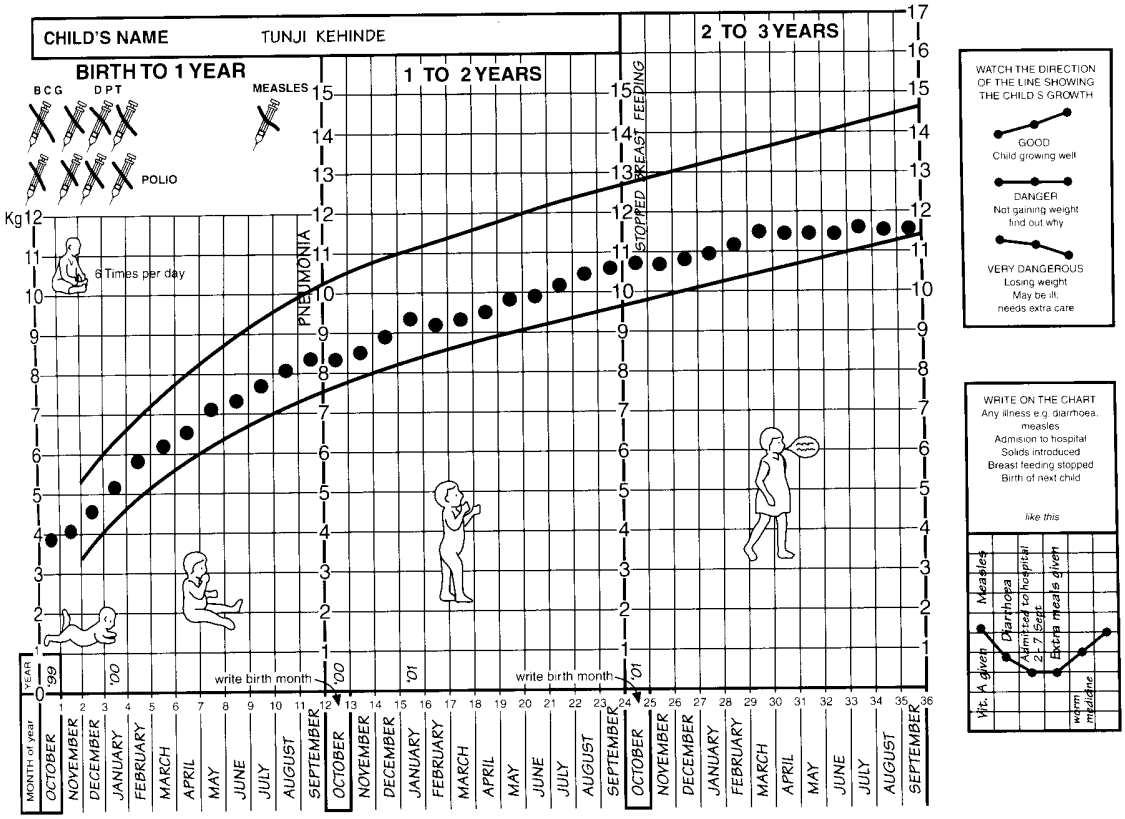
You are the **observer.** The patient has anaemia. She does not have a fever. She does not need treatment for malaria. The doctor should treat and give advice for hookworm. The doctor should also ask the woman to come back to the health centre after finishing the hookworm medicine. On the next visit, the doctor should advise a mixed diet and give ferrous sulphate until she gives birth.

ROLE PLAY 3:

You are the **mother** of a 3-year-old child, Tunji Kehinde. You do not think that your child has a problem. The child has diarrhoea often. You feed the child three times a day with cassava, maize meal ... 'all the usual foods'.

You are the **doctor**. The conjunctivae are not pale. The child does not smile and has no interest in what is going on around him. The child's legs are swollen. After you press the leg with your finger for 10 seconds, you can see where you were pressing. Ask to look at his growth chart (Picture 12).

You are the **observer**. The child has kwashiorkor. The doctor should send him to hospital immediately.

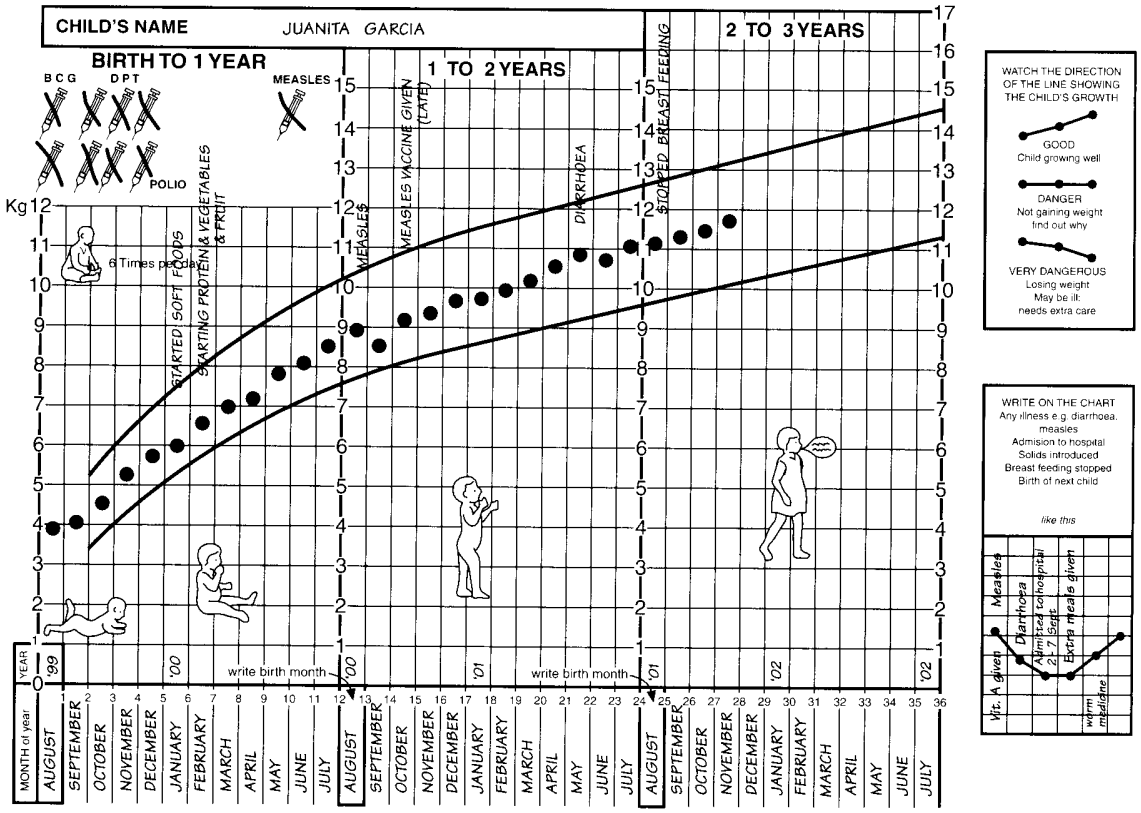


PICTURE 12 *Growth chart of child in role play 3*

If you do not use direct recording scales in your country, cross out the following box and fill in the last two weights on the growth chart in Picture 13. The last two weights have gone down.

Tell your students that each group in turn will now fill in the last two weights using the direct recording scale. Replace the sling under the direct recording scale with a bucket. (The bucket represents the child being weighed.)

Each group should partly fill the bucket with enough water so that the pointer of the direct recording scale lies over the last weight. Move the scale forward one month. Remove a cupful of water from the bucket. Do not throw this water away. Ask a student to mark the 'child's' new weight. Ask a student to move the scale forward and remove another cupful of water. Ask another student to mark the next weight. Remove the growth chart and allow the group to do the last role play. (Replace the water in the bucket ready for the next group of students.)



PICTURE 13 *Growth chart of child in role play 4*

ROLE PLAY 4:

You are the **mother** of a 2 year old girl, Juanita Garcia Lopez. The girl has had a fever for 3 days. You feed her rice, cassava, maize porridge and occasionally small fish two times a day.

You are the **doctor**. The conjunctivae are not pale. The child does not smile. The child does not have swollen legs. You look at her growth chart (Picture 13). The growth line has gone down on the two most recent weighings.

You are the **observer**. The child may have severe malnutrition. The doctor should send the child to a nutrition clinic.

SECTION 7: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. What do the following growth lines mean? What will you do for each child? (Refer to the illustrations of the growth lines in the quiz at the beginning of this chapter.)

- **The child is growing well. Tell the mother that the child is growing well.**
- **The child is not growing. Take the child's history. Treat any illness. Teach the mother the six rules of good nutrition.**
- **The child has lost weight. Treat for early malnutrition. If the child has lost weight on the two most recent weighings, send him to the nutrition clinic.**

2.What are the six rules of good nutrition?

- **Breastfeed until second birthday at least six times a day.**
- **Soft foods in addition to breastmilk after 5 months.**
- **Protein foods in addition to breastmilk after 6 months.**
- **Vitamin and mineral foods in addition to breastmilk after 6 months.**
- **Four meals a day in addition to breastmilk after 9 months.**
- **If ill, feed more often. Breastfeed young babies eight times a day or feed five times a day.**

3.What will happen if a child is not given food which follows the six rules of good nutrition?

- **The child may get malnutrition or anaemia. He may get severe malnutrition. Many patients with severe malnutrition die.**

4.What are the causes of anaemia?

- **Malnutrition - lack of iron and folic acid in the diet**
- **Malaria**
- **Hookworm**
- **Frequent pregnancy**
- **Sickle cell disease**
- **Heavy periods - women who bleed heavily every month lose a lot of blood.**

Lesson 3 Skin problems

BEFORE THE LESSON

- There are **11** posters in this lesson. (See p. 4 for information on how to use the posters.)
  Prepared posters: 1

Student answer posters: 2, 4, 7, 8, 10
Summary posters: 3, 5, 6, 9, 11

- For section 2, you need four patients. You need one patient with a fungus infection, one with impetigo, one with scabies and one with a skin ulcer.
- Ask the patients to meet you in the classroom at 8:30 a.m. Tell them that they will receive a small payment for coming. Do not forget to bring some money with you to the lesson.
- Prepare *blank* copies of the five tables under 'Features of skin problems' for each student. Copy the headings only and leave the boxes empty.
- You need a balloon filled with water.
- You need a copy of Appendix 9 for each student.
- You need six copies of the patient case study questions for the practical in section 4.

SECTION 1: Quiz

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

POSTER 1:
(Prepared poster)

1. For which skin problem would you use each of the following medicines?
Benzyl benzoate emulsion
Whitfield ointment
Co-trirnoxazole
Gentian violet

2. How do you diagnose measles?

3. If a patient has new dark red spots in the skin, what should you do?

SECTION 2:

Diagnosis and management of skin problems

Give each of your students one blank copy of Tables 1 to 5 (see pp. 79-82). Students should complete their blank tables with the correct answers after each problem has been discussed. If possible, show the students each important feature on a patient.

Features of skin problems - Virus infections

POSTER 2:
(Student answer poster)

Draw the *lines and headings only* of Table 1 (on p. 79) on Poster 2.

Today we will learn about skin problems that are caused by:
- virus infections
- bacterial infections
- fungus infection
- insects
- allergies.

For each skin problem, we will fill in the appropriate table. You can put the finished tables on your health centre wall.

Virus infections

Three viruses that can cause a skin rash or swelling are:
- measles
- chickenpox
- warts.

Measles

Measles starts with a runny nose, sticky eyes, a fever and a cough. A few days later a flat red rash appears behind the ears. Next, the rash becomes slightly raised and spreads to the face and body. The areas of redness meet together. The rash lasts for 6 or 7 days. The rash does not itch. The fever disappears soon after the rash has appeared, usually within 3 days. The patient may also have red eyes.

If a patient has a fever and a rash all over his body, he may have measles. The rash does not itch. Diagnose measles if the patient also has red eyes or a cough or fluid coming from the nose.

Treat a patient with measles as described in Lesson 3:
- Look for chest illnesses.
- Look for corneal ulcers.
- Do not give tetracycline eye ointment for conjunctivitis unless a cornea is not clear.
- Give vitamin A.
- Give the first-line malaria treatment if there is malaria in your area.
- Show the mother how to do tepid sponging.
- Advise the mother to continue to breastfeed.
- Advise the mother to give a mixed diet of mashed food five times each day. She should do this until the child is well again and for a week after he is better.

Ask the students what to write in each space of the measles row of Table 1. Fill in the correct answers on Poster 2. Students should fill in the correct answers in their blank Table 1.

Chickenpox

The first symptoms of chickenpox are a rash and a fever. The rash quickly turns into small blisters on the body and under the hair. Next, blisters appear on the face, arms and legs. The blisters are very itchy. Many patients scratch the blisters and damage the skin. This can cause impetigo (infection with bacteria). Treat impetigo if it is bigger than 1 cm wide.

POSTER 3:
(Summary poster)

Advice for patients with chickenpox

1. **Cut** your **fingernails**. Long fingernails damage the skin if the patient scratches her skin.

2. **Wash** frequently to prevent impetigo.

3. **Give home treatment advice**.
- Give plenty of **fluids**.
- Continue to **feed** at least **five times a day**.
- Tell the patient to **return**:
  - **if** she is **not able to drink**
  - **if** her **breathing** becomes **difficult or fast**
  - **if** she becomes **more ill**.

Now ask the students what to write in each space of the chickenpox row of Table 1. Fill in the correct answers on Poster 2. Students should fill in the correct answers in their blank Table 1.

Warts

The wart virus causes warts on the skin, often on the hands or feet. Warts are normally the same colour as the skin. They are often raised above the surrounding skin. Warts do not itch. It may take months or years for warts to disappear but warts do not need any treatment.

Ask the students what to write in each space of the warts row of Table 1. Fill in the correct answers on Poster 2. Students should fill in the correct answers in their blank Table 1.

POSTER 4:
(Student answer poster)

Features of skin problems - Bacterial infections

Draw the *lines and headings only* of Table 2 (on pp. 80-81) on Poster 4.

Bacterial infections

Bacterial infections that can affect the skin are:
- impetigo
- skin ulcers
- abscess
- meningococcal septicaemia
- serious skin infections in children less than 2 months old.

Impetigo

Impetigo starts as a blister that quickly gets bigger and breaks. The skin becomes wet and red and dries to form a yellow coloured area. Impetigo is most common on the face, hands and feet. People get impetigo by touching the skin of a person who has impetigo. A person is more likely to get impetigo if he has scabies, flea bites or does not wash often.

Impetigo does not cause a fever and is not painful. If the area underneath the skin becomes infected, the patient has cellulitis. A patient with cellulitis may have a fever and the skin is painful to touch.

Treat a patient with impetigo as follows:
- If the impetigo is smaller than 10 cm wide, paint it with gentian violet once a day for 5 days.
- If the impetigo is bigger than 10 cm wide, treat with co-trimoxazole. at the normal dose, for 5 days.
- If there is cellulitis, give co-trimoxazole, at the normal dose, for 5 days.

Advise a patient with impetigo to:
1. Cut his fingernails.
2. Come back if his skin becomes more painful or he develops a fever.
3. Wash every day and to eat a mixed diet.

Ask the students what to write in each space of the impetigo row of Table 2. Fill in the correct answers on Poster 4. Students should fill in the correct answers in their blank Table 2.

Skin ulcers

If a skin wound does not heal. a skin ulcer develops. Bacteria in the wound, malnutrition or diabetes may stop a wound from healing. Patients with leprosy may have many wounds and skin ulcers. Skin ulcers are normally on the feet and ankles.

POSTER 5:
(Summary poster)

How to treat skin ulcers

Treat skin ulcers like this:
1. Wash the ulcer **every day** if possible.
2. On the **first visit**:
- Clean the ulcer. Squirt **normal saline or clean water** quickly at the ulcer **using** a **syringe**.

(*continued)*

- Do this again and again until all the dirt has been removed.
- Next, put **povidone iodine on the ulcer**.

3. On the second visit, and **further visits**:

- Clean the ulcer very gently. Do not damage the healing red skin.
- **Gently** remove the yellow or green matter from the ulcer using a sterile swab or cloth. Dip the cloth in **normal saline or povidine iodine** 10%.

4. **Cover** the ulcer each day with a clean dressing. Consider using unripe slices of **papaya** flesh underneath the dressing bandage as an antiseptic if possible. Otherwise use povidone iodine 10%.

5. **If** the skin around the ulcer is **painful** to touch, the patient has **cellulitis**. Treat the patient with co-trimoxazole. at the normal dose, for 5 days.

6. Make sure that the patient has been immunised against tetanus. If she has not, give a **tetanus toxoid vaccination** this week. Give two more tetanus toxoid vaccinations, with a month between each injection. This will not prevent the patient from getting tetanus from the ulcer she has now, but it will prevent tetanus in future. The vaccine starts to work after 3 months and gives protection for 10 years or more.

7. **If** a skin ulcer is **no better after 2 weeks** of treatment, send the patient to **hospital**. The patient may need treatment for another cause of the ulcer, for example diabetes, malnutrition or cutaneous leishmaniasis. The edges of a cutaneous leishmaniasis ulcer are raised.

Now ask the students what to write in each space of the skin ulcers row of Table 2. Fill in the correct answers on Poster 4. Students should fill in the correct answers in their blank Table 2.

Abscess

An abscess is a type of bacterial infection underneath the skin. The body uses white blood cells to fight against the infection. Dead white blood cells collect to make a lump filled with yellow matter called pus. An abscess is warm and painful when you touch it. It often feels like a balloon that is full of fluid.

Use a balloon filled with water to show your students what it feels like to touch an abscess. Ask the students to place two fingers on the balloon and to press one of the fingers down into the balloon. The balloon pushes the second finger upwards.

Women who are breastfeeding often get an abscess in a breast. Breast abscesses develop if the baby does not take the nipple all

the way into the mouth when he is breastfeeding. This damages the skin of the nipple. Bacteria can get into the damaged skin and may cause an abscess.

POSTER 6:
(Summary poster)

How to treat an abscess

Treat an abscess as follows:

1. Cut into the abscess with a **sterile knife**.
2. Clean the pus out of the abscess.
3. Put a **sterile swab**, which has been dipped **in normal saline** or **povidone iodine** 10%, as far **into the hole** as possible.
4. Leave a new sterile swab in the opening of the hole.
5. The wound will heal from the inside. Keep the hole open, this will allow you to clean the inside of the wound.
6. Treat the patient with **co-trimoxazole**, at the normal dose, for 5 days.
7. Gently **remove** all of the **swabs** from the wound **every second day**. Put new sterile swabs back in.

If the abscess is in a breast:

1. Make the cut in a line pointing away from the nipple.
2. Express breastmilk frequently from that breast, every 4 hours, by holding the breast firmly and gently squeezing the nipple between the thumb and a finger.
3. Use a cup and spoon to give the milk to the baby. Do not give the milk if it has a lot of pus in it.

- If a breast is hot and painful to touch but does not yet feel like a balloon, put a large needle into the lump. Pull the plunger of the syringe: if pus comes out make a cut in the breast.
- If there is no pus, give the woman co-trimoxazole at the normal dose. See the woman again after 2 days.

Now ask the students what to write in each space of the abscess row of Table 2. Fill in the correct answers on Poster 4. Students should fill in the correct answers in their blank Table 2.

Meningococcal septicaemia

We will talk about meningococcal septicaemia later in this lesson. Leave space in your blank Table 2.

Serious skin infections in children less than 2 months old

Young babies can become ill and die very quickly. Young babies with serious infections may not always have a general danger sign. Look for a fever. Look at the skin and at the umbilicus in the middle of the baby's abdomen.

If the young baby has:

- pus coming from the umbilicus or redness of the umbilicus *and* a fever
- many or large areas of pus under the skin,

give him an intramuscular injection of ceftriaxone. Give 50-80 mg for each kg of body weight. Send him to hospital immediately.

If the young baby has:

- pus coming from the umbilicus, but no fever
- redness of the umbilicus, but no fever
- only small areas of pus under the skin,

give him co-trimoxazole, 1/2 tablet two times a day, for 5 days. See the child again after 2 days.

Ask the students what to write in each space of the row for serious skin infections in children less than 2 months old in Table 2. Fill in the correct answers on Poster 4. Students should fill in the correct answers in their blank Table 2.

Fungus infections

POSTER 7:
(Student answer poster)

Features of skin problems - Fungus infections

Draw the *lines and headings only* of Table 3 (p. 81) on Poster 7.

Fungus infections that affect the skin are:

- tinea
- yeast infections.

Tinea is a fungus infection. It can grow anywhere on the skin. Tinea starts as a scaly, slightly raised pale or red patch. The skin is not painful when you touch it. The rash may be itchy. As the infection grows, the skin in the middle of the rash may become normal again. The infection then looks like a ring. Tinea causes hairs to fall out of the skin. Treating tinea takes a long time. The medicine you use will depend on what is available locally.

- Rub Whitfield ointment (benzoic acid and salicylic acid ointment) into the skin once a day for several weeks. Advise the patient to continue using the ointment until the rash has completely disappeared and for one extra week.
- If the problem is no better after 4 weeks, send the patient to the leprosy clinic. Leprosy can also cause the skin to look pale and scaly.
- If the tinea is in the hair, skin treatments will not help.

Give the students a copy of Appendix 9.
Ask the students what to write in each space of the tinea row in Table 3. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Yeast infections

Yeasts are a special type of fungus. Yeasts grow in warm, wet areas of the body. Yeast infections are found between the toes, near the pnvate parts, under the breasts and under the arms. The skin will be slightly 'Yet. The skin may be white or red.

Treat yeast infections with gentian violet or a fungus treatment. Give this every day until the rash has completely disappeared, and for one extra week after that.

Ask the students what to write in each space of the yeasts row in Table 3. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Insects

POSTER 8:
(Student answer poster)

Features of skin problems: Insect problems

Draw the *lines and headings only* of Table 4 (p. 81) on Poster 8.

Skin problems caused by insects are:

- flea bites
- body lice infestation
- scabies.

Flea bites

Fleas live in the homes and clothes of people and on animals. Flea bites are itchy. If people scratch the bites, this can damage the skin and cause impetigo. Advise patients with flea bites to clean their home. Tell them to put insecticide powder on floors, bedding and clothes, if possible.

Ask the students what to write in each space of the flea bites row in Table 4. Fill in the correct answers on Poster 8. Students should fill in the correct answers in their blank Table 4.

Body lice infestation

Body lice live in people's clothes. Body lice cause an itchy rash on most parts of the body. This rash is similar to the itchy rash caused by scabies. Treat the skin with benzyl benzoate emulsion. Advise the patient to wash his clothes in very hot water and to iron the clothes to kill the lice.

Ask the students what to write in each space of the body lice row in Table 4. Fill in the correct answers on Poster 8. Students should fill in the correct answers in their blank Table 4.

Scabies

Scabies is very common. It is caused by a tiny insect that lives underneath the skin. A patient with scabies has scaly skin, often at the wrists or between his fingers. He may have an itchy rash over most of his body. Treat the skin with benzyl benzoate emulsion. Advise the patient to wash his clothes in very hot water and to iron the clothes.

A person with scabies may get impetigo. If he has impetigo, treat impetigo first. Then use benzyl benzoate emulsion to treat the scabies. Tell the patient to cut his fingernails.

How to treat scabies

POSTER 9:
(Summary poster)

Treat scabies as follows:

- Treat **everyone in the house**. Some people have scabies without having symptoms.
- Use one **100ml** bottle of **benzyl benzoate** (25%) **to treat two adults** or children over the age of 5 years.
- If the patient is **under the age of 2 years mix** the benzyl benzoate **with** an **equal amount of water**.
- Put benzyl benzoate on all parts of the body, except for the face and head .
- **Leave** the medicine on for **24 hours** .
- **Repeat** this treatment **after 7 days**.
- Treatment will kill all the scabies insects, but the skin will still itch for up to 2 weeks.
- If the rash is no better 3 weeks after treating the whole family, there may be another cause of the skin rash. In areas where there is river blindness, the rash may be caused by onchocerciasis. Treat everyone with ivermectin 6 mg once a year. This will help to prevent blindness but it will not help the skin rash.

Ask the students what to write in each space of the scabies row in Table 4. Fill in the correct answers on Poster 8. Students should fill in the correct answers in their blank Table 4.

Allergy problems

POSTER 10:
(Student answer poster)

Features of skin problems - Allergy problems

Draw the *lines and headings only* of Table 5 (p. 82) on Poster 10.

Allergy problems that can cause a skin rash are:

- reactions to medicines
- eczema.

Reaction to medicines

Injections, tablets or ointments can cause skin rashes. Antibiotics and phenobarbital commonly cause rashes. Allergic rashes are often

itchy, but are not usually scaly. If a rash starts or gets worse after using any medicine, stop the medicine immediately if possible.

Ask the students what to write in each space of the reactions to medicines row in Table 5. Fill in the correct answers on Poster 10. Students should fill in the correct answers in their blank Table 5.

Eczema

An eczema rash is itchy and scaly. Eczema often causes a rash at the front of the elbows, behind the knees, and on the face. It also causes dry skin.

Eczema is difficult to treat. Tell the patient that you will not be able to cure eczema. To treat skin dryness, put natural oils, such as coconut oil, on the skin **every** day. Tell the patient not to use perfumed soap and to avoid using soap frequently. Soap removes oils from the skin. If the eczema is very itchy, put hydrocortisone cream 1 % on the affected areas two times a day until the itch is better.

Ask the students what to write in each space of the eczema row in Table 5. Fill in the correct answers on Poster 10. Students should fill in the correct answers in their blank Table 5.

Tables 1-5: Features of skin problems

TABLE 1 Features of skin problems - Virus infections

	Rash	Where	Other features	Sometimes	Advice	Treatment
Measles	1. Flat then slightly raised 2. Red 3. Does **not** itch	Starts behind ears Goes to face and body Goes to all parts of the body	Fever Has one of: (a) cough (b) conjunctivitis (c) fluid from the nose	1. Pneumonia 2. Corneal ulcer	Home treatment Breastfeed Soft mixed diet 5 times a day Tepid sponge	Vitamin A The first-line malaria treatment in malaria areas Send to hospital if has pneumonia
Chickenpox	1. Itchy 2. Blisters	Starts on the body and in hair Goes to arms and legs	Fever	Impetigo	Cut nails Wash daily Home treatment	The first-line malaria treatment in malaria areas No other medicine Treat if has impetigo

TABLE 1 (continued)

	Rash	Where	Other features	Sometimes	Advice	Treatment
Warts	1. No colour 2. Raised 3. Not itchy 4. Hard and dry	Usually hands or feet	None		Warts will go away after several months or years	None

TABLE 2 Features of skin problems– bacterial infections

	Rash	Where	Other features	Sometimes	Advice	Treatment
Impetigo	Blisters, then wet red skin, then yellow matter	Face, hands or feet	None	Cellulitis	Cut nails Wash daily Home treatment Return if develops fever or pain	Gentian violet if less then 10 cm Co-trimoxazole if more than 10 cm Co-trimoxazole if tender
Skin ulcers	1. Skin broken 2. Red, yellow or green matter in wound	Ankles and feet	None	Cellulitis	Keep dry and change dressing daily	Wash and dress every day. Use povidone iodine or unripe papaya under dressing. Tetanus vaccine. Treat if has cellulitis.
Abscess	1. Hot and painful to touch 2. Feels like a balloon	Breast or anywhere	Fever		Come to health centre every second day Express breastmilk and give to child with cup and spoon	Cut and clean Co-trimoxazole
Meningococcal septicaemia	Dark red spots that do not disappear when pressed	Anywhere	Unwell, often a general danger sign			Intramuscular benzylpenicillin and send to hospital immediately

TABLE 2 (continued)

	Rash	Where	Other features	Sometimes	Advice	Treatment
Serious skin infections in child less than 2 months	1. Pus or red umbilicus **and** fever	Anywhere, often umbilicus	Fever or any general dangerous sign			Intramuscular chloramphenicol Send to hospital immediately.

TABLE 3 Features of skin problems – Fungus infections

	Rash	Where	Other features	Sometimes	Advice	Treatment
Tinea	1. Scaly 2. Slightly raised	Anywhere	None		Go to leprosy clinic if no better after 4 weeks	Whitfield ointment or other treatment for fungus
Yeasts	Between fingers, toes, under breasts, armpits and next to private parts					Gentian violet or treatment for fungus

TABLE 4 Features of skin problems – insect problems

	Rash	Where	Other features	Sometimes	Advice	Treatment
Flea bites	Itchy spots	Anywhere		Impetigo	Clean home. Insecticide dust on floors, bedding and clothes	None
Body lice	Itchy rash	All parts of body			Wash clothes in very hot water or use hot iron How to use benzoyl benzoate	Benzyl benzoate emulsion for whole family
Scabies	1. Scaly 2. Itchy	Wrists Between fingers Anywhere but not face or scalp	Itchy rash on all parts of body	Impetigo	Cut nails How to use benzoyl benzoate Return if no better after 3 weeks	Benzoyl benzoate for whole family

TABLE 5 Features of skin problems– Allergy

	Rash	Where	Other features	Sometimes	Advice	Treatment
Reaction to medicine	1. Often itchy 2. Dark or red 3. Often blisters	One area, all of the body		Anaphylaxis and death	Stop medicine	Treat anaphylaxis
Ezcema	1. Itchy 2. Scaly	Front of elbows, behind the knees, neck and face			Use coconut oil every day. Do not use perfumed soap	1% hydrocortisone cream

Refreshment break

SECTION 3: When to send patients to hospital

POSTER 11:
(Prepared poster)

When to send patients with skin problems to hospital

Send patients with skin problems to hospital immediately if:

1 They have **pneumonia and measles**. Give patients with pneumonia and measles an intramuscular injection of procaine penicillin fortified (0.1 million IV for each kg of body weight up to 1.2 million IV, one time). Pneumonia is very dangerous to patients who have measles.

2 They have **meningococcal septicaemia**. If a patient has new, dark red spots in the skin, press on the spots with two fingers. Separate the two fingers. If the **dark red spots do not disappear when you press on the spots**, treat the patient for meningococcal septicaemia. Give her an intramuscular injection of benzylpenicillin (0.1 million IV for each kg of body weight, up to 2 million IV, one time). If the patient is not able to get to the hospital immediately, give benzylpenicillin four times a day.

Show the students how to press on the spots with two fingers. Ask the students what to write in each space of the meningococcal septicaemia row of Table 2.

3 **A serious skin infection in a child aged less than 2 months.** Give the child an intramuscular injection of chloramphenicol (40 mg for each kg of body weight one time).

Also send these patients to hospital:
- If a skin ulcer is no better after 2 weeks of treatment. The patient may have diabetes, malnutrition or cutaneous leishmaniasis .
- If a rash is no better after 4 weeks of treatment with a fungus treatment, send him to the leprosy clinic.

SECTION 3: **Practical**

ACTIVITY:

Divide the students into three groups. Give two copies of the following patient case studies to each group. Tell the students that they will use their five tables of the features of skin problems to decide which skin problem each patient has.

Using the tables, they should:

- make sure that the *rash* is the correct type
- check *where* the rash is
- see what *other features* the patient has.

Tell the students that they have 15 minutes to answer the questions about three patients. If the type of rash, the location of the rash and other features are correct, they have made the diagnosis.

Patient 1

A 4-year-old girl has an itchy rash on her body and in her hair. The girl has a slight fever. She does not have a cough or difficult breathing. Her eyes look normal. Some areas of skin have blisters.

1. What skin problem does she have?
2. What other illness may she have?
3. What is the correct treatment?

Patient 2

A 35-year-old woman complains of swelling and pain in her left breast. She has a 2-month-old baby. The woman has a fever and a hot swelling on her left breast. The skin is painful and feels like a balloon when you touch it.

1. What skin problem does she have?
2. What treatment would you give her?
3. What advice will you give her?

Patient 3

An 11-year-old boy fell on some rocks 2 days ago. The boy has an ulcer on his left shin which looks very dirty.

1. What will you do?
2. He comes back to your health centre 7 days later. When you touch the skin on his left shin, he tells you that it is painful. How will you treat him?

Ask a different student in each group to tell you the answers for each patient. Tell the students what was good about their answers. Tell the students the correct answers. The correct answers are below:

Answers

Patient 1

1. Chickenpox
2. Possibly malaria
3. Give the girl the first-line malaria treatment in malaria areas. Cut her fingernails. Advise her mother to wash her daily. Give the mother advice about home treatment.

Patient 2

1. Breast abscess.
2. Cut into the abscess and clean it. Treat the woman with co-trimoxazole, 2 tablets two times a day, for 5 days.
3. Advise her to express breastmilk and give it to the child with a cup and spoon.

Patient 3

1. Wash and dress the ulcer every day. Use povidone iodine or unripe papaya under the dressing. Make sure that the patient has already been immunised against tetanus. If not, give him a tetanus toxoid vaccination this week. Give two more tetanus toxoid vaccinations, with a month between each injection.
2. The boy has cellulitis, give him co-trimoxazole. at the normal dose, for 5 days.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. For which skin problem would you use each of the following medicines?

Benzyl benzoate emulsion
Scabies
Whitfield ointment (benzoic acid and salicylic acid ointment)
Tinea or yeast infection
Co-trimoxazole
Cellulitis
Abscess, after making a cut
Impetigo, if the area affected is more than 10 cm wide
Gentian violet
Yeast infections, impetigo (if the area affected is less than 10cm wide)

2. How do you diagnose measles?

Think of measles if a patient has a fever and a rash all over his body. The rash does not itch. Diagnose measles if the patient also has red eyes or a cough or fluid coming from the nose.

3. If a patient has new dark red spots in the skin what should you do?

Press on the spots with two fingers. Separate the two fingers. If the dark red spots do not disappear, when you press on them, treat the patient for meningococcal septicaemia. Give her an intramuscular injection of benzylpenicillin. Send the patient to hospital immediately.

Lesson 6 Diarrhoea

BEFORE THE LESSON

- There are six posters in this lesson. (See p. 4 for information on how to use the posters.)
  Prepared poster: 1, 3, 4, 5
  Student answer posters: 2, 6
- Ask one student to help you with the demonstration tutorial in this lesson. Give the student a copy of Appendix 10. If possible, practise with him before the lesson.
- Ask a different student to volunteer to teach the class. Make a copy of the 'Demonstration - What to teach village leaders' on page 90 and give it to the volunteer student. Ask her to practise with you before the lesson.
- Give each student a copy of Appendix 10.
- Prepare copies of the role plays. Write the information for the patient, the doctor and the observer on separate pieces of paper. Use a paper clip to keep each role play together. You need one copy each for six groups of students.
- Give each student a copy of Appendices 11 and 12.
- If there is polio in your area, give each student a copy of Appendix 13.

SECTION 1: Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

POSTER 1:
(Prepared poster)

1. When should you use antibiotics to treat patients who have diarrhoea?
2. What are the causes of diarrhoea?
3. How can you tell if a patient is dehydrated?
4. When should patients with diarrhoea be sent to hospital?

SECTION 2: Diagnosis and management

A patient with diarrhoea passes loose or watery faeces three or more times in a day. Diarrhoea is dangerous because loose or watery faeces contain a lot of water. If a patient loses a lot of water, he may become dehydrated and may die. Diarrhoea is most common in children aged between 6 months and 18 months. Diarrhoea often kills these children.

Causes of diarrhoea

Tell the students that today they will learn how to prevent and treat diarrhoea.

POSTER 2:
(Student answer poster)

Causes of diarrhoea

Ask the students what causes diarrhoea.

Answer

Bad hygiene - bad hygiene allows the infections which cause **gastroenteritis** to pass from one person to another person. Gastroenteritis is an infection with bacteria, viruses or parasites which causes diarrhoea.

Answer

Bacteria - some **bacteria grow in food** that has been left for a long time before eating. These bacteria cause **food poisoning.** Food poisoning often causes vomiting and/or diarrhoea. If food has been left for 8 hours or more, cook it again. Boil the food for at least 5 minutes.

Answer

Malnutrition makes a patient more likely to get infections that cause diarrhoea.

Answer

Any illness which causes a **fever**, for example malaria, pneumonia, tonsillitis, measles and otitis media can cause diarrhoea.

Answer

Any **severe illness**, for example appendicitis and intussusception, can cause diarrhoea. Make sure that patients with diarrhoea do not have peritonitis.

Answer

Giardia. A parasite bowel infestation caused by drinking contaminated water tends to cause long standing relatively mild symptoms with a slow onset. Consider it with patients who have had symptoms for more than 2 weeks especially if they experience bloating and produce more wind (farting).

Taking a history and examination

Give each student a copy of Appendix 10. Give a copy of the demonstration to the student who will help you with the demonstration. Ask him to play the part of a student. You will play the student's trainer. Read to the class slowly and in a loud voice. Ask the class to watch and listen to the demonstration.

POSTER 3:
(Prepared poster)

Four questions for patients with diarrhoea

Copy the four questions from the boxes on p. 87 onto Poster 3.

Demonstration

Student: *What should 1 do when 1 see a patient with diarrhoea?*

Trainer: Appendix 10 will help you treat patients with diarrhoea. Start at the top left. The treatment for diarrhoea depends on the answers to four questions (as well as knowing their HIV status and what medication they have been taking) and the examination of the patient. First, tell me why each question is useful.

The first question is: **How many times have you passed faeces this morning?**

Student: *If a patient passes loose or watery faeces three times or more in a day, he has diarrhoea. If a patient has passed very watery faeces six times or more today, he may have cholera.*

Trainer: Excellent.

The second question is: **Do you have a fever?**

Student: *The patient may need treatment for the problem which causes the fever. Malaria, pneumonia, tonsillitis, measles and otitis media cause a fever and sometimes cause diarrhoea.*

Trainer: Good.

The third question is: **Is there any blood in your faeces?**

Student: *If there is blood in the diarrhoea, the patient usually has dysentery.*

Trainer: Correct.

The fourth question is: **For how long have you had diarrhoea?**

Student: *If the patient has had diarrhoea for* 2 *weeks, he has persistent diarrhoea.*

Trainer: Excellent. Then, examine the patient. Next, make sure that he does not have a general danger sign .
If the patient has a general danger sign, treat this first.
If the patient has blood in his faeces or pain in his abdomen, examine his abdomen. If there is no guarding or rebound tenderness, the patient does not have an abdominal problem. Treat him for dysentery.
How can we tell if a patient is dehydrated?

Student: *If a patient is dehydrated, his mouth is dry. If we pinch a fold of the patient's skin and let go, the skin goes back slowly. If the patient is very dehydrated, the skin takes more than 2 seconds to become flat again.*

Trainer: Good. Children with severe malnutrition also have very loose skin on the abdomen. Pinch a fold of skin over a bone. If you think a patient may be dehydrated or have severe malnutrition, ask what colour his urine is. If the patient is dehydrated, the urine will be dark yellow and he will have passed urine only one time or no times this morning.

Treatment

Trainer: Patients with diarrhoea need treatment to prevent, or to treat, dehydration and to prevent malnutrition. Patients often get malnutrition after they have had diarrhoea.

Immediate treatment after examination

Trainer: Give a patient with dehydration oral rehydration solution. Give 20 ml of the solution for each kilogram of body weight every hour. Give the solution in small amounts.
Can you tell me for how long we should treat patients?

Student: *Treat patients with severe dehydration for* 6 *hours using a nasogastric tube.*
Treat patients with some dehydration for 4 *hours using a cup and spoon.*

Trainer: Very good. For example: A 10-kg child will need 200ml of the solution in each hour. If the child has some dehydration, give a total of 800 ml in 4 hours. If the child has severe dehydration, give a total of 1200 ml in 6 hours.
Treat patients with a *general danger sign* for a very severe febrile disease. Also give a patient who has a general danger sign and diarrhoea 5 ml of oral rehydration solution every minute on the way to the hospital. Use a cup and spoon or a nasogastric tube with a syringe.
If a patient has had diarrhoea six times or more this morning, he may have *cholera.*
• Give oral rehydration solution for 4 to 6 hours. If the patient is no better, send them to a cholera centre.
• Give the first-line antibiotic for cholera 4 to 6 hours after starting treatment with oral rehydration solution. Give antibiotics for 3 days.
• If the patient has bloody diarrhoea, but no abdominal problem, he usually has dysentery:
• If the patient is a child, treat with co-trimoxazole.
• If the patient is an adult, he does not need medicine. However, if he is no better 5 days after the dysentery started, treat him with co-trimoxazole.
• Treat all patients with malnutrition and dysentery with co-trimoxazole.

POSTER 4:
(Prepared poster)

Co-trimoxazole treatment for dysentery

Copy Table 1 onto Poster 4.

TABLE 1 Co-trimoxazole treatment for dysentery

Age	Dose of co-trimoxazole
Up to 6 months	¼ tablet or 2.5 ml liquid two times a day for 5 days
7 months to 5 years	½ tablet or 5 ml liquid two times a day for 5 days
6 years to 12 years	1 tablet two times a day for 5 days
More than 12 years	2 tablets two times a day for 5 days

Note: 1 tablet = 480mg = 10 ml liquid

Continue with the demonstration:

Student: *Can I treat all patients with diarrhoea with antibiotics?*

Trainer: No. Only use antibiotics to treat diarrhoea if the patient has dysentery or cholera.

Student: How should we treat a patient with persistent diarrhoea?

Trainer: If the patient is not dehydrated, teach him about home treatment, treat him for Giardia with metronidazole (Adult dose: 400mg three times a day for 5 days). Ask him to go to the hospital if he has not started to improve within 2 weeks. If a patient with persistent diarrhoea is dehydrated, treat the dehydration first, then send him to hospital immediately.

Treatment after 4-6 hours

Student: *What do you do after giving the patient oral rehydration solution for* 4 *or 6 hours?*

Trainer: After treatment, pinch the skin again:

- If the patient still has severe dehydration, send him to hospital for intravenous fluids. Give 5 ml of oral rehydration solution each minute on the way to hospital.
- If the patient still has some dehydration, continue to give oral rehydration solution for another 4 hours.

Student: *How do we treat patients after* 4 *or* 6 *hours of treatment who do not have dehydration any more?*

Trainer: We give these patients oral rehydration salts to make up a solution at home. Teach the patient or the patient's mother about home treatment of diarrhoea.

Home treatment

Ask the students how to treat diarrhoea at home. Look for the following answers.

Answer Give the patient as much extra fluid as he will drink. Tell the mother that if the child vomits, this is usually only one-quarter of the fluid that he has drunk, so that most of the extra fluid is still inside him. If the child is breastfeeding, breastfeed him frequently and for longer than usual at each feed. Give clean water between breastfeeds. The patient's urine should become clear instead of dark and yellow.

Answer Feed the patient five times a day or more. Continue doing this until the patient is well again and for one extra week after he gets well. This is especially important to prevent malnutrition if the patient is a young child.

Answer Tell the patient to return to the health centre if the patient:

- cannot drink or breastfeed
- becomes more ill
- develops a fever
- has blood in his faeces.

Continue the demonstration tutorial:

POSTER 5:
(Prepared poster)

Extra fluid for diarrhoea

Copy Table 2 onto Poster 5.

TABLE 2 Extra fluid for diarrhoea

Age	Amount of extra fluid to give each time a patient passes loose faeces
Up to 2 years	100 ml (1/2 cup)
2 years to 9 years	200ml (l cup)
10 years and more	400 ml (2 cups)

Trainer: Teach mothers that children with diarrhoea need more fluid than they normally drink each day. Give extra fluid each time the patient passes loose faeces. Show the mother how much extra fluid to give. What extra fluid should she give if the patient was dehydrated when he arrived at the health centre?

Student: *At first we give oral rehydration solution as extra fluid between feeds.*

Trainer: Excellent. Each standard packet of oral rehydration salts will make 1 litre (1000 ml) of solution. Give two standard packets of oral rehydration salts to children less than 10 years old. Give four standard packets of oral rehydration salts to patients aged 10 or more. Show the mother how to make up the solution. Tell her that the solution or other extra fluids may make diarrhoea worse, but these fluids will prevent dehydration.

Use the instructions in Appendix 11 to teach students how to put in a nasogastric tube. Give the students a copy of Appendix 12.

Refreshment break.

Demonstration

What to *teach village leaders*
For this demonstration, the volunteer student will teach the class.

How to prevent diarrhoea

POSTER 6:
(Student answer poster)

Divide Poster 6 into four areas and write the four headings: '1. How to feed children', '2. Food hygiene', '3. Pit latrines' and '4. Treatment'. The volunteer student will use Poster 6 during this demonstration.

Tell your students:

Imagine you are going to talk to the leaders in your village about preventing diarrhoea. Village leaders are important people. It may be difficult to tell them what to do. Let the village leaders tell you how to prevent people getting ill with diarrhoea.

Now ask the volunteer student to teach the class. She will play the role of the teacher. The other students will play village leaders.

The student teacher says to the village leaders:

Many of us know some of the ways to prevent our children from getting ill or dying with diarrhoea. It is important that we all know *all* the ways to prevent diarrhoea. I would like you to tell me your ideas. Think about your ideas in each of these four areas. I will write your ideas on Poster 6 under the four areas as you call them out.

Ask the student teacher to put up Poster 6.

The student teacher should encourage the village leaders to say the correct answers below. She should also summarise any other useful things that the village leaders say under the correct areas on Poster 6.

Area 1: **How to feed children**

1. **Breastfeed** children **until** they reach **2 years of age**.
2. **Never use a bottle** to feed children. Bottles are very difficult to clean. The bacteria in bottles cause diarrhoea. **Use a cup and a spoon** to give fluids.
3. Feed children **less than 6 months** with breastmilk only.
4. After 6 months of age, give children other soft foods in addition to breastmilk. **After 9 months of age** give a **mixed diet** at least **four times a day** in addition to breastmilk.

Area 2: **Food hygiene**

I. Drinking water should be from a **protected water source**. Tap water is normally safe. Water from a well is normally safe if the well has been built correctly. Boil water from any other source for 20 minutes to make it safe to drink.
2. **Wash fruit and vegetables** before eating.
3. **Wash** your **hands** before preparing or eating food.
4. Cover food, faeces and rubbish to keep flies away.

Area 3: **Pit latrines**

1. Go to the toilet or put **all faeces in** a **latrine**. If there is no latrine, use a small hole away from the house. Cover faeces with some soil every day.
2. **Wash** your **hands** after passing faeces. Wash young children after they have passed faeces.
3. If a **child** passes **faeces** near the house put the faeces **in** the **latrine** or hole.

Area 4: **Treatment for diarrhoea**

1. Drink plenty of fluids. Any type of fluid (except alcohol) will help. Sugar and salt solution or coconut water with a pinch of salt arc better than normal drinks. Give **as much fluid** as the person **will take** between feeds.
2. **Feed at least five times a day**.
3. **Bring** the patient **to** the **health centre if**:
   - he is **not able to drink** or breastfeed
   - he becomes **more unwell**
   - he develops a **fever**
   - there is **blood in his faeces**.

Ask students to copy Poster 6 when it is finished.

Polio

Good food hygiene and using pit latrines will also prevent polio.

If polio is a problem in your area, teach Appendix 13 'Polio'.

SECTION 3: When to refer patients to hospital

You should send a patient to hospital if:

1. She has a general danger sign.
2. After 4-6 hours of treatment. the skin still takes more than 2 seconds to become flat again.
3. She has passed very watery faeces six times or more this morning. (Send to a cholera treatment centre.)
4. She is not improving after treatment for Giardia within 2 weeks.
5. She has peritonitis. (Send to a hospital that can do operations.)

SECTION 4: Practical

Tell the students that we will do three role plays to help them diagnose and treat patients with diarrhoea. Divide the class into six groups of at least three students. Each group does each of the three role plays. In each role play, one student will play the doctor, one student will play the patient or the patient's mother, and a third student will be the observer.

Tell your students:

• Give the patient (or the patient's mother) a piece of paper.

This piece of paper tells the patient what symptoms he has. If the doctor asks the correct questions, the patient will tell the doctor about his symptoms.

• Give the doctor a piece of paper.

This piece of paper tells the doctor what she will find when she examines the patient. The doctor's job is to ask the four important questions for diarrhoea. The doctor must make sure that the patient does not have a general danger sign. The doctor decides what treatment to give the patient.

• Give the observer a piece of paper.

This piece of paper tells the observer: (1) the diagnosis, (2) the treatment, (3) advice for the patient, and (4) whether the patient should be sent to hospital. After each role play, the observer should tell the group what the doctor did correctly and what he could have done better.

Role plays

- Tell the groups that they have 40 minutes to do all three role plays. Different students should play each role in each role play.
- Give each group the three role plays and help the students to use Appendix 10. Below is the information for the role plays.

ROLE PLAY 1:

You are the **mother** of the patient, a 6-month-old child. The child has a fever and he has had diarrhoea for 2 days. He passed faeces two times this morning. He does not have blood in his faeces. He vomited one time today. He has not had a convulsion. He passed clear urine two times this morning.

You are the **doctor.** You find that the patient's mouth is not dry. A pinch of skin over his hip bone goes back quickly. The child is breastfeeding. His growth chart shows that he weighs 6.5 kg. The growth line is flat but it went up last month.

You are the **observer**. The child has gastroenteritis and possible malaria. Give the child the first-line treatment for malaria. Teach the mother home treatment for diarrhoea.

ROLE PLAY 2:

You are the **mother** of a patient, an 18-month-old child. The child does not have a fever. He has had diarrhoea for 4 days. He has passed very watery faeces four times this morning. He does not have blood in his faeces. He has vomited one time today. He has not passed urine this morning. He breastfeeds slowly.

You are the **doctor**. You find that the patient's mouth is dry. A pinch of skin over his hip bone takes more than 2 seconds to go flat. He is not anaemic and has no fever. His growth chart shows that he now weighs *8.5* kg and he weighed 9 kg one month ago.

You are the **observer.** The child has gastroenteritis and severe dehydration. Put in a nasogastric tube. Give oral rehydration solution in small amounts. Give 170 ml (20 ml x 8.5 kg) of this solution every hour for 6 hours. This is a total of 1020 ml (170 x 6). Next, pinch his skin again. If the skin goes back quickly, give home treatment if the child is able to drink. If the skin stilI takes less than 2 seconds to become flat again, continue to give oral rehydration solution in small amounts. Give him 170 ml of solution every hour for 4 hours. This is a total of 680 ml (170 x 4).

ROLE PLAY 3:

You are the **mother** of a 5-year-old child. The child has a fever. He has had diarrhoea for 2 days. He passed loose faeces three times this morning. He does not have blood in his faeces. He has vomited four times today. He is not able to breastfeed. He has not had a convulsion.

You are the **doctor**. You find that the patient's mouth is dry. A pinch of skin over his hip bone takes less than 2 seconds to go flat. The child has no interest in anything. He is not anaemic. His growth chart shows that he weighs 13 kg.

You are the **observer.** The child has a general danger sign and a very severe febrile disease. Clear his mouth. Lay him on his side. Treat fever with tepid sponging. Give him an intramuscular

injection of artesunate unless you can do a malaria test. Give him an intramuscular injection of ceftriaxone, chloramphenicol, benzylpenicillin or procaine penicillin fortified. On the way to the hospital, give oral rehydration solution, 5 ml each minute through a nasogastric tube.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. When should you use antibiotics to treat patients who have diarrhoea?

Treat all children with dysentery with co-trimoxazole.
Treat all patients who have both malnutrition and dysentery with co-trimoxazole.
Treat very ill adults with co-trimoxazole if they have dysentery.
Treat adults who are no better 5 days after the dysentery started with co-trimoxazole.
Antibiotics are also used to treat cholera.
Metronidazole is used to treat suspected giardia, if diarrhoea has gone on for 2 weeks or more.

2. What are the causes of diarrhoea?

- **Gastroenteritis.** Gastroenteritis is caused by bad hygiene. Good hygiene means:
  - wash hands before preparing or eating food
  - use a pit latrine when passing faeces
  - drink water from a protected water source
  - breastfeed. never bottle-feed children
  - wash fruit and vegetables
- **Food poisoning**
- **Malnutrition**
- **Any illness which causes a fever**
  - malaria
  - tonsillitis
  - measles
  - otitis media
- **Severe illnesses that may cause peritonitis**
  - appendicitis
  - intussusception

3. How can you tell if a patient is dehydrated?

The patient's mouth is dry.
Pinch a fold of his skin, over a bone, and let it go. The skin goes back slowly.

4. When should patients with diarrhoea be sent to hospital?

Patients with a general danger sign.
If, after treating a patient for 4-6 hours, the skin takes more than 2 seconds to become flat again.
The patient has passed very watery faeces six times or more this morning. (Send to a cholera treatment centre.)
If a patient is no better 2 weeks after treatment for giardia.
If a patient has peritonitis. (Send to a hospital that can do operations.)

Lesson 6 Women's health problems

BEFORE THE LESSON

- There are two posters in this lesson. (See p. 4 for information on how to use the posters.)
- Prepared posters: 1, 2
- Make a copy for each student of Appendixes 14 and 15.
- There are nine demonstrations in section 2. Ask nine students to help you. Prepare two copies of each role play. Give one copy to a student. The other copy is for you (or use this book). Practise before the lesson.
- Decide if you need to teach students how to measure haemoglobin (this is not covered in this manual).
- Prepare two examples of obstetric problems which you will present to students in section 3. Use Appendix 15.
- Prepare three large signs for the practical in section 4. Prepare one page of paper with a symptom written on it for each student. You need sticky tape.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. Which medicines are safe to give to a pregnant woman?
2. Which medicines are not safe to give to a woman who is breastfeeding?
3. How do you treat a pregnant woman who is having a convulsion?
4. How do you treat anaemia in the last month of pregnancy?

SECTION 2: Diagnosis and management

Discussion

In some countries, it may be difficult for a male health worker to treat a woman patient who has gynaecological problems (problems with her private parts). Divide the students into three groups. Ask the groups to discuss how this difficulty can be solved in your country. Next, ask each group to present their ideas.

Gynaecology problems

Women who are not pregnant may have problems with their private parts. These are called gynaecology problems. Pain in the lower abdomen or an unusual discharge from the private parts are usually gynaecology problems. Take a history. You then need to ask women with these problems five questions (see Poster 2).

POSTER 2:
(Prepared poster)

Questions for women with gynaecology problems

1. For how many days do you bleed each month? Does blood make your pad or cloth very wet in less than one hour?
2. Do you have bad pain every month when your period comes?
3. Is it painful when you have sexual intercourse? Do you pass blood after sexual intercourse when you do not have a period?
4. Do you have an unusual or smelly discharge from your private parts?
5. Was your last normal period more than 6 weeks ago?

Tell the students that we will now discuss the answers to these questions and what treatment to give. Give each student a copy of Appendix 14.

1. If a woman bleeds for more than 8 days every month or if a pad or cloth becomes very wet in less than one hour, she has **heavy periods**. Heavy periods may cause anaemia. Check for anaemia and treat if present.
Treatment:
- If the woman plans to get pregnant, give her ibuprofen 400 mg three times a day (after food) *only* on the days that she has pain or bleeding.
- If the woman does not plan to get pregnant, send her to the Maternal and Child Health or family planning clinic. The clinic may give her the combined oral contraceptive pill. Taking the pill will stop her from bleeding heavily. For most women it is safe to take the combined oral contraceptive pill for many years. Women should not take the pill if they are older than 45 years or if they smoke and are older than 40 years.

2. **Pain every month** that stops her from working.
Treatment:
- If the woman plans to get pregnant, give her ibuprofen 400 mg three times a day (after food) *only* on the days that she has pain or bleeding.

- If the woman does not plan to get pregnant, send her to the Maternal and Child Health or family planning clinic. The combined oral contraceptive pill will reduce period pain.

3. **Pain or blood during sexual intercourse**.

Treatment:

- If the woman is less than 45 years old, she may have a sexually transmitted disease. Send her and her partner to the sexually transmitted disease clinic.
- If she is more than 45 years old, send her to the gynaecology clinic.

4. Unusual or smelly **discharge from** her **private parts**.

Treatment:

- If the woman is less than 45 years old, she may have a sexually transmitted disease. Send her and her partner to the sexually transmitted disease clinic.
- If she is more than 45 years old, send her to the gynaecology clinic.

5. **Last** normal **period** was **more than 6 weeks ago**.

Treatment:

- If she is less than 45 years old and has pain in her lower abdomen, she may have an ectopic pregnancy (see later in this lesson). Send her to a hospital where operations are done.
- If she is more than 45 years old, her last period was more than 1 year ago and she is now bleeding again, send her to the gynaecology clinic.

Obstetric problems

Obstetrics is to do with the problems of the private parts of women who are pregnant.

Demonstrations

Give each student a copy of Appendix 15. You will do the following nine demonstrations with different students. The demonstrations show different obstetric problems.

Appendix 15 summarises the main diagnostic and treatment points of these demonstrations. Students will learn how to use Appendix 15 in section 3 of the lesson.

DEMONSTRATION 1: *Vomiting in early pregnancy*

Student: *An 18-year-old woman comes to see you. Her last period was 6 weeks ago. She has vomited two times each day for the past 2 weeks. She does not have any pain when she passes urine. She passes urine more often than usual. Can you help her?*

Trainer: This woman may be pregnant. Vomiting in early pregnancy is a very common problem. If a woman vomits severely in pregnancy we must look for a urinary tract infection. Send her to have her urine examined. If she has a urinary tract infection, give her amoxicillin 500 mg three times a day tor 5 days.

Student: *Are there any other problems that cause severe vomiting in pregnancy?*

Trainer: Twin pregnancy may cause severe vomiting.

Student: *If the woman does not have a urinary tract infection, what treatment can we give her?*

Trainer: Send her to hospital if she is vomiting severely. Advise her to eat small amounts of food and drink every hour. Tell the woman that this problem will usually disappear before 14 weeks after the start of her last period. Do not give her any medicine. Medicines to stop vomiting can damage the unborn baby.

DEMONSTRATION 2: *Ectopic pregnancy*

Student: *A 19-year-old woman has had dizziness and severe pain in her lower abdomen for 6 hours. What questions would you ask her? How would you treat her?*

Trainer: Was your last normal period more than 6 weeks ago? If she says yes, she may be pregnant. If she has severe pain in her lower abdomen, she may have an ectopic pregnancy. Send her immediately to a hospital that can do operations. Give her oral rehydration solution, one teaspoonful every minute.

An ectopic pregnancy means that the unborn baby is not inside the uterus. This is very dangerous because ectopic pregnancy may cause bleeding inside the abdomen, peritonitis and shock. A woman with shock may feel dizzy, anxious and sweaty. She may lose consciousness. An operation may save the woman's life.

DEMONSTRATION 3: *Antepartum haemorrhage (APH)*

Student: *A woman who is 7 months pregnant has passed a small amount of blood from her private parts. She does not have pain in her abdomen. She does not have a fever. What would you do for her?*

Trainer: This woman has had an antepartum (before birth) haemorrhage. Send her to hospital immediately.

Student: *What would you do if the woman started to bleed heavily?*

Trainer: Give her oral rehydration solution to drink. She should drink one teaspoonful every minute on her way to hospital.

Student: *Another woman who is less than 6 months pregnant passes blood from her private parts. What would you do?*

Trainer: This is either a threatened abortion or an abortion. An abortion is when the unborn baby dies.

- If the woman has a fever, give her an intramuscular injection of 2 million ID of benzylpenicillin. Next, send her to hospital.
- If the woman passes more than a small amount of blood, send her to hospital.
- If the woman does not have a fever and only passes a small amount of blood, tell her to rest at home. She should not do any heavy work or have sexual intercourse for 2 weeks.

DEMONSTRATION 4: *Anaemia in pregnancy*

(You may want to teach students how to measure haemoglobin. This is not covered in this manual.)

Student: *A woman who* is *in the last month of her pregnancy feels weak and tired. She* is *pale. How would you treat her?*

Trainer: Measure the woman's haemoglobin (Hb) in the health centre or hospital. Examine the woman's faeces for hookworm eggs.

1.If her haemoglobin is less than 7 g/dl give her the first-line malaria treatment in malaria areas. Next. send her to hospital for a blood transfusion.

2.If her haemoglobin is between 7g/dl and 10g/dl:

- Give her the first-line malaria treatment if there is malaria in your area and she has a fever (test for malaria is you can).
- Give her mebendazole if there are many hookworm eggs in the faeces. Do not give mebendazole in the first 3 months of pregnancy.
- Give her ferrous sulphate 200 mg (with or without folic acid 0.25 mg) three times a day for at least 3 months.

Student: *Is it possible to stop pregnant women from becoming anaemic?*

Trainer: Yes. Teach women to eat a mixed diet with foods that contain iron, folic acid and vitamin C. Advise women to wear shoes. Give pregnant women 200 mg ferrous sulphate and 0.4 rug of folic acid (or one tablet of ferrous sulphate 200 mg with folic acid 0.25 mg) every day for the whole of the pregnancy in areas where iron deficiency is common.

DEMONSTRATION 5: *Pre-eclampsia and eclampsia*

Student: *A woman who* is 8 *months pregnant has a headache. She does not have a fever. Her diastolic blood pressure* is *100 mmHg. She may have pre-eclampsia. What should you do for her?*

Trainer: Send any pregnant woman with a diastolic blood pressure of 100 mmHg or more to hospital immediately. If a pregnant woman's blood pressure goes very high she may have a convulsion. This is called eclampsia. Eclampsia may kill her and her unborn baby.

Student: *What causes pre-eclampsia and eclampsia')*

Trainer: The cause is not known. Pre-eclampsia and eclampsia damage the kidneys, the blood vessels and the brain. The kidney damage causes women to pass protein in their urine. The blood vessel damage causes women to have high blood pressure. The brain damage causes convulsions and death.

Student: *How can we stop eclampsia from killing women?*

Trainer: The Maternal and Child Health worker should measure a pregnant woman's blood pressure every second week in the last 3 months of pregnancy.

- If the woman's diastolic blood pressure is 90 mmHg or more, examine the blood pressure again after one week.
- If the blood pressure is 95 mmHg or more, send the woman to hospital this week.
- If the blood pressure is 100 mmHg or more, send the woman to hospital today.

Student: *What should we do if a pregnant woman has a convulsion?*

Trainer:
- Give her 10 mg diazepam rectally.
- Next, put her onto her side so that if she vomits she will not breathe in the vomit.
- Give her magnesium sulphate 5 g intramuscularly into each leg.
- Send her to a hospital where operations are done.
- If she is still having a convulsion after 5 minutes, give her 10 mg diazepam rectally again.
- Give a further 5 g of magnesium sulphate after 4 hours, 2.5 g into each leg.

DEMONSTRATION 6: *Prolapsed cord*

Student: *A woman who* is *in the last month of her pregnancy tells you that a large amount of water passed from her private parts today. The baby's umbilical cord* is *hanging out of the woman's private parts. What will you do?*

Trainer: What you do depends on whether the cord has a pulse:
- If the umbilical cord does not have a pulse, the baby is already dead. The woman may be able to give birth to the dead baby at home. If the baby has not been born after 12 hours send her to hospital.
- If the umbilical cord has a pulse and the cervix is fully open (10 cm wide), allow the baby to be born immediately.
- If the umbilical cord has a pulse and the cervix is not fully open, ask the woman to kneel down and to bend forward. Her bottom should be higher than her head. Gently put the umbilical cord back into the woman's private parts. Gently push the baby away from the cord. Next, send the woman to a hospital where operations are done immediately. The woman will have to be carried very carefully.

Refreshment break

DEMONSTRATION 7: *Ruptured uterus*

Student: *A 30-year-old woman who has already had seven children has been in labour for* 24 *hours. She had severe, constant pain in her abdomen. The woman lost consciousness 10 minutes ago.*

Trainer: The woman's uterus may have ruptured. You may be able to feel parts of the baby's body very easily in the woman's abdomen. Her pulse will be fast and weak. Her blood pressure will be low. The woman may pass blood from her private parts.

Student: *What would you do for her?*

Trainer: Send her immediately to a hospital where operations are done. If possible, give her intravenous fluids. (If the woman is conscious, give her oral rehydration solution to drink, 5 ml every minute.)

She must go to hospital urgently. There is a high chance that she will die.

Student: *How can we prevent the uterus from rupturing?*

Trainer: Send the patient to a hospital where operations are done:
•If a woman's labour pain has been happening regularly for more than one day and one night.
•If a woman has been pushing for more than 2 hours with no progress.

DEMONSTRATION 8: *Postpartum haemorrhage (PPH)*

Student: *A 35-year-old woman gave birth to her seventh child half an hour ago. The woman has a large amount of blood coming from her private parts. She feels dizzy.*

Trainer: This is called postpartum haemorrhage.

- Tell the woman to pass urine immediately where she is.
- Tell her to breastfeed the child immediately. If the child is dead, ask her to squeeze her nipples between her fingers.
- Give her an injection of 0.5 mg ergometrine into a vein or intramuscularly.
- Give her oral rehydration solution to drink, 5 ml every minute.
- If the placenta does not come out, send the woman to a hospital
- where operations are done.

Show the students what you mean in the next point, pretending to put your hands on the woman's uterus. Ask them also to copy your actions.

- If the bleeding has not stopped and the placenta has come out feel the uterus in the abdomen. If the uterus is soft, put your right hand into her private parts and squeeze the uterus with your left hand. If the uterus stays soft continue to squeeze until the woman sees a women's doctor. If the uterus is hard, put a clean cloth into her vagina to stop blood from coming out. Take the woman immediately 10 a hospital where operations are done.

Student: *If a woman starts to bleed heavily from her private parts more than 24 hours after the baby was born, what would you do?*

Trainer: Send the woman to hospital.

DEMONSTRATION 9: *Medicines for pregnant women and women who are breastfeeding*

Student: *A 25-year-old woman who* is 2.5 *months pregnant was treated with the first-line malaria treatment less than* 2 *weeks ago. She has a fever. A blood test shows that she has malaria. What treatment can you safely use?*

Trainer: Co-artem. Quinine. Fansidar is used in the first 3 months of pregnancy. Fansidar is also used to prevent malaria in the 2nd and 3rd trimesters.

Student: *What other medicines are safe to use for pregnant women?*

Trainer: Paracetamol, aluminium hydroxide, phenoxymethylpenicillin, benzylpenicillin, amoxicillin. ampicillin, ferrous sulphate, folic acid, fansidar oral rehydration salts solution, and most medicines which are put on the skin.

Student: *What medicines are not safe to give to women who are breastfeeding or pregnant?*

Trainer: Chloramphenicol and the combined oral contraceptive pill.

SECTION 3: When to refer patients to hospital

Teach student how to use Appendix 15. Give the students two examples of obstetric problems and show them how to use the appendix for diagnosis and treatment.

SECTION 4: Practical

This activity will help you to learn the symptoms of sexually transmitted diseases and urinary tract infections.

Give each student a piece of paper with a number and one of the following nine symptoms written on it. For example, if you have 27 students, you need three pieces of paper with each symptom.

1. Unusual discharge from the private parts.
2. Pain when having sexual intercourse.
3. Ulcers near the private parts.
4. Pain on passing urine.
5. Passes urine more often than usual.
6. Pain in the lower abdomen.
7. Fever.
8. The woman's partner has pain when he passes urine.
9. The woman's partner has a discharge from his private parts.

Activity Ask each student to stick the paper on their chest. Put a large sign 'Sexually transmitted disease' on one wall. On the opposite wall, put a sign 'Urinary tract infection'. On a wall between these two walls, put a sign 'Sexually transmitted disease or Urinary tract infection' .

Explain that the symptom each student has written on the paper on their chest may be caused by either a sexually transmitted disease or a urinary tract infection or by both.

Tell the students:

• If you think that your symptom can *only* be caused by a sexually transmitted disease, stand by that sign.

Answer Students with numbers 1, 2, 3, 8 and 9 should stand next to the 'Sexually transmitted disease' sign.

• If you think that your symptom can only be caused by a urinary tract infection, stand by that sign.

Answer No students stand next to the 'Urinary tract infection' sign.

• If you think that your symptom can be caused by *either* a sexually transmitted disease or a urinary tract infection, stand by the third sign.

Answer Students with numbers 4, 5, 6 and 7 stand next to the 'Sexually transmitted disease or Urinary tract infection' sign.

Treatment:

• If a patient has symptom 1, 2, 3, 8 or 9 (say the symptoms) send her and her partner to the sexually transmitted disease clinic.

• If a patient has symptom 4 or 5 (say the symptoms), send her to have her urine examined. She may have a urinary tract infection.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1.Which medicines are safe to give to a pregnant woman?

Quinine, chloroquine, paracetamol, aluminium hydroxide, phenoxymethylpenicillin, benzylpenicillin, amoxicillin, ampicillin, ferrous sulphate, folic acid, oral rehydration salts solution and most medicines which are put on the skin. Coartem is safe after the first 3 months of pregnancy. Fansidar is used in the first 3 months of pregnancy to treat malaria and also taken to prevent malaria in the 2nd and 3rd trimesters.

2.Which medicines are not safe to give to women who are breastfeeding?

Chloramphenicol

3. How do you treat a pregnant woman who is having a convulsion?

- **Give her diazepam 10mg rectally.**
- **Next, put her onto her side.**
- **Give her magnesium sulphate 5 g intramuscularly *into each* leg.**
- **Send her to a hospital where operations are done.**
- **If she is still having a convulsion after 5 minutes, give her diazepam 10 mg rectally again.**
- **Give a further 5 g of magnesium sulphate after 4 hours, 2.5 g into each leg.**

4. How do you treat anaemia in the last month of pregnancy?

Measure the woman's haemoglobin. Check to see if she has a fever. Look for hookworm in the woman's faeces.

- **If her haemoglobin is less than 7 g/dl give her the first line malaria treatment if there is malaria in the area, and send her to hospital for a blood transfusion.**
- **If there is malaria in the area, give a patient with fever the first-line malaria treatment.**
- **If there are a large number of hookworm eggs in the faeces, give mebendazole**
- **If her haemoglobin is 7 g/dl or more and below 10 g/dl give her ferrous sulphate 200 mg three times a day for at least 3 months.**

Lesson 8 Abdominal problems

BEFORE THE LESSON

- There are nine posters in this lesson. (See p. 4 for information on how to use the posters.)
  Prepared posters: 1, 4, 6, 9
  Student answer posters: 2, 3, 7, 8
  Summary poster: 5
- For Sections 2 and 3, you need a long sock and two balls of different sizes. Cut the end off the sock.
- You need a table or a bed at the front of the class for the demonstration 'How to examine the abdomen' in Section 2. Ask a male student to help you with the demonstration and practise before the lesson.
- Ask a male student to volunteer to allow you to draw the numbers of a clock on his abdomen.
- Prepare a copy of Pictures 15 and 16 for each student.
- Prepare a blank copy of Table 3, 'Features of abdominal problems', for each student.
- Copy the headings only and leave the boxes empty.
- If diabetes is a problem in your area, make a copy of Appendix 16 for each student.
- If your students can do urine microscopy in their health centres, make a copy of Append ix 17 for each student.
- Make a copy of Appendix 18 for each student.
- Prepare two examples of abdominal problems which you will present in section 3. Use Appendix 18.
- For Section 4, you need one copy of the questions for each group of five students.

SECTION 1: Quiz

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

POSTER 1:
(Prepared poster)

1. Name eight causes of peritonitis.
2. A woman has abdominal pain. What questions should you ask her?

SECTION 2: Diagnosis and management

Abdominal pain

Almost all abdominal problems cause abdominal pain. To diagnose the cause of abdominal pain, we need to know what type of pain

each abdominal problem causes, and where each abdominal problem causes pain.

There are two main types of abdominal pain:

- intermittent abdominal pain
- constant abdominal pain.

Intermittent abdominal pain

Abdominal pain is intermittent if it becomes bad for a short time (several seconds or a minute) and then gets better. The pain increases and decreases. Intermittent pain can continue for several hours or a few days. Patients with intermittent abdominal pain find it difficult to sit still. Intermittent pain may be caused by irritation or blockage of the bowel inside the abdomen. It may also be caused by problems in the ureters.

You now use the sock and the two balls to demonstrate how a blocked bowel can cause intermittent pain. Put the small ball inside the sock. Tell the students that this long sock is like the bowel. The bowel pushes food or faeces along. Normally food or faeces is soft and small and the bowel can easily push it. This small ball is like a small piece of food or faeces inside the bowel. Press on the ball and show the students how easy it is to push the ball from one end of the sock to the other. Explain that in the same way, it is easy for the bowel to push soft, small food or faeces. This does not cause pain.
Put the large ball inside the sock. Tell the students that it is difficult for the bowel to push through faeces that are hard and large. The large ball is like a large piece of faeces inside the bowel. Press on the ball and show the students that it is very difficult to push the ball from one end of the sock to the other. The bowel tries to push intermittently and this causes intermittent pain.

Next, you will teach the students where different abdominal problems cause pain. Ask the student who volunteered to have the numbers of the clock drawn on his abdomen to take off his shirt and to show the class where you have put each number (Picture 14).

POSTER 2:
(Student answer poster)

Intermittent abdominal pain

Write the *headings and the left column only* of Table 1 (p. 106) on Poster 2. Ask the students where each abdominal problem causes pain.

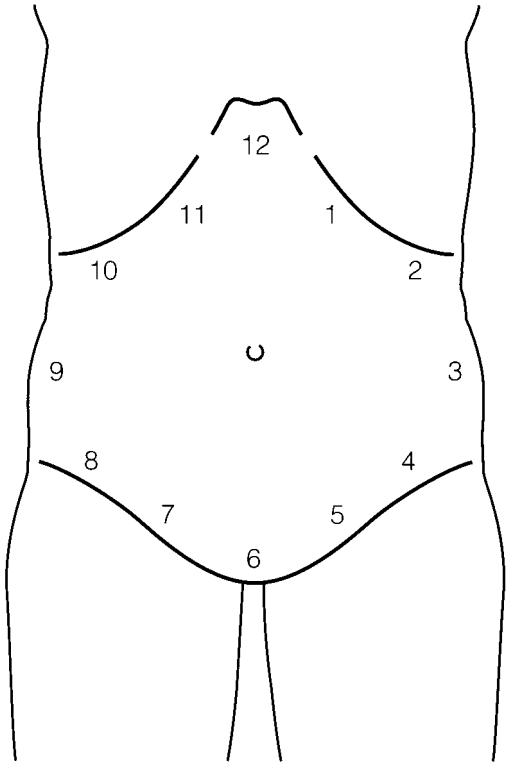
Constant abdominal pain

Other abdominal problems usually cause constant abdominal pain. Constant pain is pain that does not go away. Patients with constant abdominal pain usually stay still.

POSTER 3:
(Student answer poster)

Constant abdominal pain

Write the *headings and the left column only* of Table 2 (p. 107) on Poster 3. Ask the students where each abdominal problem causes pain.
Next, give each student a copy of Pictures 15 and 16.



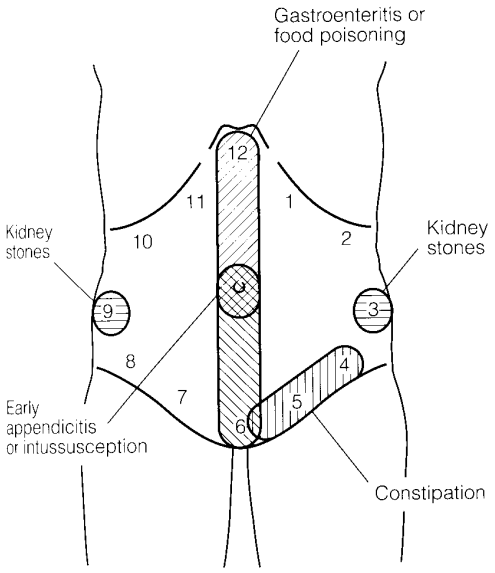
PICTURE 14 *Areas of the abdomen*

TABLE 1 Intermittent abdominal pain

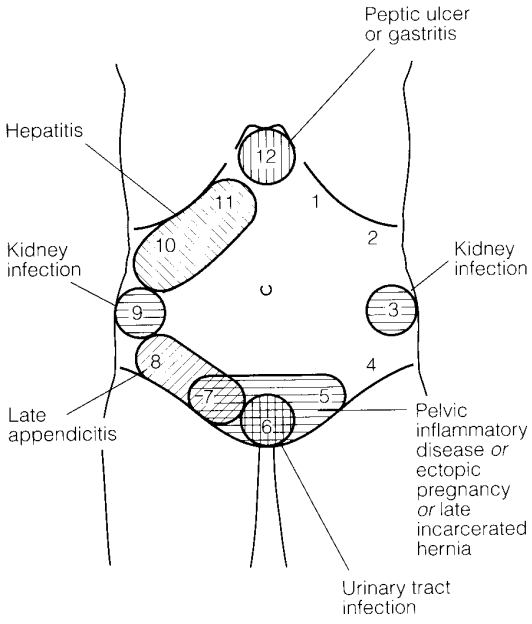
Abdominal problems that cause intermittent pain	Where the problem causes pain
Labour (the pains that push the baby out when a baby is born)	6 and in the lower back
Early appendicitis	In the centre
Intussusception	In the centre
Volvulus	In the centre or 6
Gastroenteritis and food poisoning	12, in the centre or 6
Constipation	4,5 or 6
Early incarcerated hernia	In the centre or 6
Kidney stones(Stones in a ureter)	3 or 9

TABLE 2 Constant abdominal pain

Abdominal problems that cause constant pain	Where the problem causes pain
Peritonitis	Any area, then all of the abdomen
Late appendicitis	7 and 8 then all of the abdomen
Urinary tract infection	6
Kidney infection (pyelonephritis)	3 or 9
Pelvic inflammatory disease (PID)	5, 6 or 7
Ectopic pregnancy	5, 6 or 7 then all of the abdomen
Peptic ulcer or gastritis	12
Late incarcerated hernia	5, 6 or 7 then all of the abdomen
Typhoid	Any area, then all of the abdomen
Hepatitis	10 or 11



PICTURE 15 *Causes of intermittent abdominal pain*



PICTURE 16 *Causes of constant abdominal pain*

How to take an abdominal history

POSTER 4:
(Prepared poster)

Questions to ask patients with abdominal pain or with blood in the faeces

1. Do you have any problems when you pass urine?
2. Are your bowels all right?
3. If the patient is a woman, ask: When was your last normal menstrual period? Does your pain come at the same time as your period? Is it painful when you have sexual intercourse?
4. Show me where you feel the pain.
5. What type of pain do you feel? Is the pain constant or intermittent?
6. Is there anyone else at home who has the same symptoms that you have?

How to examine the abdomen

After taking a history, examine the abdomen of all patients who have severe abdominal pain or blood in the faeces.

Demonstration

Tell the students that you will show them how to do an examination. Put a bed or table at the front of the class. Ask the student with clock numbers drawn on his abdomen to walk towards you slowly. Tell him to hold his stomach and bend slightly forward as he walks. Ask him to slowly get onto the bed and lie on his back. Examine the volunteer with your right hand.

POSTER 5:
(Summary poster)

How to examine patients with severe abdominal pain

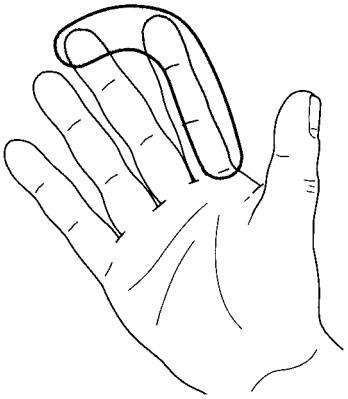
This patient bends forward when he walks, because he has severe abdominal pain. Do the following:

1. Look for **fever** and **anaemia**.
2. Next, ask the patient to look upwards. If the white part of his eye is yellow, the patient has **jaundice**. Only look for jaundice in sunlight.
3. Ask the patient to **lie flat** on his back with his arms by his side.
4. **Remove the clothes** from the **whole abdomen**. Remove clothes from the private parts of a man. *(Do not ask the student volunteer to do this in the class.)*
5. ***Look for scars*** *of previous operations. Look for* ***swellings****.*

(*continued)*

6. **Ask** the patient **if** he has any **pain** at the moment. Ask him **where** the pain is.
7. **Watch** the patient's **face** when you touch his abdomen. The patient's face will show you if the patient is in pain.
8. **Use** the part of your **hand** that is best at feeling to do the examination. Start to examine the abdomen in the places where there is least pain.

Show the students, using your hand as an example, the area of the hand that is shown in the Picture 17.

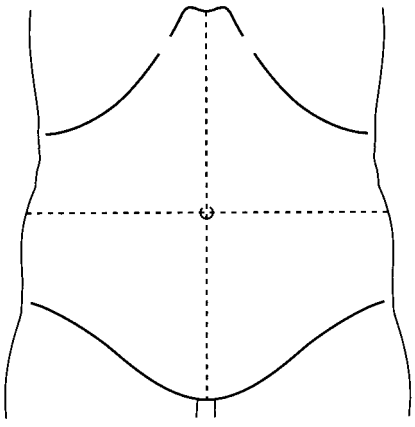


PICTURE 17 *Area of the hand used to examine the abdomen*

POSTER 6:
(Prepared poster)

Four areas of the abdomen

Draw Picture 18 on Poster 6



PICTURE 18 *Four areas of the abdomen*

(*continued)*

9. **Examine** each of the four areas of the **abdomen** (Picture 18). First, press lightly into each of the four areas. Next, press more deeply into each of these areas. Look to see if the pain becomes worse when you press. Feel for any unusual swelling.

10. If the pain becomes worse when you press into the abdomen, look for **guarding** and **rebound tenderness**:

- Press slowly and deeply into the abdomen. If the patient has guarding, the muscles will stop you from examining deeply. Guarding is when the muscles at the front of the abdomen become hard to protect the abdomen from more pain .
- Press slowly and deeply into the abdomen. Suddenly remove your hand. If the patient has rebound tenderness, the pain will suddenly become worse. Watch the patient's face.

11. Look for a **large spleen**. Start at area 7. Press your hand into the abdomen. Move your hand a little towards area 2. Press the abdomen again. Do this again and again. If the has a large spleen, you will feel the hard edge of the spleen before you feel the edge of the ribs.
12. Look for a **large liver**. Start at area 10. Press your hand into the abdomen. Move your hand a little towards area 11. Press the abdomen again. Do this again and again. If the patient has a large liver you will feel the hard edge of the liver before you feel the edge of the ribs. The liver may also be tender if the patient has hepatitis.
13. Look for **painful kidneys**. Put your left hand behind area 3. Place your right hand on area 3. Press your right hand into the abdomen. If the patient has painful kidneys, the pain will increase when you press. Do the same at area 9.

Common and important abdominal problems

Show the students Poster 4 again.

POSTER 7:
(Student answer poster)

Common and important abdominal problems

Draw the *lines and headings only* of Table 3 (pp. 112-113) on Poster 7. Give each of your students one *blank* copy of Table 3. Students should complete their blank Table 3 with the correct answers.

Labour

Labour pains (also called contractions) push the baby out when a woman is giving birth. A woman in labour will often have

intermittent pain in the low back and the lower abdomen (area 6). Labour starts when the pains become regular. There are usually a few minutes between each pain.

Ask the students what to write in each space of the labour row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Peritonitis

Peritonitis is caused by damage or irritation to the inside of the abdomen. The inside of the abdomen is called the peritoneum. Peritonitis causes severe abdominal pain. Patients with peritonitis may vomit, but do not usually have diarrhoea. Patients with peritonitis often die. If a patient has guarding or rebound tenderness, he usually has peritonitis.

Peritonitis is caused by:

- any illness which allows the bacteria or the acid in the bowel to enter the peritoneum
- any illness which causes a lot of blood to collect in the peritoneum.

POSTER 8:
(Student answer poster)

Causes of peritonitis

Ask your students which eight illnesses commonly cause peritonitis.

Answer • **appendicitis**
Answer • **perforated peptic ulcer**
Answer • **intussusception**
Answer • **incarcerated hernia**
Answer • **ectopic pregnancy**
Answer • **pelvic inflammatory disease** (a sexually transmitted disease)
Answer • **typhoid**
Answer • **volvulus**

Send all patients who have guarding or rebound tenderness immediately to a hospital that can operate. An operation may prevent death.

Appendicitis

Appendicitis is caused by unusual bacteria which damage the appendix. If the appendix is damaged, bacteria can enter the peritoneum and cause peritonitis.

Diagnosis: Appendicitis starts with an intermittent pain in the centre of the abdomen. After a few hours or days, the pain becomes constant in area 7 or 8 of the abdomen. The patient will have a slight fever. He will also have guarding and rebound tenderness, starting in areas 7 and 8. Later he will have guarding and rebound tenderness in all areas of the abdomen.

TABLE 3 Common and important abdominal problems

Problem	**Question**						
				Pain			**May cause peritonitis**
	Problems when pass urine?	**Bowels alright?**	**Last period normal?**	**Where?**	**Constant or intermittent?**	**Anyone else?**	
Labour				6 and the low back	Intermittent		
Appendicitis				Centre then 7 and 8	Intermittent then constant		Yes
Peptic ulcer or gastritis				12	Constant		Yes
Intussuscep-tion		No. Blood		Centre	Intermittent then constant		Yes
Incarcerated hernia		No. Less often		Centre or 6 then 5, 6 or 7	Intermittent then constant		Yes
Ectopic pregnancy			No. Last period missed or unusual	5, 6, or 7 then all of the abdomen	Constant		Yes
Pelvic inflammatory disease			Yes. Pain with sex	5, 6, or 7	Constant		Yes
Typhoid		No. Less often and usually		If developed peritonitis any area, then all of the abdomen	Constant if has peritonitis	Sometimes	Yes

TABLE 3 Common and important abdominal problems

Problem	**Question**						
				Pain			**May cause peritonitis**
	Problems when pass urine?	**Bowels alright?**	**Last period normal?**	**Where?**	**Constant or intermittent ?**	**Anyone else?**	
Volvulus		No. Less often		Centre or 6 then all of the abdomen	Intermittent then constant		Yes
Gastroenteritis and food poisoning		No. Diarrhoea		12, centre and 6	Intermittent	Yes, often	
Constipation		No. Pain. Less often		4, 5 or 6	Intermittent		
Urinary tract infection	Yes. Pain. Passes urine often			6	Constant		
Kidney infection (pyelonephritis)	Yes. Pain. Passes urine often			3 or 9	Constant		
Kidney stones (stones in a ureter)				3 or 9	Intermittent		
Hepatitis				10 or 11	Constant		
Rectal prolapse		No. Something at anus			No pain in abdomen		

Treatment: Send all patients who may have appendicitis immediately to a hospital where operations are done.

Ask the students what to write in each space of the appendicitis row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Peptic ulcer or gastritis

Peptic ulcers and gastritis are irritations of the inside of the upper parts of the bowel. Peptic ulcers and gastritis develop if the upper bowel is not able to protect itself from the acid in the stomach. Some medicines, especially ibuprofen and aspirin, and smoking can prevent the stomach from protecting itself. A perforated gastric ulcer is caused when the acid makes a deep hole in the wall of the upper bowel. The acid may reach the outside of the bowel and cause peritonitis.

Diagnosis: The patient has constant pain in area 12 of the abdomen. The pain is made better by eating or drinking. Make the diagnosis from the history. You will not usually find anything when you examine the patient.

Treatment:

- Send all patients with peritonitis immediately to a hospital where operations are done.
- Or: If there is no guarding or rebound tenderness, give the patient aluminium hydroxide. Give him 30 tablets. Tell the patient to chew and swallow one tablet every time he gets the pain.
- Or: If pain in area 12 has been present for 2 weeks or more, the patient may need other treatment for a peptic ulcer. Send the patient to hospital.

Tell all patients with a peptic ulcer or gastritis not to use aspirin or ibuprofen. Tell patients not to smoke. Tell patients who have pain in area 12 to eat small meals frequently. Drinking milk may help.

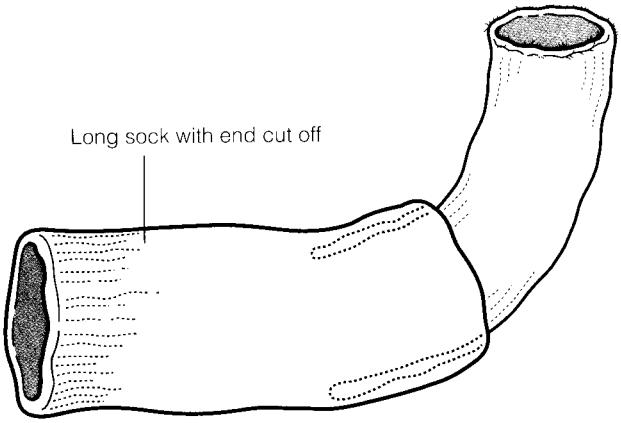
Ask the students what to write in each space of the ulcer and gastritis row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Intussusception

Show the students what happens to the bowel in intussusception. Cut the end of a long sock before the lesson. The sock represents the bowel. Show that part of the bowel swallows another part of the bowel (Picture 19).

Intussusception is where one part of the bowel swallows another part. This usually happens near the appendix. Intussusception is very dangerous. It can stop blood reaching part of the bowel and, if this happens, that part of the bowel will die. Later, food and faeces will leak out of the bowel, causing peritonitis.

Diagnosis: When you examine the abdomen you may feel a swelling to the right of the centre of the abdomen.



PICTURE 19 *How intussusception happens*

Treatment: Send patients who have a swelling and pain in the abdomen immediately to a hospital where operations are done. Intussusception causes an intermittent pain in the centre of the abdomen. Later. the pain may become constant. The patient may also pass blood with his faeces.

Ask the students what to write in each space of the intussusception row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

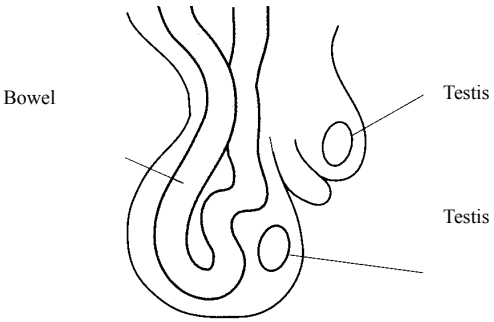
Incarcerated hernia

Men often get swellings in the scrotum. These swellings are commonly caused by a hernia, hydrocoele or orchitis. Women can also get hernias.

POSTER 9:
(Prepared poster)

Swellings

Copy pictures 20, 21 and 22 onto Poster 9.



PICTURE 20 *Hernia*

• Hernia

A hernia is when part of the bowel comes through a weakness in the bottom of the abdomen into the scrotum or at the fold

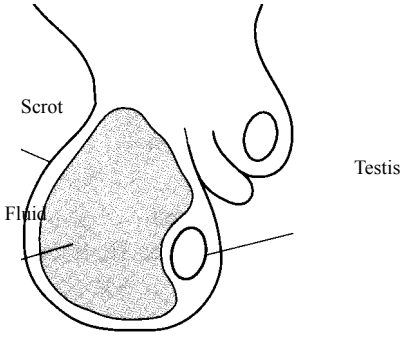
between the abdomen and the leg. A hernia is usually a painless swelling. The hernia may become incarcerated (trapped) and painful. An incarcerated hernia is a painful swelling which is normally near the private parts.

Diagnosis: Feel at the top of the scrotum or at the fold between the abdomen and the leg. Lay the patient down. Try to push the swelling slowly back into the abdomen. With a hernia, you can normally push the swelling back into the abdomen. With an incarcerated hernia, the bowel does not go back into the abdomen. This is very dangerous because it may stop blood from reaching part of the bowel. This will cause peritonitis.

Treatment:

- If a patient has a painful swelling near the private parts, send him immediately to a hospital where operations are done.
- If a patient has a painless hernia, send him to surgical outpatients at hospital.

Ask the students what to write in each space of the incarcerated hernia row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.



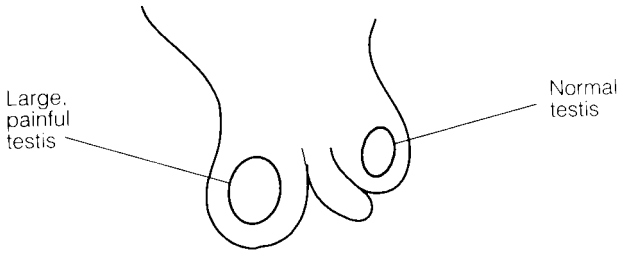
PICTURE 21 *Hydrocoele*

• *Hydrocoele*

A hydrocoele is a bag of fluid in the scrotum. It is usually caused by filarial worms. Filarial worms are transmitted by a mosquito. The worms block lymph vessels and prevent fluid leaving the scrotum.

Diagnosis: Hydrocoeles are not painful. You can feel the top of a hydrocoele at the top of the scrotum. Lay the patient down. Try to push the swelling slowly back into the abdomen. You cannot push a hydrocoele back into the abdomen when the patient is lying down.

Treatment: Send patients with a very large hydrocoele to surgical outpatients at hospital.



PICTURE 22 *Orchitis*

• Orchitis
Orchitis is an infection of one or both testes (testicles).

Diagnosis: The testicle or testicles are large and painful to touch. There may be discharge from the penis and pain when the patient passes urine.

Treatment:
- If a patient with orchitis has pain when he passes urine or a discharge from his penis, send him to the sexually transmitted disease clinic. Ask the patient's partner to go with him.
- Treat all other patients with co-trimoxazole. Give 960 mg (two tablets) two times a day for 5 days.

Ectopic pregnancy
Ectopic pregnancy causes a constant pain in area 5, 6 or 7. If a woman has pain in area 5, 6 or 7, ask about her last period. If her last normal period was more than 6 weeks ago, she may be pregnant and have an ectopic pregnancy (see Lesson 7). Send her immediately to a hospital where operations are done. Give her 5 ml oral rehydration solution every minute.

Ask the students what to write in each space of the ectopic pregnancy row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Pelvic inflammatory disease (PID)
Pelvic inflammatory disease is a sexually transmitted disease. The uterus and the fallopian tubes are infected. If the infection in the fallopian tubes reaches the peritoneum, the patient may develop peritonitis.

Diagnosis: Pelvic inflammatory disease causes constant pain in area 5, 6 or 7. This pain is worse during sexual intercourse.

Treatment: Send her to the sexually transmitted disease clinic. Ask her partner to go with her.

Ask the students what to write in each space of the pelvic inflammatory disease row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Typhoid fever

Typhoid is caused by drinking water or eating food made dirty with human faeces. Patients with typhoid may become very ill after 2 or 3 weeks. Typhoid may damage the bowel and cause peritonitis.

Diagnosis: Typhoid causes a fever which comes and goes. A patient with typhoid usually has a headache, feels tired and is often constipated. He may have a cough.

Treatment: Cross out the box below that does not apply in your country.

In malaria areas

Treat for malaria. If the fever is no better after 5 days, and a blood test shows that the patient does not have malaria, send him to hospital. Typhoid is one cause of a fever which continues for more than a week.

In areas where there is no malaria

Tell the patient to go to hospital if the fever is no better after 5 days.

Ask the students what to write in each space of the typhoid row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Volvulus

Show the students what happens to the bowel if the patient has volvulus. Use the sock that you have prepared. Hold the two ends of the sock with one hand. Turn the loop of the sock around.

Volvulus is caused when part of the bowel turns around inside the abdomen. This stops faeces and air moving inside the bowel. Volvulus may also stop blood from reaching part of the bowel and cause peritonitis.

Diagnosis: Volvulus causes intermittent abdominal pain, usually in the centre of the abdomen or in area 6, vomiting and a swollen abdomen. A patient with a volvulus does not pass faeces or air.

Treatment: Send a patient who has a painful swollen abdomen immediately to a hospital that does operations.

Ask the students what to write in each space of the volvulus row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Refreshment break

Gastroenteritis and food poisoning

Gastroenteritis and food poisoning cause irritation inside the bowel. Gastroenteritis and food poisoning cause intermittent pain in the centre of the abdomen and in areas 12 and 6. Patients usually have diarrhoea and may vomit. Other people in the patient's home may have similar symptoms.

Ask the students what to write in each space of the gastroenteritis and food poisoning row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Constipation

Constipation means that the patient has pain or difficulty in passing faeces. A patient may get constipation if she does not eat enough fruit and vegetables or drink enough fluids.

Diagnosis: Constipation may cause intermittent pain in areas 4, 5 or 6. It can result in tearing of the anus. If a patient has a tear in the anus, there will be a sharp pain every time the patient passes faeces. There may also be blood on the outside of the faeces.

Treatment: Advise a patient with constipation to eat plenty of fruit and vegetables and to drink plenty of fluids. If the patient has pain in the anus, tell her to put vegetable oil in and on the anus every time she passes faeces until the pain has gone. Remind the patient to wash her hands with soap (or ash) and water after she does this.

Urinary tract infection

Ask the students what to write in each space of the constipation row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.
Urinary tract infections are caused by bacteria. It is easier for bacteria to get into a woman's bladder than into a man's bladder. Bacteria may travel into a woman's bladder after sexual intercourse or during pregnancy.

Ask your students to call out the symptoms of a urinary tract infection. Look for the following answers:

Answer Pain on passing urine

Answer Passing urine more often than usual

Answer Pain in the lower abdomen

The patient may have another illness if she passes urine more often than usual or has blood in her urine:

- If a patient passes urine more often than usual, she may have diabetes

- If a patient passes blood in her urine, she may have schistosomiasis.

Teach the students about diabetes mellitus, using Appendix 16, if diabetes is a problem in your area. Teach students how to interpret urine results if they can do urine microscopy in their health centres. Use Append ix 17.

If the patient is pregnant and you think she has a urinary tract infection, treat with amoxicillin. Give 250 mg three times a day for 5 days. Send patients with a urinary tract infection, schistosomiasis or possible diabetes to hospital.

Ask the students what to write in each space of the urinary tract infection row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Kidney infection (pyelonephritis)

Sometimes the bacteria that cause a urinary tract infection can infect the kidneys. A patient with a kidney infection has fever and pain in area 3 or 9. He will also have symptoms of a urinary tract infection. Send the patient to hospital.

Ask the students what to write in each space of the kidney infection row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Kidney stones (stones in the ureter)

Kidney stones are very painful. This problem causes intermittent pain in areas 3 or 9. Give the patient ibuprofen 600 mg three times a day until the pain has gone.

- If the patient is vomiting, put the ibuprofen into her rectum. Tell the patient to drink plenty of fluids. Give the patient 5 ml of fluid every minute if she is vomiting.
- If the patient has vomited four times or more this morning, send her to hospital. This is a general danger sign.
- If the patient also has a fever, treat her for a urinary tract infection.

Ask the students what to write in each space of the kidney stones row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Hepatitis A

Viral hepatitis A is the most common cause of jaundice. Viral hepatitis is caused by drinking water or eating food made dirty with human faeces. Hepatitis B and C are more serious illnesses transmitted sexually or dirty needles.

Jaundice is also caused by severe malaria and by infection with other parasites. Some medicines can cause jaundice. These include medicines for tuberculosis, for psychiatric problems, and paracetamol.

To diagnose jaundice, ask the patient to look upwards. If the white part of his eye is yellow, the patient has jaundice. Only look for

jaundice in sunlight. Send all patients with jaundice to hospital immediately .

- If the cause of the jaundice is viral hepatitis, the patient needs no treatment and the jaundice usually improves in 2 weeks. Advise patients with hepatitis to rest, to eat a mixed diet and not to drink alcohol for 3 months .
- If medicines could be the cause of the jaundice, tell the patient to stop taking the medicines.

Ask the students what to write in each space of the hepatitis row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

Rectal prolapse

Rectal prolapse is where the lowest part of the bowel comes out of the anus. Children with malnutrition sometimes develop rectal prolapse if they have diarrhoea or a lot of whipworm.

The first thing to do is to push the rectum back into the anus. Use some vegetable oil to help the rectum slide back in. Next, send the patient to hospital. Tell someone to hold the patient's buttocks together on the way to the hospital to stop the rectal prolapse coming out again.

Ask the students what to write in each space of the rectal prolapse row of the table. Fill in the correct answers on Poster 7. Students should fill in the correct answers in their blank Table 3.

The students can put their completed Table 3 on the wall at their health centre.

SECTION 3: When to refer patients to hospital

Make sure each student has a copy of Appendix 18: 'How to treat a patient with abdominal pain or with blood in the faeces'. Give the students two examples of abdominal problems and show them how to use Appendix 18.

SECTION 4: Practical

Activity

Tell the students that this activity is about how to treat three patients who have abdominal problems. Divide the students into groups of five or six. Give them the following three examples. Tell them to use Table 3 and Appendix 18 to answer the questions about each patient. Give the students 30 minutes. Then ask each group what they think the answers are.

Patient 1

Siti is a 24-year-old woman. She has had constant pain in area 6 for 3 days. Siti has had a fever. She has vomited one time today.

She has pain when she passes urine. The pain is not made worse when she has sexual intercourse. Her last normal period was 2 weeks ago. Siti is able to walk easily. She is not anaemic. Area 6 is tender. There is no guarding and no rebound tenderness.

- What questions are important to ask because she is a woman?
- What illness do you think Siti has?
- How will you treat her?

Patient 2

Peter is 17 years old. He has had pain in his abdomen for 2 days. At first the pain was intermittent in the centre of his abdomen. Now it is constant in areas 7 and 8. He has vomited three times today. He has a fever and is sweaty. Peter walks slowly and bends forward. Peter's abdomen is tender. When you press in areas 7 and 8 you find that he has guarding and rebound tenderness.

- What illness does Peter have?
- How will you treat him?

Patient 3

Mario is 54 years old. He has had constant pain in area 12 of his abdomen for 2 months. The pain gets better when Mario eats. Sometimes he vomits. Mario tells you that he was given aspirin one month ago. His pain gets worse when you press area 12. He does not have guarding or rebound tenderness.

- What was wrong with the treatment that Mario was given one month ago?
- What illness does Mario have?
- How will you treat Mario?

Answers

Ask the students to give their answers. Give them the correct answers:

Patient 1

• When was your last normal period? Does your pain come at the same time as your period? Do you feel pain when you have sexual intercourse?
• A urinary tract infection. She may have malaria.
• Send her to hospital.

Patient 2

• Appendicitis.
• Send him immediately to a hospital where operations are done.

Patient 3

• Do not give aspirin to patients who have abdominal pain. Aspirin can cause peptic ulcers.
• Mario may have a peptic ulcer.
• Send Mario to hospital. Tell him not to take aspirin or ibuprofen. and advise him not to smoke.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question **in** the quiz.

1. Name eight causes of peritonitis.
   Appendicitis
   Perforated peptic ulcer
   Intussusception
   Incarcerated hernia
   Ectopic pregnancy
   Pelvic inflammatory disease
   Typhoid
   Volvulus

2. A patient has abdominal pain. What questions should you ask her?
   • Do you have any **problems when** you **pass urine?**
   • Are your **bowels all right?**
   • **When was** your **last normal** menstrual **period?** Does your **pain** come **at the same time** as your period? Do you feel **pain when** you **have sexual intercourse?**
   • Show me **where** you feel the pain.
   • What type of pain do you feel? Is the pain **constant or intermittent?**
   • Is there **anyone else** at home who has the same symptoms as you?

Lesson 9 Heart problems

BEFORE THE LESSON

● There are five posters in this lesson. (See p. 4 for information on how to use the posters.)
Prepared poster: 1
Student answer posters: 2, 5
Summary posters: 3, 4
● Prepare some example blood pressure measurements so students can practise how to calculate the average blood pressure.
● You need a male student to volunteer to allow you to draw two crosses on his back.
● Give each student a copy of Table 1 'When to refer patients to hospital'. Also give them a copy of Appendix 23 Healthy heart advice.
● For section 4, you need a patient (or two) who have heart failure with crackles in both lungs or fluid under the skin in the legs. Ask the patients to meet you in the classroom after the refreshment break. Tell them that you will give them a small payment for coming. Do not forget to bring some money with you to the lesson.
● Show four students how to measure blood pressure. Teach them how to teach this to other students.
- Show four students how to listen to the lower part of both lungs.
- You will need stethoscopes and equipment for measuring blood pressure.
- Give each student a copy of Appendix 23 Healthy heart advice. Each student will need to learn how to share decisions about keeping the heart healthy with you in the clinic. Teach them individually. See the chapters on shared decision-making and lifestyle medicine.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz
Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. What treatment may save the life of a patient who has had a myocardial infarction?
2. What medicine should you give to patients with angina or a cerebrovascular incident?
3. Which patients should have their blood pressure measured?
4. What advice should you give to people who have high blood pressure?
5. What would you find when you take a history and examine a patient who has heart failure?

SECTION 2: Diagnosis and management of heart problems

Heart problems are an important cause of illness and death in all parts of the world. Heart problems are more common in people who smoke.

Today you will learn about three groups of heart problems:

- heart failure (in areas where heart failure is common)
- angina and myocardial infarction
- high blood pressure and the problems caused by high blood pressure.

Heart failure

(Consider not teaching about heart failure if heart failure is not common in your area.)

The heart is a bag of muscle that pushes blood to all parts of the body. Heart failure causes fluid to collect in parts of the body. often in the lungs or lower legs. If you find fluid under the skin in the lower legs. Consider sending the patient to hospital immediately.

Fluid in the lungs may cause fast breathing. Remember that patients with pneumonia also have fast breathing.

- If a patient has fast breathing and a fever, treat him for pneumonia. If he is no better after treatment. Consider sending him to hospital. He may have heart failure.
- If a patient with fast breathing does not have a fever. listen to his chest. Listen to the lower part of both lungs. If you hear crackles in both lungs. Consider sending the patient to hospital immediately. He may have heart failure.

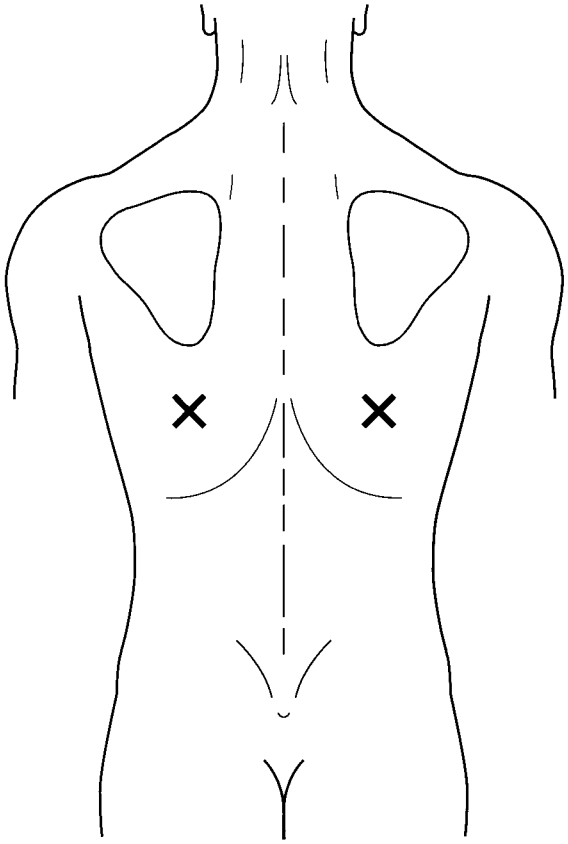
Ask a male student to take off his shirt. Draw two crosses on the student's back 5 cm below the scapulae. Show them how to listen to the chest (Picture 23).

Put the stethoscope in your ears and put the other end on one of the crosses. Ask the patient to breathe in and out deeply. Listen carefully. Listen for a crackling noise. Listen to both sides of the chest. If you can hear a crackling noise on both sides of the chest. the patient probably has heart failure.

Heart failure can be caused by:

- severe anaemia
- high blood pressure
- myocardial infarction
- tuberculous pericarditis (tuberculosis of the bag around the heart)
- rheumatic heart disease
- congenital heart disease.

Patients with congenital heart disease or rheumatic heart disease are treated with intramuscular benzathine penicillin every 3 weeks for the rest of their life. Give patients who weigh 30 kg or less 0.6 million IU. Give all other patients 1.2 million IU.



PICTURE 23 *Where to listen for heart failure*

Angina and myocardial infarction

The coronary arteries are tubes that take blood into the heart muscle.

• If the coronary arteries are very narrow, the heart muscle is painful when the patient is exerting himself. This is called angina. Angina pain normally feels like the inside of the chest is being squeezed, crushed or grabbed. The pain of angina is sometimes in the neck or left upper arm. The pain of angina stops when the patient rests. The pain does not last for longer than 20 minutes.

• If the coronary arteries become blocked some of the heart muscle will die. This is called a myocardial infarction, heart attack or MI. The pain of a myocardial infarction is the same as angina pain. The pain of a myocardial infarction normally lasts for more than 20 minutes. Patients who are having a myocardial infarction are often cold, sweaty and anxious. Patients often feel nauseated. They may vomit. Many patients die soon after a myocardial infarction.

Smoking can make the coronary arteries narrow. Usually only people who are more than 40 years old have angina or myocardial infarctions. If you think a patient has had a myocardial infarction

give him an aspirin tablet (300 mg) immediately. This will stop some patients from dying.

Send patients who have angina or have had a myocardial infarction to hospital. At hospital the patient may be given other medicines. Give all patients who have angina, or have had a myocardial infarction, a quarter of a tablet of aspirin (75 mg) every day, for the rest of their lives. Aspirin makes myocardial infarction less likely. They should also consider taking a daily statin tablet for the for the rest of their lives. Advise these patients to stop smoking. Advise them that regular physical activity (work or exercise) is good, but that they should avoid strenuous exercise if it causes chest pain.

High blood pressure

Blood goes around the body inside tubes called arteries. If these arteries become narrow, the heart has to work harder to push the blood round. You can tell how hard the heart is working by measuring the blood pressure. If the blood pressure is high, the heart is working harder than usual. Another name for high blood pressure is hypertension.

POSTER 2:
(Student answer poster)

Illnesses caused by high blood pressure

Ask the students what illnesses can be caused by high blood pressure.

Answer

Heart failure

Answer

Myocardial infarction

Answer

Cerebrovascular incident. A cerebrovascular incident is also called a stroke or a CVI. A stroke is usually caused when an artery leading to the brain is blocked. If this happens, part of the brain dies. A stroke can cause weakness on one side of the patient's body. It can also cause death. If a patient has had a stroke, giving the patient aspirin can help to stop her having another stroke. Give a quarter of a tablet of aspirin (75 mg) every day for the rest of the patient's life. Atorvastatin eg 10mg daily will also prevent some people dying. Advise these patients to stop smoking. Advise them that regular physical activity (work or exercise) is healthy.

Answer

Blindness or kidney failure

Heart failure, myocardial infarction, stroke and kidney failure can kill people. High blood pressure is dangerous. A patient with high blood pressure is two times as likely to die in the next year as a patient with normal blood pressure.
There are two types of blood pressure:
1. the diastolic blood pressure, which is the lower blood pressure
2. the systolic blood pressure, which is the upper blood pressure.

In pregnancy the diastolic blood pressure is more important than the systolic blood pressure. If the diastolic blood pressure is 95 or higher they should see a midwife urgently to make sure that they do not have pre-eclampsia. If a patient has a diastolic blood pressure of 130 mmHg or more and takes no blood pressure medicine, he will probably die in less than a year.

POSTER 3:
(Summary poster)

Four things to prevent illness and death from high blood pressure

We can do four things to prevent illness and death from high blood pressure:
1. **Check** for high **blood pressure every 5 years** in all **patients aged** more than **45 years**. It is important to measure the blood pressure because patients with high blood pressure usually have no symptoms. Measure the blood pressure if a patient has a severe headache, is aware of his heart beating or if he has poor eyesight.
2. **Give healthy heart advice** to people who have high blood pressure.
3. **A** patient who has a **diastolic blood pressure** which is ***on average*** **110 mmHg or higher, or a systolic blood pressure of 180 or higher should usually start on blood pressure medication**.
4. **Make sure** that **patients** who are given medicine for high blood pressure **take** the **medicine** every day.

POSTER 4:
(Summary poster)

When to measure blood pressure

- If the patient has a diastolic blood pressure of **120mmHg or higher, or a systolic blood pressure of 190 or higher, send him to the blood pressure clinic (or hospital) immediately**.
- If a patient has a blood pressure of **140/95 mmHg or less, measure** the blood pressure **again after 1-3 years**.
- If the patient has a blood pressure of **less than 190/120mmHg but more than 140/95 mmHg**, measure the blood pressure **again on 3 different days**.
- If the patient is pregnant, measure the blood pressure every **2 weeks in the last 3 months** of the pregnancy.

How to calculate the average blood pressure

Measure a patient's blood pressure on three different days. To calculate the average blood pressure, add up the three blood pressure measurements and divide this number by three. The answer will be the average blood pressure.

Give your students examples of different blood pressure measurements for patients. Ask the students to calculate the average blood pressure for each patient.

Healthy heart advice

Give healthy heart advice to all patients who have a blood pressure of more than 140/95 mmHg, diabetes, are overweight or have symptoms of possible sleep apnoea syndrome.

POSTER 5:
(Student answer poster)

Answer
Answer

Healthy heart advice

Ask your students what advice they can give to help patients to reduce their blood pressure or to prevent heart problems.
Do not smoke.
Do physical work or exercise three times or more **every week** for 20 minutes. This exercise should make the patient sweat but should not cause pain in the chest.

Answer **Do not add salt** to food during cooking or eating.
Answer **Eat one banana**, or more, **every day** if possible.
Answer **Lose weight** if you are over weight.

Treatment

• If a patient has an average blood pressure of 150/105 mmHg or more, send him to a high blood pressure clinic.
• The blood pressure clinic should look for a cause of the high blood pressure or any damage done by the blood pressure. This may involve a urine dip test to check for blood, protein and glucose, a blood test to check the kidneys and salts (a U+E test) and an ultrasound of the kidneys and bladder. The clinic should also make sure that the patient does not have sleep apnoea syndrome or diabetes.
• The patient may choose to take medicine every day long term (years).
eg Moduretic a quarter of a 55mg tablet at night, Enalapril 5mg at night are examples.
• If a patient has an average blood pressure between 140/95 mmHg and 150/105 mmHg, only give medicine to reduce the blood pressure if the patient has a high risk (>20%) of a heart attack or stroke in the next 10 years. Calculate the patient's future risk of a heart attack or stroke here: www.patientcentre.org
• If the patient is a pregnant woman, different treatment is needed. See eclampsia and pre-eclampsia in Lesson 7.

SECTION 3: When to refer patients to hospital

Give each student a copy of Table 1.

TABLE 1 When to refer patients to hospital

Heart problem	Symptoms or signs	Treatment
Heart failure	Fast breathing but no fever and has crackles in both lungs, **or** swelling of ankles, liver, and neck or face	Send to hospital immediately
Angina or myocardial infarction	Squeezing pain, crushing pain or grabbing pain in the middle of chest. Sometimes in the neck or left upper arm	Give aspirin 300 mg. Send a hospital immediately
High blood pressure All patients	Blood pressure 190/120 mmHg and above	Send to blood pressure clinic (or hospital) immediately
	Average Blood pressure 150/105 mmHg and above	Send to clinic for investigation and treatment of high blood pressure
High blood pressure Pregnant women	Diastolic Blood pressure 95 - 99 mmHg	Send to hospital this week
	Diastolic Blood pressure 100 mmHg and above	Send to hospital immediately

Refreshment break

SECTION 4: Practical

How to measure blood pressure

Divide the students into four groups. Ask your four student helpers to teach each group how to measure the blood

pressure (Picture 24). Each student will practise measuring the blood pressure of another student, who will play the patient.
Show them how to use the type of blood pressure equipment that you have locally.

PICTURE 24 *Measuring blood pressure*

1.Ask the patient to sit down. Sometimes the patient can only lie down.
2.Remove all the clothing from the patient's right arm.
3.Put the blood pressure cuff tightly around the upper part of the right arm. Put the cuff at least 2 cm above the bend in the arm. The bladder (inflatable part) of the cuff should cover at least the front part of the arm.
4.The patient's palm should face upwards. Ask him to rest his hand on the table next to him. Put the blood pressure measurement scale on the same table.
5.Put the stethoscope in your ears. Put the other end of the stethoscope on the front of the bend in the arm, on the part that is closest to the patient's body.
*6.*Turn the valve so that, when you press the rubber bulb, air stays in the cuff. Press the rubber bulb several times until the measurement scale is *above* 200 mmHg..
7.Open the valve slowly, a small amount at a time. until air escapes slowly from the cuff. Listen for a noise each time the heart beats. You will only hear this noise between the top blood pressure (systolic blood pressure) and the bottom blood pressure (diastolic blood pressure).

- If you do this too quickly you will get the blood pressure wrong.
- If you do this too slowly you will hurt the patient.
- If you do this at the correct speed you will hear a noise as the heart beats each time the mercury comes down 4 mmHg.

*8.*When you hear the first noise look at the top of the mercury or at the needle. Read the number. This is the top blood pressure. When the noise first becomes very quiet or stops. read the number. This is the bottom blood pressure. Write down the two blood pressures: for example. BP *140/90.*

- If the patient is a pregnant women or has a fever or anaemia. the noise becomes *quiet* after you reach the bottom blood pressure.
- If the patient has high blood pressure. the noise may disappear between 180 mmHg and 160 mmHg. This is *not* the bottom blood pressure. The noise comes back again as the mercury or needle comes down further.

How to look for heart failure

Activity

Now tell the students to divide into two groups and ask the two patients with heart failure to come into the class.
Ask one group to listen for crackles in the lungs and look at the legs of the two patients. Ask the other group to listen for crackles in the lungs and look at the legs of two students. After 10 minutes, change groups. Ask the student helpers to help the groups to listen for the crackles and look for fluid under the skin of the legs of the two patients with heart failure.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question.

1 What treatment may save the life of a patient who has had a myocardial infarction?
Give the patient aspirin 300 mg immediately (and 75 mg every day for the rest of his life). Send the patient to hospital.

2 What medicine should you give to patients with angina or a cerebrovascular incident?
Give aspirin 75 mg and atorvastatin eg 10mg every day for the rest of their lives.

3 Which patients should have their blood pressure measured?

- **Patients over 45 years: every 5 years**
- **Patients with a severe headache or who are aware of their heart beating or who have poor eyesight.**
- **Pregnant women in the last 3 months of pregnancy.**

4 What advice should you give a patient who has high blood pressure?

- **Do not smoke.**
- **Exercise three times or more every week for 20 minutes or more.**
- **Do not add salt to your food when cooking or eating.**
- **Eat one banana, or more, every day if possible.**

5 What would you find when you take a history and examine a patient who has heart failure?
Fast breathing or fluid under the skin in the legs. You may hear crackles in both lungs.

Lesson 10 Accidents, emergencies, joints and the back

BEFORE THE LESSON

- There are 16 posters in this lesson. (See p. 4 for information on how to use the posters.)
- Prepared posters: 1, 8, 11, 12
- Student answer posters: 2, 3,4,5,6,7,9,10,13,14,15,16. Only write the title on Poster 15 - the students will complete Poster 15 during the lesson. (There are no summary words.)
- Give each student a copy of Appendix 19.
- You need a bed or a table at the front of the class for the role play in section 2.
- Practise before the lesson.
- Ask one student to help you with the demonstration in section 4. Give the student a copy of the demonstration and practise with her before the lesson.
- For the role play you need clothes, a piece of rope, some leaves, a cup of water, a short stick and piece of cloth.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1 If a patient has been hit on the head, what questions should you ask him?
2 What are the main causes of anaphylaxis:
- in health centres?
- at home?
3 What can you do to help a patient who has shock after an accident?
4 How will you examine a patient who has a painful knee?

SECTION 2: Diagnosis and management

Most of today's lesson will be told as a story about *you.* You have finished your training as a primary health care worker. You are working in a health centre. On the first day, you will see many problems which are accidents and emergencies. On the second day, you will see patients who have back or joint problems. On the third day, you will see five patients with back pain.

Accidents and emergencies

Head injuries

On the first day you are cycling to work. You find a man who has driven his car into a mango tree. The man has blood on his head. The man is breathing but he does not answer or move when you shout in his ear.

POSTER 2:
(Student answer poster)

How to treat a patient with a head injury

Ask the students what four things they should do for a patient with a head injury.

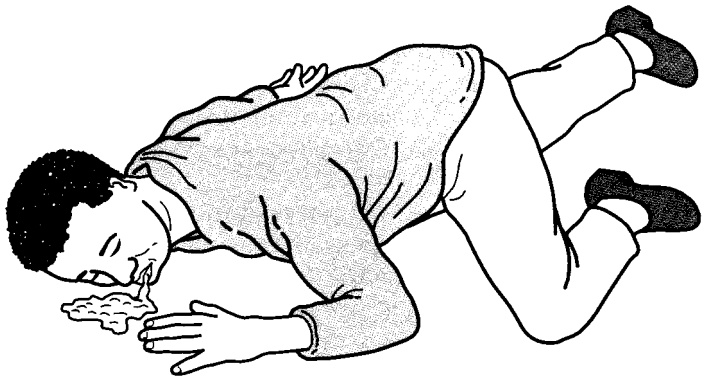
Answer

Do not move the head until you **get help** from two or more people. **Put** the **head in line with** the **body**. Make sure the head cannot move. **Move** the patient **to a safe place**.

Answer

As soon as possible, **lay** the patient **on** his **side** in the coma position. This will help him to breathe.

Put a student volunteer into the coma position (Picture 25) in front of the other students.



PICTURE 25 *The coma position*

Answer

Use two fingers to **remove** any **vomit from** his **mouth**. Make sure that his **tongue** is **not at the back** of his **mouth**.

Answer

Send the patient to **hospital** with a record card. On the record card write the time of the accident or the time when you found him.

Ask four students to show the class how to treat a patient with a head injury. Tell them what they do correctly and what they could do better.

You continue to cycle to work. You are stopped by Maryam who is worried about her son Tobias. Tobias was hit on his head by a coconut this morning. You need to ask Maryam five questions. If Maryam says 'yes' to any of these questions you must send Tobias to hospital immediately. Tell Maryam to take Tobias to hospital immediately if she can say 'yes' to these questions later in the day or tomorrow.

POSTER 3:
(Student answer poster)

Five questions to ask patients with a head injury

Ask the students which questions to ask patients with a head injury.

Answer 1. Did he **lose consciousness** for more than 1 minute?
Answer 2. Is it **impossible to wake** him completely?
Answer 3. Has he **vomited three times or more**?
Answer 4. Has he got a **very painful headache** or a **large wound** on his head?
Answer 5. Does he have any **unusual feeling** in his arms or legs?

Cuts

Your first patient at the health centre, Sita, has a large cut on her arm. First, treat the wound. This is similar to treatment for skin ulcers (see Lesson 5). Next, send Sita to hospital to have the wound sewn together. This wound can be sewn together because Sita was injured today and the wound is bigger than 1 cm in size.

POSTER 4:
(Student answer poster)

How to treat a wound

Ask the students to tell you how to treat a wound.

Answer 1. **Clean the wound**. Use a syringe to squirt normal saline or clean water at the wound.
Answer 2. **Cut away** any **black matter**, but do not remove black clotted blood.
Answer 3. Put **povidone iodine** 10% on the wound.
Answer 4. Cover the wound with a clean dressing. Consider putting unripe slices of papaya flesh underneath the dressing.
Answer 5. **Change** the dressing **every 2 days** until the wound is dry. Clean the wound very gently with povidone iodine or normal saline.
Answer 6. If the wound has been sewn together, **take out** the **stitches after 7 days**.
Answer 7. If the patient has not been immunised against tetanus, give her a tetanus vaccination this week. Give 0.5 ml **tetanus toxoid** intramuscularly. Give two more tetanus vaccinations, the first after 1 month and the second after 2 months.
Answer 8. Give another tetanus vaccination after 10 years, and another vaccination after another 10 years. A total of five injections will prevent tetanus for life.

Tell your students:

Good wound treatment is very important. Good wound treatment can help to prevent tetanus.

Broken bones

Your next patient, Yusuf, fell out of a tree this morning. He has pain in his right arm and his forearm is bent. You can see that a bone is pressing against the skin. The skin in that place is white.

POSTER 5:
(Student answer poster)

How to treat broken bones

Ask the students: How will you treat Yusuf?

Answer 1. If a bone is broken and presses on the skin, **make** the **bone straight** immediately. First, pull both ends of the arm or leg away from the broken bone. Next, make it straight.

Answer 2. **If** the **skin** is **broken**, **cover** the wound **with** a **clean cloth**.

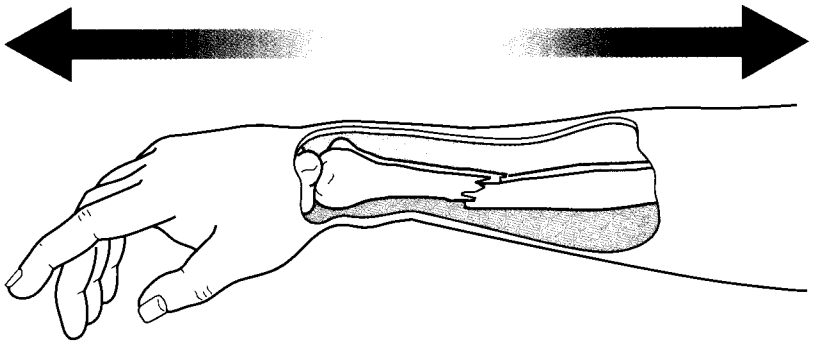
Answer 3. **If** the wound is **bleeding heavily, press** on the wound firmly until the bleeding stops.

Answer 4. **If** a **large bone** has been broken, **give** the patient **diazepam** rectally (see Appendix 4). Give the same dose as for treating convulsions. Diazepam reduces anxiety. If available, also give a strong medicine to reduce pain (pethidine for example).

Answer 5. **Stop** the arm or leg **from bending** where it is broken. Place a straight stick next to the arm or leg. Tie the arm or leg to the stick with cloth.

Answer 6. **Send** a patient who has a **broken large bone to hospital** immediately.

Show the students Picture 26 of how to make a broken bone straight.



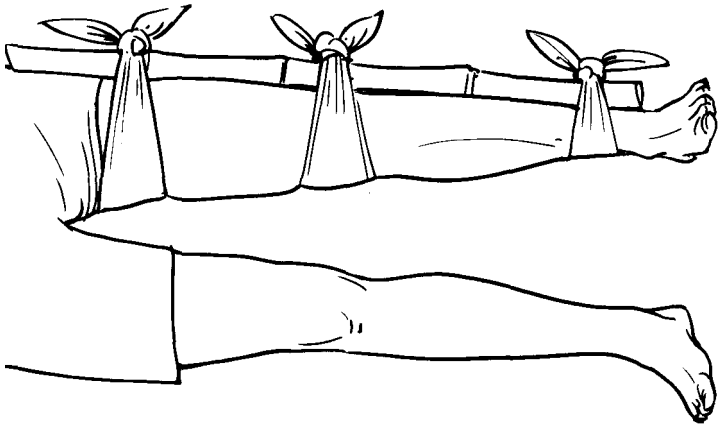
PICTURE 26 *How to make a broken bone straight*

Ask two students to help you. Ask one to play a patient with a broken arm. Ask the other student to pull the arm at the elbow. You will pull at the wrist.

Show the students Picture 27 of how to stop a broken leg from bending.

Ask the students: If a patient has broken a bone but the bone is not bent, how can we tell that it is broken? Look for the following answer:

Answer If a bone is broken it will be painful when you push the ends of that bone together.



PICTURE 27 *How to stop* a *broken leg from bending*

Shock

Shock means that not enough blood reaches the brain and other parts of the body. Shock is very dangerous. Patients with shock may become unconscious or die.

Shock may be caused by:

- blood loss and broken bones
- anaphylaxis, which is a severe allergic reaction.

Tell the students that the heart beats fast in shock. Feel one of the arteries in the neck to count how many times the heart beats in 1 minute. Show the students where to feel. The movement of the arteries is called the pulse.

Hamida, your next patient, has broken her leg bone. Hamida feels light-headed. She tells you that she feels as if she might faint. She is sweating and cold. Her pulse is weak and faster than 110 beats in one minute. Hamida has shock caused by blood loss and a broken bone.

POSTER 6:
(Student answer poster)

How to treat shock from blood loss and broken bones

Ask the students: How will you treat Hamida?

How to treat shock from blood loss and broken bones

Answer • **Treat** the cause of the **shock**. **Stop** the **bleeding** if possible.

Answer • Place a stick next to the broken arm or leg and **tie** the **stick to** the **arm or leg** with cloth.

Answer • **Give** the patient **rectal diazepam** if she has broken a large bone.

Answer • **Give** the patient **oral rehydration solution**. Give her 5 rnl (1 teaspoon) every minute.

Answer • **Send** the patient **to hospital** immediately.

Anaphylaxis

Next, the orderly calls for your help. He has just given a 24-year-old man an injection of procaine penicillin fortified. The patient has lost consciousness and is cold and sweaty. His pulse is weak and faster than 110 beats in 1 minute. The patient has shock caused by anaphylaxis.

There are three common causes of anaphylaxis:
- medicines - antibiotic injections, antibiotic tablets or vaccinations may cause anaphylaxis
- food - some people are allergic to some foods, for example nuts, prawns or squid.
- insect bites and stings - usually from bees and spiders.

POSTER 7:
(Student answer poster)

How to treat anaphylaxis

Ask the students: How will you treat this patient?

To treat a patient with anaphylaxis:

Answer 1. Give him an injection of **epinephrine** (also called adrenaline). 1 in 1000, **intramuscularly**.

Answer 2. Give a **second** injection of epinephrine **after 10 minutes** if the patient is still unconscious or has a fast pulse.

Answer 3. **If** the patient is **still** unconscious or **unwell** 10 minutes after the second injection of epinephrine. **give** him a **third injection** of epinephrine. **Send** him **to hospital** immediately.

Answer 4. When the patient is well, **tell him** that **he has an allergy.** Tell the patient what he is allergic to, if you know. Teach the patient and the patient's family that in future he must avoid the thing he is allergic to.

Tell your students: The dose of epinephrine is different for patients of different ages.

POSTER 8:
(Prepared poster)

Doses of epinephrine

Copy Table 1 onto Poster 8.

TABLE 1 Doses of epinephrine

Age of patient	Dose of epinephrine	
Up to 12 months	0.1 ml	-
1 year up to 5 years	0.25 ml	1/4 vial
5 years old or more	0.5 ml	1/2 vial

Kerosene poisoning

Gabriel, your last patient of the day, is a 3-year-old boy. Gabriel has drunk some kerosene. To treat a patient who has drunk kerosene:

1. Send the patient to hospital.
2. Tell the patient to drink lots of young coconut juice or water on the way to hospital.
3. *Do not* make the patient vomit.

Rabies

On your way home you pass through Kijini village. Earlier today the villagers killed a dog which had bitten two people. The villagers thought the dog had rabies.

POSTER 9:
(Student answer poster)

How to treat patients with bites from an animal with rabies

Ask the students what they should do for patients who are bitten by animals that may have rabies

Answer

1. **Wash wounds immediately**. The best cleaning fluids are iodine or alcohol. Iodine and alcohol kill viruses. However, water, with or without soap, will help. Even urine is better than nothing. Use a brush to clean the wound if possible.

Answer

2. **Send** the two patients **to hospital** immediately.

Answer

3. The patient will need to be given a course of rabies vaccinations as soon as possible.

Burns

At home, your neighbour brings her 6-year-old son Raju to you. Raju has burnt himself. A large pan of hot water fell on his abdomen and the front of his right leg.

POSTER 10:
(Student answer poster)

Immediate treatment for burns

Ask the students: How will you treat Raju?

Immediate treatment for burns

Answer

1. **Wash** and cool the burn **with cold water**. Hold the part of the body that has been burnt underneath a running tap for about 20 minutes or in a bucket of cold water for the same length of time.

Answer

2. Do **not** break any blisters.

Answer

3. If the burn is dirty, clean it gently with normal saline or polyvidone iodine 10%.

Answer

4. Put **unripe papaya flesh** on the burn. This is a very good antiseptic. It helps the burnt skin to heal and also stops the skin sticking to the cloth.

Answer

5. If you have no papaya, paint the wound with **gentian violet**. Next, put some **vaseline**, **or vegetable fat which has been boiled and cooled**, on the burn to stop the skin sticking to the cloth.

Answer

6. **Cover** the burn **with** a **clean cloth**.

Answer

7. **Change** the dressings **every 2 days**.

Answer

8. Make sure that the patient has been immunised against tetanus. If not, give him **tetanus toxoid** as soon as possible.

Answer

9. **You do not** normally need to **give** an **antibiotic** to a patient who has a burn.

Answer

10. **If** the **burn** becomes covered with yellow or green **pus**, **smells bad or** is getting **bigger**:

- clean the wound again
- dress the wound with papaya, or gentian violet and vaseline
- treat the patient with **co-trimoxazole** for 5 days.

Answer

11. If the burn has **not started to heal after 1 week** send him to hospital.

Degree of the burn

To decide whether a patient needs to go to hospital you need to know:

- the degree of the burn
- the percentage of the skin area that has been burned.

POSTER 11:
(Prepared poster)

The three degrees of burns

The **degree of** the **burn** is the **depth** of the **burn**. There are three degrees of burn:

Answer

1. **First-degree** burns only affect the very **outside layer** of the skin. The skin is **red** and **tender.**

Answer

2. **Second-degree** burns affect the **outside and middle layers** of the skin. The skin becomes **blistered** and **tender**.

Answer

3. **Third-degree** burns affect the **outside, middle and bottom layers** of skin. There is no blistering of the skin in that area. The skin may be **black or white**. The skin has no feeling and is **not tender**. The skin is not able to grow back in a third-degree burn.

A patient with third-degree burns needs to go to hospital.

Percentage of skin

If a patient burns a large percentage of his skin area, he will lose a large amount of fluid and will get infections. Patients with burns should drink plenty of fluids.

Dehydration and infections may kill the patient.

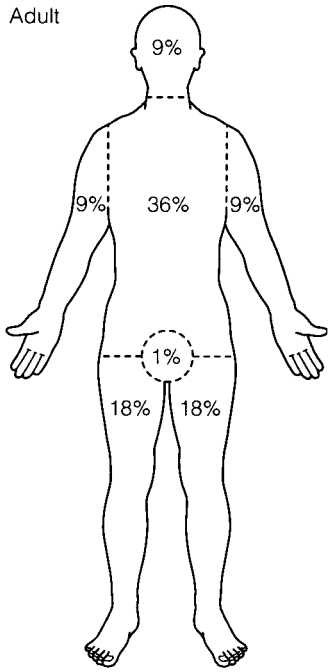
A patient who has burnt 10% or more of his skin area needs to go to hospital.

A patient who has a burn on his face or private parts also needs to go to hospital.

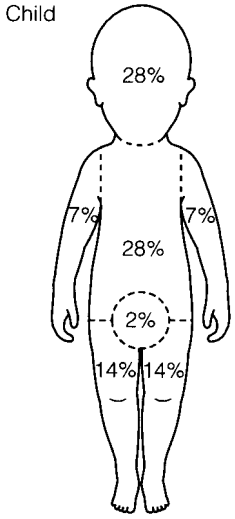
POSTER 12:
(Prepared poster)

Percentages of skin area of each part of the body of a child and of an adult

Draw Pictures 28 and 29 on Poster 12.



PICTURE 28 *Percentages of skin area which cover each part of the body of an adult*



PICTURE 29 *Percentages of skin area which cover each part of the body of* a *child who is less than* 12 *years old*

Pictures 28 and 29 show the percentages of the skin area that cover each part of the body of an adult and a child aged 12 years or less.

For example:

- The skin that covers the leg of a child is 14% of the total skin area. If a child burnt only the front of one leg, he would have a 7% burn .
- The skin that covers the whole of the chest together with the abdomen of an adult is 36% of the total skin area. In a child the same area is 28% of the total skin area. If an adult burnt only the front of the abdomen, he would have a 9% burn (a quarter of 36%). If a child burns only the front of the abdomen, he would have a 7% burn (a quarter of 28%).

Give the students three examples of patients who have burnt parts of the body. Ask the students to calculate the area of skin burnt on each patient. Show them how to work this out using Raju as an example:

Raju has burnt all of the front of his abdomen. This is 7% of his total skin area. Raju has also burnt the front of his right leg. This is 7% of his total skin area (half of 14%). In total, Raju has burnt 14% of his skin area. Send Raju to hospital for further treatment.

Refreshment break.

Joints and the back

On your second day at work, you see patients with joint and back problems.

Arthritis

Your first patient today is a 47-year-old man called Max. Max's knee has been painful and swollen for 4 days. You ask Max if the knee was injured. Max cannot remember hurting his knee. You ask Max if he has a fever. Max tells you that he has been hot and sweaty at night for 4 days.

POSTER 13:
(Student answer poster)

Answer

Answer
Answer

Answer

Things to look for in patients with joint pain

Ask the students what four things to look for if a patient has joint pain.

1. Look to see if the joint is more **swollen** than the joint on the other side.
2. Feel to see if the joint is more **hot** than the rest of the body.
3. Press the swelling to find out if it is soft or hard and bony. Ask the patient if the joint is **tender**.
4. Ask the patient to **bend** the joint. Ask him if it is **more painful** when he bends the joint.

A patient with arthritis has pain and swelling of one or many joints. Arthritis causes patients to have permanent and often

increasing difficulty in using their joints. Arthritis is divided into two types: septic arthritis and other types of arthritis. The patient may have any of these types of arthritis.

Septic arthritis

Septic arthritis must be treated immediately. If the patient has not been injured and has a soft, hot or tender swelling in one joint, and bending the joint is very painful, the patient has septic arthritis. Max's knee has soft, tender swelling but does not feel hot. It is painful to bend his knees. He may have septic arthritis.

Send patients with septic arthritis to hospital immediately. If it will take longer than 6 hours for the patient to get to the hospital, give co-trimoxazole at twice the normal dose.

Other types of arthritis

Diagnose other types of arthritis if a patient has had pain for more than 6 weeks with hard or soft swelling around one or more joints. The most common other types of arthritis are osteoarthritis and rheumatoid arthritis.

If a patient has rheumatoid arthritis, he has swelling in the joints on **both** sides of the body. Two different joints **and** the joints in the hands will be swollen. The swelling is soft and may be warm and tender. Send patients with possible rheumatoid arthritis to see a joint expert (a rheumatologist) if possible .

- Treat other types of arthritis with paracetamol: two tablets four times a day. Tell the patient not to take more paracetamol than this dose. Higher doses can damage the liver.
- If paracetamol is not helpful, give ibuprofen 600 mg three times a day after food. Tell patients to stop taking ibuprofen if they get pain at the top of the abdomen. Advise the patient to bend and straighten each joint several times every day.

Osteomyelitis

Marcelle, your next patient, has pain in his upper leg, not in his joint. Marcelle has not had an accident. Marcelle cannot walk. The bone is tender. The upper leg is hot. Marcelle has osteomyelitis. Osteomyelitis is an infection of bone. Give Marcelle twice the normal dose of co-trimoxazole and send him immediately to hospital.

Diagnosing and treating patients with back pain

Five patients with common and important types of back pain come to your health centre today. Your job is to decide which type of back problem each patient has.

POSTER 14:
(Student answer poster)

Seven questions for patients with back pain

Ask the students which seven questions we need to ask patients to find out the cause of back pain.

Answer
Answer
Answer
Answer
Answer
Answer
Answer

1. How long have you had back pain?
2. Have you had a bad fall or an **accident**?
3. Is the pain **worse after exercise**?
4. Is the pain **constant**?
5. Do you have a **fever**?
6. Is it **painful when** you **press** on a **bone** in the spine?
7. Ask the patient to lie on his back. Lift one leg at the hip but keep the knee straight. Do the same with the other leg. Ask the patient if there is **pain in** the **back and below the knee when** you **lift the leg**.

Give each student a copy of Appendix 19. Explain to the students that Appendix 19 summarises what they need to know to diagnose the cause of back pain.

Role plays

Tell your students that you will now role-play seven patients. Tell the students to ask you each of the seven questions.

- For question 6, ask a student to press on your spine bones.
- For question 7, lie on your back and ask a student to lift each leg as described above.
- When you role-play patient 3, tell the student that you feel pain in the back and below the knee when she lifts your leg.

Next, ask the students to tell you the diagnosis. Tell the students the treatment.

ROLE PLAY 1:

Patient 1 has had back pain for less than 2 weeks. The pain is often worse after exercise. She has a fever.

Diagnosis: The cause of back pain is fever. Fever causes pain in the muscles of the back.

Treatment: Treat the patient for malaria if there is malaria in the area.

ROLE PLAY 2:

Patient 2 has back pain that gets worse after exercise and gets better after rest.

Diagnosis: The cause of back pain is the back muscles working too hard.

Treatment: Show the patient Show to keep her back straight and bend her knees when bending over. Regular stretching exercises each morning and night will help. Paracetamol may be helpful.

ROLE PLAY 3:

Patient 3 has pain in the lower back. The pain goes down one leg below the knee when the hip is bent.
(Tell the student that you feel pain in the back and below the knee when she lifts your leg.)

Diagnosis: The cause of back pain is a disc prolapse. A disc prolapse happens when the gristle (soft part) between the bones in the spine is damaged and pushed out from between the bones of the spine. Sometimes this gristle is pushed against a nerve. This causes the pain of a disc prolapse.

Treatment: Tell the patient not to work for 2 weeks. He should start doing regular stretching exercises as soon as he can. Give him paracetamol. Refer him to the orthopaedic clinic if the pain has not started to reduce after 2 weeks.

ROLE PLAY 4:

Patient 4 has had pain in the back for more than six weeks. The pain is constant. There is also pain when you press one of the bones in the spine. There may be a fever.

Diagnosis: The cause of back pain is tuberculosis of the spine.

Treatment: Send the patient to the tuberculosis clinic.

ROLE PLAY 5:

Patient 5 has had a bad fall or an accident. There is pain when you press one of the bones in the spine.

Diagnosis: The cause of back pain is a broken bone.

Treatment: Tell the patient to rest completely for 6 weeks. Give her paracetamol. If the patient does not rest she may damage the nerve in her spine. If she damages the nerve in her spine, she may never be able to walk again. If the patient has weakness in her legs or cannot feel part of her legs or around her anus, send her to hospital immediately.

SECTION 3: When to refer patients to hospital

POSTER 15:
(Student answer poster)

When to send patients to hospital

Write the title only on Poster 15 before the lesson.

Ask students to write reasons for sending a patient to the hospital on Poster 15. Tell students which of the answers they have written on Poster 15 are correct. Circle the correct answers on Poster 15 so all the students can see them. Look for the following answers:

Answer • if a patient with a head injury says 'yes' to any of the five questions

Answer • if a large bone has been broken

Answer • if a patient has shock caused by blood loss or broken bones

Answer • if a patient has shock caused by anaphylaxis and is still unconscious or unwell after the second injection of epinephrine

Answer • if a patient has drunk kerosene

Answer • if a patient is bitten by an animal that may have rabies

Answer • if a patient has third-degree burns or burns on more than 10% of the total skin area; if the patient has a burn on the face or private parts or a burn has not started to heal after 1 week

Answer • if a patient has possible septic arthritis

Answer
Answer
Answer
Answer

- if a patient has possible osteomyelitis
- if a patient with a disc prolapse is no better after 2 weeks (send to the orthopaedic clinic)
- if a patient has had constant back pain for 6 weeks or more and part of the spine is tender (send to the TB clinic)
- if the patient has had an accident and has weakness in his legs or cannot feel part of his legs or around his anus

SECTION 4: **Practical**

Tell the students that this demonstration will show them how to treat snake bites. You need clothes, a piece of rope to represent the snake, some leaves, a cup of water, a short stick and three pieces of cloth. Ask one student to play the woman who is bitten by the snake. You will play the farmer. Practise the demonstration with the student before the lesson.

Demonstration

Woman: Ahhhh ... I've been bitten by a dangerous snake!
Farmer: Do *not worry. snakes are not very good at injecting poison into people. Most snakes do not make dangerous poison.*
Woman: That's nice to know.
Farmer: Lie down and let me wipe the bite with a piece of cloth.
Woman: Thank you.
Farmer: I will wrap a cloth firmly but not tightly around the leg. Next. I'm going to stop your leg from moving. I will tie a stick next to the leg.
Woman: You are very kind.
Farmer: I will take you to hospital.
Woman: Thank you sir.

Snake bites usually happen at night, when people walk barefoot and accidentally stand on a snake. Different types of snake cause different types of damage but most snake bites are not dangerous. The damage caused by a snake bite depends on the type of snake and the amount of poison injected. Usually the snake is only able to inject a small amount of poison.

POSTER 16:
(Student answer poster)

How to treat snake bites

Ask the students how to treat snake bites.

Answer
Answer

1. **Wipe** the **bite** with a piece of cloth. If the snake spat in the patients' eyes. **wash** the **eyes** thoroughly with water. Even urine will help if there is no water available. Do not cut the bite.
2. Tell the patient **not to worry**. Snakes are not very good at injecting poison into people. Most snakes do not make dangerous poison.

Answer 3. Wrap a cloth firmly, but not tightly, around the bitten leg or arm. **Stop** the bitten leg (or arm) **from moving**. Tie a stick next to the leg.

Answer 4. **Send** the patient **to hospital**. If the snake has already been killed, take it to the hospital together with the patient. If the snake is not dead, leave the snake alone. Remember that even a dead snake can still inject poison.

Answer 5. **If** the patient **vomits, turn her on her side**. This will prevent the patient from choking on her vomit.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. If a patient has been hit on the head, what questions are useful.
   - **Did he lose consciousness for more than I minute?**
   - **Is it impossible to wake him completely?**
   - **Has he vomited three times or more?**
   - **Has he got a very painful headache or a large wound to his head?**
   - **Does he have any unusual feeling in his arms or legs?**

2. What are the main causes of anaphylaxis?
   - **Medicines - antibiotic injections, antibiotic tablets and vaccinations**
   - **Foods - some people are allergic to some foods, for example, nuts, prawns or squid**
   - **Insect bites and stings - usually from bees and spiders**

3. What should you do to help a patient who has shock because of an accident?
   - **Treat the cause of the shock. Stop the bleeding if possible.**
   - **Give the patient oral rehydration solution. Give him 1 teaspoon (5 ml) of solution every minute.**
   - **If a large bone has been broken give the patient diazepam rectally. Place a stick next to the arm or leg and tie the stick to the arm or leg with cloth.**
   - **Send the patient to hospital immediately.**

4. If the patient has a painful knee, how will you examine it?
   - **Look to see if the joint is more swollen than the joint on the other side.**
   - **Feel to see if the joint is more hot than the rest of the body.**
   - **Press the swelling to find out if it is soft or hard and bony. Is the joint tender?**
   - **Ask the patient to bend the joint. Is it more painful?**

Lesson 11 Psychiatric problems

BEFORE THE LESSON

● There are seven posters in this lesson. (See p. 4 for information on how to use the posters.)
Prepared posters: 1,3, 5
Student answer posters: 2, 4, 6, 7
● There are five demonstrations in this lesson. Ask ten students to help you perform the demonstrations. Give each student a copy of the demonstration and ask them to practise the demonstration before the lesson. They may want to dress up for the demonstration.
● You need a mat or a rug for the first demonstration and some farming tools for the second demonstration.
● Cross out the box about sleeping sickness if there is no sleeping sickness in your area.
● For section 4, try to find a traditional healer who is effective at treating anxiety and depression. Ask him if he will teach your students. Tell him that your students may send patients with anxiety and depression to him if they know that he can help them.
● Provide your students with a copy of appendix 23. Emotional or mental health symptoms.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz
Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. A patient is brought to you because he has been doing strange things for the past 5 days. He does no t have a fever.
   - What questions should you ask to find out if he has severe mental illness?
   - Where should you send him if you think he has severe mental illness?
2. What are the important symptoms of depression?
3. What advice should you give to a patient who has epilepsy?

SECTION 2: Diagnosis and management

Tell the students that this lesson will tell them how to help patients with psychiatric problems.

A patient has psychiatric problems when his mind and spirit are ill. There are many causes of psychiatric problems. Health workers need to understand the local culture to be able to help a patient who has an illness of the mind and spirit. Culture means the beliefs and habits that are normal in the patient's community.

Traditional healers often treat patients with psychiatric problems. Traditional healers often know more about patients' culture than health workers. They are often good at treating illnesses like anxiety and depression. Later in the lesson we will hear from a traditional healer about how he treats these illnesses.

We will now talk about several patients with psychiatric problems: severe mental illness, depression and anxiety. You will also learn about epilepsy. Epilepsy is not a psychiatric illness. It is sometimes caused by damage to the brain. Epilepsy may make some patients more likely to suffer with depression or anxiety.

In areas with sleeping sickness: tell your students that they will also learn about sleeping sickness.

Severe mental illness

A patient has severe mental illness if he has one or more of these symptoms:

- hallucinations
- delusions
- thinking in a very unusual or disorganised way.

Patients with severe mental illness can also have symptoms of depression and anxiety. The symptoms of depression and anxiety are discussed later in this section.

POSTER 2:
(Student answer poster)

Questions for all psychiatric patients

Ask your students to tell you what they should do if they think a patient may have a psychiatric illness.

Ask: When you are **on your own**, do you hear peoples' **voices**? Do you often **see things** that are unusual (hallucinations) ?

Answer

Ask: Do you have any **ideas** that **other people know are not true** that **you know are correct** (delusions)?

Answer

Listen: **Listen** to **what** the **patient says**. If what he says **does not make sense** to you, his thoughts may be unusual or disorganised.

Answer

Ask: Have you been **sad** for **more than 2 weeks**?

Answer

The answers to these questions will tell you whether a patient has a severe mental illness or possible depression.

There are many causes of severe mental illness (sometimes called psychosis). Severe mental illness may be caused by an illness of the body or by a psychiatric illness. Illnesses of the body can sometimes affect the brain and cause mental illness. Illnesses of the body usually last for a short time and can often be cured. Psychiatric illnesses usually last for a long time. Treatment can make psychiatric illnesses better but often the problem will come back again.

Common causes of severe mental illness

Illnesses of the body:
- alcohol withdrawal
- cerebral malaria
- meningitis
- head injury
- alcohol intoxication

Psychiatric illnesses:
- schizophrenia
- mania

Demonstrations

Explain to the students that they will now see three demonstrations which will help them remember how to diagnose different causes of severe mental illness. The demonstrations show patients with an illness of the body, with schizophrenia and with mania.

DEMONSTRATION 1: An illness of the body (Delirium)

Ask one student to play the husband and one to play the wife. You need a mat or rug for this demonstration.

A 20-year-old man is sitting on a mat on the floor. He is restless, shouts and looks anxious. His wife is kneeling next to him and tries to comfort him.

Husband: *Get those things away from me!*

Wife: What things?

Husband: *Those nasty little hairy animals!* (Points to the corner of the room.)

Wife: I can not see any animals.

Ask your students to tell you which of the symptoms of severe mental illness this man has. Look for the following answer:

Answer: The man is having hallucinations.

Tell your students:

This man works at the local sugar plantation. He normally spends most of his wages on alcohol. This week the bar has no alcohol so he has had no alcohol to drink. This man is ill with alcohol withdrawal. If someone drinks large amounts of alcohol regularly and then suddenly stops drinking alcohol, he may become ill with alcohol withdrawal. This causes the person to become anxious, shaky. He may have convulsions. Give him diazepam 10-20 mg by mouth, or rectally or by intramuscular injection. Give him 50 ml of sugar water or milk. Next, send the patient to hospital.

Alcohol intoxication, alcohol withdrawal. cerebral malaria, meningitis and a head injury are all illnesses of the body (also known as delirium) that can cause severe mental illness.

Tell the students how to treat a patient with symptoms of severe mental illness:

- If the patient has symptoms of severe mental illness and has been hit on the head, send him to hospital immediately.
- If the patient has symptoms of severe mental illness and has a fever, treat him for very severe febrile disease (see Chapter 2) and send him to hospital immediately.
- If a patient has symptoms of severe mental illness, but does not have fever and has not been hit on the head, send him to see a psychiatric nurse or doctor.

DEMONSTRATION 2: Schizophrenia

Ask one student to play the role of the boy and another student to play the role of his mother. You need two farming tools for this demonstration.

A 16-year-old boy and his mother are talking to each other as they farm.

Mother: *Why don't you talk to other people, Hassan?*

Boy: The voices tell me not to.

Mother: *What voices?*

Boy: The voices that tell me that the people in our village are against me.

Mother: *But Hassan, the people in the village like you. Where do these voices come from?*

Boy: I hear the voices in my head when there is nobody there. I know that the people from the village hate me. They want to kill me.

Mother: *Hassan, the people in the village are very worried about you. You have been behaving very strangely for the last few months. The people in the village do not want to kill you.*

Boy: I know they do want to kill me. Nothing you can say will stop me knowing that!

Ask your students to tell you which of the symptoms of severe mental illness this boy has. Look for the following answer:

Answer: The boy is having hallucinations, he is hearing voices. The boy has delusions. He thinks the people in his village want to kill him. The people in his village do not want to kill him but the boy knows that he is correct. The boy has thoughts that are unusual.

Ask your students what could cause this boy's severe mental illness. Explain what is wrong with the boy.

This boy does not drink alcohol. He has not been hit on the head. He does not have a fever. The boy is ill with a type of severe mental illness called schizophrenia. A person with schizophrenia cannot tell the difference between things that really do happen and things that do not happen. He may hear voices when there is nobody there. He may feel that he has no control over his thoughts or actions. For example, a patient with schizophrenia may say 'Someone is putting thoughts into my head.' A person can be ill with schizophrenia for many years. The illness sometimes gets better for long periods of time. Other worries can make the schizophrenia worse.

This boy needs to see a psychiatric nurse or doctor. He may need treatment with an antipsychotic medicine. Antipsychotic medicines reduce hallucinations, delusions and abnormal thoughts. Haloperidol, chlorpromazine, thioridazine, trifluoperazine and fluphenazine are examples of antipsychotic medicines. These medicines can cause side effects. One side effect of antipsychotic medicines is acute dystonia.
The symptoms of acute dystonia are:

- the patient is suddenly unable to turn his neck away from one side
- the patient is unable to look ahead with his eyes
- the patient is unable to open his mouth.

If you think that a patient has acute dystonia, stop the medicine or reduce the dose. Next, give trihexyphenidyl (benzhexol) 2.5 mg (half a tablet) three times a day until the symptoms have stopped. Treatment for 3 days is usually enough. Send the patient to see a psychiatric doctor or nurse, who may give the patient a different medicine.

DEMONSTRATION 3: Mania

Ask one student to play the policeman and one to play the woman.

A policeman has been called to the market place. A woman is annoying the sellers at the market. She is talking quickly in a loud voice.

Woman: I tell you all. I am God's messenger. God has brought me back from the dead to set you free from your difficult lives. Come with me now and I will show you all the promised land. I will help you all.

Policeman: *Come with me, madam.*

Woman: Ah officer, I'm glad you came. I've been telling these good people how I can help them. Take me to the radio station so that I can talk to more people. I have a very important job to do. God himself has told me what to do.

Policeman: So *you are a priest of the church?*

Woman: Officer, I am the woman who will do God's work on earth. I need no help from the church. I will make the earth a perfect place to live in. All people will soon be as happy as I am.

Ask your students to tell you which of the symptoms of severe mental illness this woman has. Look for the following answer:

Answer: This woman is having delusions. Her thoughts are unusual.

Ask your students what could be the cause of this woman's illness. Explain what is wrong with her.

This woman does not drink alcohol. She has not been hit on the head and does not have a fever. The woman is ill with a problem called mania.

Tell the students the signs of mania and what to do for a patient with mania.

Patients with mania may:
- be very happy for a long time
- eat a lot and speak quickly
- want to have sex often
- spend all of their money
- think that they are very important
- have hallucinations.

Many patients who have mania some of the time have depression at other times.
Send this woman to see a psychiatric doctor or nurse, who may prescribe an antipsychotic medicine or carbamazepine.

Depression and anxiety

Many things that happen in life can cause anxiety and depression. For example, getting married, taking exams or a serious illness in the family, can make people anxious. People who are anxious for a long time may become ill with depression. Depression can also be caused by a big life event or a problem that continues for a long time. For example, the death of a husband or wife or child can make someone ill with depression.

Ask your students what might cause a patient to be anxious or to become ill with depression.

Demonstrations

Tell the students that they will see two demonstrations about patients with symptoms of depression and anxiety.

DEMONSTRATION 4: Depression

Ask one student to play the role of a 35-year-old woman, and one to play the role of a traditional healer.

A 35-year-old woman is talking to the traditional healer. Her husband and her son have died in the last 2 months.

Traditional healer: Tell me how I can help you.

Woman: *l feel very sad. I cannot sleep and I cry all the time.*

Traditional healer: I heard about the deaths of your husband and son. I am sorry. Are you able to eat?

Woman: *No.*

Traditional healer: What time do you wake up in the morning?

Woman: *Four o' clock. long before the sun comes up.*

Traditional healer: Are you able to do your work? Do you do the things that you normally enjoy?

Woman: *No. I have no interest in anything.*

Traditional healer: Have you thought about harming yourself?

Woman: *Yes. but I could not do it. I still have four children to look after.*

Traditional healer: I can help you get better. You must come to talk to me about how you are feeling every week.
It is normal for people to feel sad some of the time and happy at other times. Talking to a friend or relative about their problems can help most people who are sad. If a person is very sad for longer than 2 weeks and also has three other symptoms. she has depression.

Tell the students again that *all* patients who have depression are very sad for 2 weeks or more.

POSTER 4:
(Student answer poster)

Extra symptoms of depression

Ask your students what the additional symptoms of depression are.

The patient:

Answer is **not interested in eating**

Answer **wakes very early**. well before sunrise

Answer is **more sad in the morning** than in the evening

Answer has **no interest** in sexual intercourse or other things that she normally enjoys

Answer is **unable** to do her **work**

Answer **thinks** that **she is no good** or feels bad for doing something wrong. although she has not done anything wrong

Answer **hopes to die** or **plans to kill herself.**

Send a patient to sec a psychiatric doctor or nurse if she is very sad and also has three or more of these extra symptoms or is planning to kill herself. The psychiatric doctor or nurse may treat depression with counselling or with antidepressant tablets.

Anxiety

Anxiety can cause different symptoms. The symptoms of anxiety include:

- being aware of your heartbeat
- headache
- sweats
- fast breathing
- tingling in the lips and fingers.

But other illnesses can also cause these symptoms. You should look first for fever or anaemia and for symptoms of severe mental illness or depression. If the patient has none of these problems, he probably has anxiety.

If you think a patient has anxiety, ask him what his problems are. Help him to think about his problems and how to solve them himself. Tell the patient that his symptoms are caused by anxiety. Help *the patient* to decide what *he* can do to reduce his problems. This is called counselling. Suggest that the patient talks about his problem with his family or friends to reduce anxiety.

Diazepam should not normally be used to treat anxiety. Diazepam can make the anxiety worse.

DEMONSTRATION 5: Ask one student to play the role of a 17-year-old woman and one to play the role of a doctor.

The woman is talking to the doctor. She is sitting on the edge of her chair. She is looking down and playing with her fingers.

Doctor: Good morning.

Woman: *Good morning.*

Doctor: How can I help you?

Woman: *I have a headache and I can feel my heart beat.*

Doctor: Anything else?

Woman: *I feel like I'm going to vomit.*

Doctor: Do you have a fever?

Woman: *No.*

Doctor: Do you have a cough?

Woman: *No.*

Doctor: Have you vomited or do you have diarrhoea?

Woman: *No.*

Doctor: What medicine have you used?

Woman: *Just paracetamol.*

Tell your students: The doctor examines the patient. He finds that she is not anaemic and that she does not have a fever. The woman's blood pressure is *110/65.*

Doctor: Headaches, feeling your heart beat and feeling as if you are going to vomit are often caused by worry. Is there anything that is worrying you?

Woman: ... (slowly) ... *Well ... yes, there is. I was married last month . I did not want to get married.*

Doctor: I'm sorry. Are you unhappy all the time?

Woman: *No, I still enjoy meeting my friends.*

Doctor: Are you sleeping well?

Woman: *Not bad. It takes a long time to get off to sleep. I do not wake up until sunrise.*

Doctor: Are you able to eat?

Woman: *Yes.*

Doctor: From talking to you and examining you, I can tell you that you do not have any bad illness. Worry or anxiety causes your symptoms. Can you talk to someone else about your worries? It may help to talk to a friend who was also married but did not want to marry. If you are not feeling better in 4 weeks, come to see me again.

How to identify psychiatric problems

Explain to the students that the next story will help them to remember to look for symptoms of severe mental illness in patients who have symptoms of depression or anxiety. It will also help them to remember to look for symptoms of depression in patients who have symptoms of anxiety.

POSTER 5:
(Prepared poster)

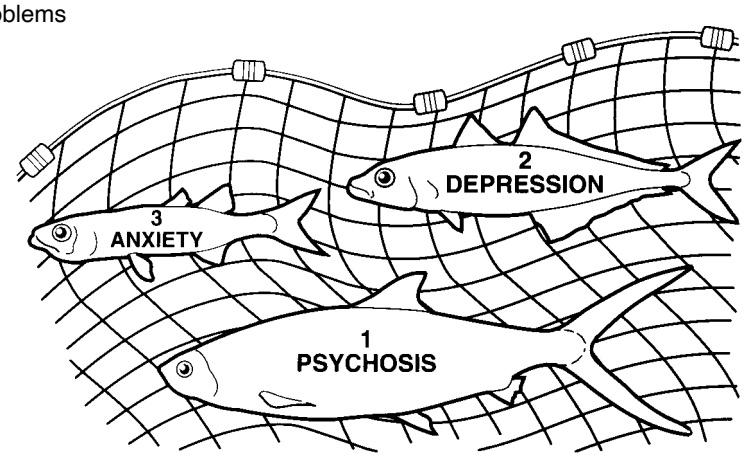
Treat the most important psychiatric problem first

Draw Picture 30 (see p. 156) on Poster 5.
Tell the students about the picture:

A fisherman catches three fish to sell at the market in a town 10 km away. The fisherman can only carry one fish on his bicycle. He must choose which fish to take to town. He will be paid the best price for the biggest fish, so he takes the biggest fish with him to sell at the market. He leaves the small and the medium-sized fish.

A health worker must do the same thing as the fisherman if a patient has more than one psychiatric problem. Treat the biggest problem first, before treating medium-sized or small problems. If a patient has severe mental illness, depression and anxiety, treat the severe mental illness first. Severe mental illness is the patient's biggest problem. Depression is a medium-sized problem. Anxiety is the smallest problem. Remember that delirium (a problem of the body) is more important than psychosis and can cause hallucinations.
See appendix 23 Emotional or mental health symptoms.

Other symptoms that tell you a patient may have a psychiatric problem are:
- physical symptoms with no obvious cause
- tired all the time.



PICTURE 30 *Treat the most important psychiatric problem first*

Physical symptoms with no obvious cause

Some patients come to the health centre again and again with physical symptoms that have no obvious cause. Sometimes the real problem is linked to poor sleep or emotional ill health. Ask the patient if there is anything which might be making her worried or sad. Tell the patient that her symptoms may be linked to worry or sadness, but the symptoms are real. These are called functional symptoms. Where there are no sinister symptoms it is usually best to stop investigating and asking for more opinions. Experienced clinicians can help these patients to understand functional symptoms and to accept them. This can reduce their anxiety.

Tired all the time

Feeling tired all the time is very common in patients with psychiatric illnesses. If a patient tells you that he has been tired for a long time, he may have anaemia, diabetes or an infection. But, if there is no obvious physical cause for his tiredness, look for a psychiatric problem.

Refreshment break

Epilepsy

Epilepsy is usually caused by damage to part of the brain. It is not a psychiatric illness. However, many people *wrongly* think that people with epilepsy have a mental illness or that epilepsy is caused by spirits.

Patients with epilepsy have convulsions (also called fits). Convulsions can be caused by many other illnesses, such as very severe febrile diseases.

If a patient has had a convulsion:

- Treat him for a very severe febrile disease (see Chapter 2). If you know that he has epilepsy treat him for a very severe febrile disease only if he has more convulsions than usual *and* a fever. Send patients with a head injury to hospital if they have a convulsion.
- If there is no other illness that could have caused the convulsion, the patient may have epilepsy.

However, epilepsy is difficult to diagnose. If you think a patient may have epilepsy, you should send the patient to hospital for

diagnosis. Doctors often only treat epilepsy patients with medicine if they have more than one convulsion every 2 months because epilepsy medicines can cause side effects. For example tiredness. The medicine prevents convulsions. Common medicines for epilepsy are carbamazepine, phenobarbital or phenytoin.

If a patient is taking epilepsy medicine, you need to:

- Explain to the patient and his family that epilepsy is caused by damage to the brain. This is especially important in cultures where people wrongly think that epilepsy is caused by evil spirits.
- Make sure the patient knows he must take the medicine every day. Tell the patient to get more medicine before the tablets finish.
- Tell the patient not to drive a car. lorry or motorcycle unless he has not had a convulsion for more than 3 years. If the patient has no warning before a fit or seizure they should not handle fire or boiling water.

In areas with sleeping sickness

Tell your students:
Sleeping sickness is passed to people by the bite of some types of tsetse fly. Soon after the bite, the patient has an illness that is very similar to malaria. Later the brain becomes damaged. The most common symptom is sleeping during the day and not sleeping at night. The patient may develop severe mental illness and strange behaviour. The patient may find it difficult to walk. Patients with sleeping sickness will die without treatment. Send patients to hospital. Treatment is difficult.

SECTION 3: When to refer patients to hospital

Illnesses of the body may cause some psychiatric symptoms and need immediate treatment and referral to hospital.

POSTER 6:
(Student answer poster)

When to refer patients to hospital

Write the *headings and the left column only* of Table 1 on Poster 6.

Ask the students which patients with psychiatric symptoms or epilepsy need immediate hospital treatment. Ask what treatment they will give first.

TABLE 1 When to refer patients to hospital

Symptoms	Treatment and referral
Answer **Hallucinations or delusions or disorganised thoughts**	**If** the patient has a **fever, treat for a very severe febrile disease** and send to hospital immediately **If** he has been **hit on the head**, **send to hospital** immediately.
Answer **Alcohol withdrawal (Very anxious, shaky or convulsion)**	Give 10-20 mg **diazepam** and 50 ml of **milk or sugar water**. Send to hospital.

POSTER 6:
(Continued)

Answer

Symptom	Treatment and referral
Epilepsy	**If** the patient with epilepsy has a **convulsion** for **more than 20 minutes**, or has **more convulsions** then normal **and** has a **fever**, or has a **general danger sign**, treat for very severe febrile disease and send to hospital immediately. If a patient with epilepsy as a **convulsion after a head injury**, send to hospital immediately.

Answer

In areas with sleeping sickness: Sleeping during the day	**If** a patient **sleeps during** the **day**, but **not at night**, and **behaves strangely** or has **difficulty walking,** send to hospital immediately.

POSTER 7:
(Student answer poster)

When to refer patients to a psychiatric nurse or doctor

Write the *headings and the left column only* of Table 2 on Poster 7.

Ask the students to tell you which patients they would send to a psychiatric nurse or doctor.

TABLE 2 When to refer patients to a psychiatric nurse or doctor

Answer

Symptom	Treatment and referral
Acute dystonia	If you think that the patient has acute dystonia, treat with **trihexyphenidyl** (benzhexol). Send him to a psychiatric doctor or nurse immediately if you do not have any trihexyphenidyl (benzhexol).

Answer

Depression	If a patient has **at least three of the extra symptoms of depression**, or is **planning to kill herself,** send her to a psychiatric doctor or nurse immediately.

Answer

Severe mental illness	If a patient has symptoms of severe mental illness but has **no fever** and has **not been hit on the head**, sent him to see a psychiatric doctor or nurse immediately.

Section 4: Practical: traditional healing

Ask the traditional healer to teach your students about his, or her, methods of treating anxiety and depression. Let him, or her, decide with you how to teach this section. Ask him or her to teach for about 30 minutes. Traditional healers sometimes have false ideas about what causes epilepsy or psychosis. Tell your patients that epilepsy and psychosis are not caused by evil spirits and need modern medical treatment.

Section 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. A patient is brought to you because he has been doing strange things for the past 5 days. What questions should you ask to find out if he has severe mental illness?

- **When you are on your own, do you hear people's voices? Do you often see things that are unusual?**
- **Do you have any ideas that other people know are not true that you know are true?**
- **Have you been sad for more than 2 weeks?**

Where should you send him if you think he has severe mental illness?

- **If there is no fever and no head injury, send him to see a psychiatric doctor or nurse.**
- **If there is fever, treat for a very severe febrile disease and send him to hospital immediately.**
- **If he has had a head injury, send him to hospital immediately.**

2. What are the important symptoms of depression?

- **Being very sad for at least 2 weeks**
- **No interest in eating**
- **Waking very early, well before sunrise**
- **Being more sad in the morning than in the evening**
- **Having no interest in sexual intercourse or other things that they normally enjoy**
- **Being unable to concentrate or to do their work**
- **Feeling no good or feeling bad for doing something wrong when they have not done anything wrong**
- **Hoping to die or planning to kill himself**

3. What advice should you give to a patient who has epilepsy?

- **Epilepsy is caused by damage in part of the brain.**
- **Epilepsy is not caused by evil spirits.**
- **Do not drive for 3 years after a convulsion.**
- **Take your epilepsy medicine every day and get more tablets before the tablets finish.**

Lesson 12 Tuberculosis and leprosy

BEFORE THE LESSON

- Arrange for all the students to visit a TB clinic and a leprosy clinic. It is best if all students visit the clinics before you teach this lesson. Ask the TB and leprosy doctors at the clinics to show the students each of the symptoms in the Table 1 in section 3.
- Give each student a copy of Table 1 'When to refer TB or leprosy patients to hospital' *before they visit the clinics.* They should take Table 1 with them when they visit the clinics.
- There are six posters in this lesson. (See p. 4 for information on how to use the posters.)

  Prepared posters 1, 3, 5, 6.
  Student answer posters: 2, 4.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz
Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. Name three important symptoms of tuberculosis (TB).
2. What investigations can be done to help decide if a patient has TB?
3. Name three important symptoms of leprosy.

SECTION 2: Diagnosis and management

Tuberculosis

POSTER 2:
(Student answer poster)

Divide Poster 2 into four areas. Label the four areas: Area 1: What is TB and who gets TB? Area 2: What symptoms does TB cause? Area 3: How is TB diagnosed in the clinic? and Area 4: TB treatment. In each of the four areas, write an example of a key word, for example:

Area 1: What is TB and who gets TB?	**Area 2: What symptoms does TB cause?**
mycobacteria	cough for more than 3 weeks
Area 3: How is TB diagnosed in the clinic?	**Area 4: TB treatment**
sputum GenwXpert test	treatment takes 6-8 months

Ask each student to write one word or idea about TB in the correct area on Poster 2. Next, ask students to write other words or ideas on Poster 2.

Add any summary words from the information below that the students have missed.

Then, for each area in turn, ask each student to tell the class what he understands about the word he wrote. Draw a circle around each summary word as the student talks about it. Thank each student for his explanation.

Use the following explanations to add useful information and to correct mistakes.

Area 1: What is TB and who gets TB?

Tuberculosis (TB) is an illness that is caused by **mycobacteria**. Mycobacteria are like bacteria, but multiply very slowly. Mycobacteria sometimes stop growing and hide in the body. This makes illnesses caused by mycobacteria difficult to treat.
TB mycobacteria cause abscesses. **TB abscesses** grow very slowly and are **not hot or red**. TB abscesses normally grow in the lungs. They also grow in lymph nodes, in joints, in bone or even in the brain.
When there are TB abscesses in the lungs, this is called pulmonary TB. When a TB abscess in a lung bursts, pus comes out and may get into the bronchi. Patients with pulmonary TB cough up this pus and spray TB mycobacteria into the air. Other people can **only get infected** with TB **by breathing in TB mycobacteria**. People who spend a lot of time in the same room as a patient with pulmonary TB are most likely to catch TB, especially if air cannot easily pass through the room.
When a person breathes in a large number of TB mycobacteria, the mycobacteria attack their body. If the person is healthy, their immune system (the body's defence system) will kill most of the mycobacteria. But a few of the TB mycobacteria will find a place to hide and go to sleep. The mycobacteria will wake up and attack the body again if the person's **immune system** is damaged or **weak**ened. For example, **HIV**, or **malnutrition** or **diabetes**, stop the immune system from fighting off illnesses such as TB. If the TB mycobacteria multiply, the **person will become ill with TB**.

Area 2: What symptoms does TB cause?

Most patients who are ill with tuberculosis have pulmonary tuberculosis. Patients with TB abscesses in the lymph nodes, joints, bones, abdomen, brain or area around the heart have extra-pulmonary TB. One in every five TB patients has extra-pulmonary TB.

(continued)
The most common symptoms of TB are:
1. **cough** for more than **3 weeks**
2. **lost weight** and does not have another illness which causes weight loss
3. **swelling of a lymph node** for more than **2 weeks**
(The swelling is not hot and is not painful when touched.)
4. **coughing up blood**
5. **constant pain in the back** for more than 6 weeks and **part of** the **spine** is **tender**.

Send a patient who has any of these symptoms to the TB clinic.
Depending on where the TB abscesses are, TB (and other diseases) can
*cause **heart failure, septic arthritis, pain in the side of the chest**, or **strange behaviour**.*

Area 3: How TB is diagnosed in the clinic
Three tests can be used to help diagnose TB:

- **Sputum smear microscopy** is the most commonly used test. Three samples of a patient's sputum are examined under the microscope. If the patient has pulmonary TB, sputum smear microscopy may find **acid fast bacilli (AFB)**. TB mycobacteria are acid fast bacilli. Acid fast bacilli are often not found in the sputum of a patient with TB.
- **Chest X-ray** will show a shadow in the lung if the patient has a large TB abscess.
- **Tuberculin skin testing** is helpful for diagnosing TB in children. This is because children with TB do not usually produce sputum and chest X-rays in children do not always give clear results.

Area 4: TB treatment
TB mycobacteria can only be killed when they are multiplying. Because TB mycobacteria multiply very slowly, it takes several months to kill them all. The treatment for TB is different in different countries. Teach your students the treatment and drugs that are recommended by the national policy of your country. The treatment is also different if the patient has been treated for TB before.
Medicines used to treat TB are **rifampicin, isoniazid, pyrazinamide, streptomycin, ethambutol** or **thioacetazone**. Usually patients take three or four different medicines for the first 2 months of treatment. Next, patients take two medicines for a further 4-6 months.
Many countries now use **Directly Observed Treatment (DOT)** programmes. This means that patients are only treated in hospital until they can no longer infect other people. This is usually about 2 weeks. After this, patients can take their medicine at home. A reliable person in their community gives the patient the medicine. This person may be a shopkeeper, a village leader or a health worker in the village or at a hospital.

Side effects of TB medicines

TB medicines can cause side effects. Most of these side effects are mild and should not stop patients from taking the medicine. However, sometimes TB medicines can make patients very ill:

- If a patient becomes **jaundiced,** stop the TB medicines and send the patient to the TB clinic.
- **Thioacetazone** can cause skin rash or blisters around the eyes or mouth. If the patient also has a fever, stop the TB medicines and send him to hospital immediately. If the patient does not have a fever, stop the thioacetazone and send him to the next TB clinic. Thioacetazone can have very bad side effects (called **Stevens-Johnson syndrome**) in patients who have HIV. If you know that a patient has HIV, do not give him thioacetazone.
- **Ethambutol** in large doses can cause **blindness.**

POSTER 3:
(Prepared poster)

What to tell TB patients

What to tell TB patients:

- The **treatment will take 6-8 months.**
- He **cannot** infect other people **2 weeks after** starting the **treatment.**
- **If he does not complete** the **treatment, he will become ill with TB again.** After **incomplete treatment** the TB mycobacteria are **more dangerous** to him and to other people.
- He should **exercise** if he feels well enough.
- **Streptomycin** is dangerous to unborn babies. If a woman could become pregnant, she must tell the TB clinic immediately.
- Other TB treatments are safe for pregnant women.
- **Rifampicin** makes sweat, tears, **urine and semen red or orange** in colour. The semen is healthy and **men may safely father children** when they are taking TB treatment.
- The patient can have **sexual intercourse.**
- If the white parts of the **eyes become yellow,** the patient should **stop the medicine** and **go to** the **TB clinic.**
- If the patient is taking **thioacetazone** and develops a **rash or blisters around his** eyes, he should **stop the medicine** and **go to** the **TB clinic.**

Refreshment break

Leprosy

POSTER 4:
(Student answer poster)

Leprosy

Divide Poster 4 into four areas. Label the four areas: Area 1: What is leprosy? Who gets leprosy? Area 2: Leprosy symptoms,

POSTER 4:
(Continued)

Area 3: Diagnosing leprosy in the clinic, Area 4: Leprosy treatment. This is Poster 4.
Ask each student to write one word or idea about leprosy in the correct area on Poster 4. Next, ask students to write other words or ideas on Poster 4. Add any summary words from the information below that the students have missed. Then, for each area in turn, ask each student to tell the class what she understands about the word she wrote. Draw a circle around each word as the student talks about it. Thank each student for her explanation.
Use the following explanations to add useful information and to correct mistakes.

Area 1: What is leprosy and who gets leprosy?

Leprosy is caused by *Mycobacterium leprae.* These mycobacteria grow on the **cold parts of the body**, for example on the **face** and **buttocks**, **inside** the **nose** and **in the nerves** under the skin. Like TB mycobacteria, leprosy mycobacteria grow very slowly. This is why you will rarely see young children with leprosy. When a patient with leprosy mycobacteria in the nose coughs or sneezes, the mycobacteria are sprayed into the air and may be **breathed in** by other people. Most people are able to kill all of the leprosy mycobacteria that they breathe in. People who are less able to fight off leprosy mycobacteria will become ill with leprosy after a few years. People with HIV infection are *not* more likely than other people to become ill with leprosy.
The type of leprosy a person gets depends on how many of the leprosy mycobacteria his body can kill:

- If only a few of the mycobacteria are killed, the patient will develop **lepromatous leprosy**.
- If some of mycobacteria are killed, the patient will develop **borderline leprosy**.
- If most of the mycobacteria are killed, the patient will develop **tuberculoid leprosy**.

Another name for leprosy is Hansen's disease.

Area 2: What symptoms does leprosy cause?

Leprosy causes symptoms in the places where the leprosy mycobacteria grow:

- If leprosy grows in the skin, it makes the **skin go pale** (in dark-skinned people) **or red** (in light-skinned people). Leprosy can also cause loss of feeling in the skin.
- If leprosy grows in a nerve, it will damage the nerve. This can **stop** the **muscles** from **working** and the patient may not be able to move part of his body. It can also **stop** the patient from **feeling** things. If he cannot feel hot or sharp things he may damage himself.

(*continued)*

• Patients who have lepromatous leprosy and borderline leprosy may have corneal ulceration and **poor eyesight.**

Send a patient with any of these symptoms to the leprosy clinic:

1. An area of the **skin** has become **pale** or red. Ask the patient to close his eyes. Touch the pale area with the corner of a piece of cloth. If the patient is **not able to feel** the cloth, send him to the leprosy clinic.
2. A pale area of skin is **no better after** using a **treatment for fungus infection for 4 weeks.**
3. An **unusual feeling** in an arm, leg or on the face.
4. **Painless ulcers or burns** on his feet or hands.
5. **Swelling in the skin,** often in the ears, which is not painful. The swollen skin does not sweat and loses hair. It is common for people with leprosy to lose the outer part of the eyebrows.
6. A **nerve is painful when you touch it.** Common places to find painful nerves are in the neck, above the elbows, at the wrists, the side of the knees and at the ankles. The nerves feel like dead worms when you touch them.

If a patient cannot feel a corner of cloth touching her feet. she may have leprosy. Patients with anaemia, malnutrition or tiredness may also tell you that they cannot feel their feet but they can feel cloth touching their feet.

Area 3: How leprosy is diagnosed in the clinic

Leprosy is usually diagnosed by just **examining the patient.** Sometimes **skin-slit smear** microscopy is needed. The doctor makes small cuts in several parts of the patient's skin and takes scrapes of the patient's skin to look at under a microscope. Microscopy of smears of this skin may find acid fast bacilli (AFB). Leprosy mycobacteria are acid fast bacilli.

Area 4: Leprosy treatment

Leprosy mycobacteria multiply very slowly, so it takes several months to kill all of them. Medicines used to treat leprosy are **dapsone, rifampicin** and **clofazimine.**

• **Tuberculoid leprosy** - Patients are **treated for 6 months,** with dapsone 100 mg every day. They also take rifampicin 600 mg once a month, usually in the clinic. Patients continue to be **seen in** the **leprosy clinic for 2 years.**

• **Borderline and lepromatous leprosy** - Patients with borderline or lepromatous leprosy are **treated for 24 months.** They take dapsone 100 mg and clofazimine 50 mg every day. Patients also take rifampicin 600 mg and clofazimine 300 mg once each month, usually in the clinic. Patients **go to** the **leprosy clinic for 5 years.**

Side effects of leprosy medicines

Dapsone sometimes makes the patient very ill 4-6 weeks after starting treatment. Stop the medicine and send the patient to hospital immediately. Patients usually have damaged nerves by the time treatment for leprosy is started. Treatment often damages nerves causing lack of feeling or weakness in a part of the body.

POSTER 5:
(Prepared poster)

Advice for patients with leprosy

• She **cannot infect** other people **3 days after** starting the **treatment**.
• **If** she **does not complete** the **treatments** she **will become ill again**. Leprosy mycobacteria are **more difficult to treat after incomplete treatment**.
• She can **exercise** if she feels well enough.
• Leprosy medicines are dangerous to unborn babies. Women should **not** get **pregnant** while taking leprosy medicines.
• Rifampicin and clofazimine make sweat, tears, **urine and semen red or orange** in colour. The semen is healthy and **men may safely father children** when taking leprosy medicines. Leprosy is not passed on to children.
• Patients can have **sexual intercourse**. Leprosy is not passed on during sexual intercourse.
• If you become very ill 4-6 weeks after starting dapsone treatment, stop the medicine and go to hospital immediately.

For patients taking clofazimine:
• Clofazimine may cause the **skin** to become **orange** or purple and the skin of the arms and legs to become dry.
• Clofazimine may also cause **abdominal pains** or **diarrhoea**. Do not stop the medicine.

Patients with tuberculoid leprosy:
• Treatment takes 6 months.

Patients with borderline leprosy:
• Treatment takes 2 years.
• Part of the body may become very **painful** and **swollen** or **weak.** This is a called a **reversal reaction**. Do not stop the medicine. **Take paracetamol**, two tablets four times a day. Go to the leprosy clinic.

Patients with lepromatous leprosy:
• Treatment takes 2 years.
• The patient may have a **fever** that does not get better after treatment for malaria. This is called an ENL reaction. Do not stop the leprosy medicine. Take **paracetamol**, two tablets four times a day, and go to the leprosy clinic.

Nerve damage means that many leprosy patients cannot feel parts of their feet or hands. Advise patients to give their feet and hands special treatment every day to prevent the skin becoming broken and ulcerated.

POSTER 6:
(Prepared poster)

Skin treatment advice

- **Look at** your **feet, hands** and **eyes every day**. Use a mirror or ask a friend to look at your eyes.
- **Soak** your **feet in water mixed with vegetable oil**. Coconut oil is suitable.
- **Remove hard skin** by rubbing gently with a rough stone.
- Put **vegetable oil or petroleum jelly** on your hands and feet.
- **Clean and cover wounds**.
- Every day **stretch** the parts of your body that you cannot use.
- Protect your hands with **gloves** or a cloth when you cook or work.
- Protect your feet with **shoes**. These must be the correct size, have a soft rubber sole and be soft inside.
- Wear **sunglasses** during the day. **Cover** your **eyes with** a **cloth at night**. Your doctor may give you eye drops to stop your eyes from becoming dry.

SECTION 3: When to refer patients to hospital

Before the lesson, give each student a copy of Table 1, which explains when to send patients to a clinic or hospital. They should take this table with them when they visit the TB and leprosy clinics.

TABLE 1 When to refer TB and leprosy patients to hospital

TB PATIENTS
Refer to TB clinic for diagnosis if:
- cough more than 3 weeks
- weight loss
- lymph node swollen for more than 2 weeks
- coughing up blood
- pain in back for more than 6 weeks and part of the spine feels tender

Stop TB medicine and send to the TB clinic if:
- jaundice
- rash or blisters

(continued)

LEPROSY PATIENTS

Refer to the leprosy clinic for diagnosis if:
- pale or red skin areas and no feeling in the skin
- strange feeling in arm, leg or face
- ulcers or burns, which are not painful
- painful nerves

Send to hospital immediately if:

- using dapsone and has fever and rash - stop dapsone

Continue leprosy medicines, give paracetamol and send to the leprosy clinic if:
- borderline leprosy with painful skin or weak foot or hand
- lepromatous leprosy with fever, if no better after first-line malaria treatment

SECTION 4: Practical: Visits to a TB clinic and a leprosy clinic

Each student should visit a TB clinic and a leprosy clinic during the course.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. Name three important symptoms of TB.
   - **A cough for more than 3 weeks**
   - **Weight loss**
   - **Swelling of a lymph node for more than 2 weeks**
   - **Coughing up blood**
   - **A constant pain in the back for more than 6 weeks and part of the spine is tender**
2. What investigations can be done in the clinic to diagnose TB?
   - **Sputum smear microscopy**
   - **Chest X-ray**
   - **Tuberculin testing**
3. Name three important symptoms of leprosy.
   - **Pale skin with loss of feeling**
   - **Ulcers or burns on the hands or feet which are not painful**
   - **Swelling in the skin which is not painful**
   - **Pain on touching a nerve**

Lesson 12 HIV

BEFORE THE LESSON

- There are seven posters in this lesson. (See p. 4 for information on how to use the posters.)
  Prepared poster: 1
  Student answer posters: 2, 3, 4, 5, 7. Only write the title on Poster 5 - the students will complete Poster 5 during the lesson.
  Summary poster: 6

- Prepare one copy of Table 1 in section 3 for each student.

- For the practical in section 4, you will need:
  - one white cup for each student
  - enough water to fill each cup one-third full
  - enough starch solution to fill *one* or *two* cups one-third full
  - an instruction card for each student, prepared before the lesson
  - 10 ml of povidone iodine 10%. Keep this separate.

How to prepare the instruction cards

For the practical, give each student one of four different types of cards. The instruction cards will tell students with whom they should mix their water.

1. One or two cards should say:

'You sleep with anyone. Mix your water with 10 or more other people's water.' (If you have 20 students, make one card with these instructions. If you have more than 20 students, make two cards.)

2. Half of the cards should say:

'You sleep with 4 or 5 people. You do not use condoms. Mix your water with 4 or 5 different people's water.'
(So, if you have 20 students, make 10 cards with these instructions.)

Divide the remaining cards into two more or less equal groups:

3. Some cards say:

'You only sleep with one other person. Mix your water with *one other person's* water. Do this *with the same person* 4 times.'
(So, if you have 20 students, make four cards with these instructions.)

4. Some cards say:

'You sleep with two or three people. You always use condoms. *Talk* to two or three other people. *Do not mix your water with anyone.'*
(So, if you have 20 students, make four cards with these instructions.)

Preparation on the morning of the lesson

1. Make the starch solution by mixing mix ½ teaspoon of clothes starch (or maize flour or cassava flour) in a cup which is one-third full of water (or water that has been used to cook rice). *If you use flour instead of starch,* or *rice water instead of water, test that the game will work before the lesson.*

2. In the classroom: fill *one cup only* one-third full with starch solution. If you have more than 20 students, fill 2 cups one-third with starch solution. Fill *all other cups* one-third full with *water. Make sure that you do this before the students arrive.*

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. How is HIV passed from one person to another?
2. Which illnesses does HIV make more common?
3. If a patient is infected with HIV today, when will a blood test show that he has been infected with HIV?
4. How can we prevent people from becoming infected with HIV?

SECTION 2: Diagnosis and management

POSTER 2:
(Student answer poster)

HIV and AIDS

Divide Poster 2 into four areas. Label the four areas: Area 1: What are HIV and AIDS? How are they transmitted?; Area 2: What illnesses are made more common by HIV?; Area 3: How to diagnose HIV in the clinic; Area 4: Treatment for HIV disease and how to prevent HIV infections.

Ask each student to write one word or idea about HIV and AIDS in the correct area on Poster 2. Next, ask students to write other words or ideas on Poster 2. Add any summary words from the information below that the students have missed. Then, for each of the four areas in turn, ask each student to tell the class what she understands about the word she wrote. Draw a circle around each summary word as the student talks about it. Thank each student for her explanation.

Use the following explanations to add useful information and to correct mistakes.

Area 1: What are HIV and AIDS and how are they transmitted?

The Human Immunodeficiency Virus (HIV) slowly **kills** the body's **white blood cells**. The white cells help to protect the body against infections. Many people with HIV

(continued)
infection have no symptoms and stay well for months or years. As HIV kills more and more white blood cells, the patient will get more common infections. These common infectious kill many patients in poor and tropical countries. If a person who has HIV infection lives for several years, he will become ill with **unusual diseases**. When this happens, the patient has **Acquired Immunodeficiency Syndrome (AIDS)**.
Many patients with HIV infection have no symptoms and are well. Other HIV patients have many swellings in the neck and under the arms. These swellings are smaller than 6 cm across.

HIV is **passed** from one **person to** other **persons**:
- during sexual intercourse **if** a **condom** is **not used** (**Other sexually transmitted diseases** also help HIV to infect other people.)
- **by blood transfusion** if blood is not tested for HIV
- by using **needles** that have **not** been **sterilised** for injecting medicines or drugs
- **from** an **HIV-infected mother to her baby**, during **pregnancy, birth** or through **breastfeeding**. About one of every three babies born to mothers who have HIV are infected with HIV.

Tell your students:

There is a risk that a mother who has HIV can pass on HIV it she breastfeeds her baby. However, even for mothers who have HIV, breastfeeding their baby is usually safer than bottle feeding. Bottle feeding with artificial feeds, like baby formula (substitutes for breast milk), can be dangerous. If a mother bottle-feeds her child, the risk of the child dying from other illnesses, like malnutrition, pneumonia or diarrhoea, is increased 25 times.

*If a mother has HIV, it is **only** safer to use artificial feeds instead of breast feeding **if** the mother is able to sterilise the bottles and buy enough baby formula to mix it correctly with safe, clean water **at all times**.*

HIV is **not transmitted**:
- by **mosquito bites**
- by **sharing food, tools for eating** or by **touching unbroken skin**.

Area 2: Illnesses which are made more common by HIV
People with HIV are more likely to get some infections and illnesses. The following illnesses are made more common by HIV:

1. **herpes zoster**
2. **pneumonia, *Pneumocystis carinii* pneumonia (PCP), sinusitis**
3. **tuberculosis**

4. **oral candida**
5. **oral hairy leucoplakia**
6. **weight loss, persistent diarrhoea**
7. **parotitis**
8. **non-typhi salmonellae**
9. **Kaposi's sarcoma**
10. **cryptococcus.**

If a patient has one of these illnesses, treat the illness and talk to the patient about HIV. If the patient is worried about HIV or thinks she may be infected, refer her to a voluntary counselling and testing centre.

Area 3: How HIV is diagnosed in the clinic
HIV is usually diagnosed with a test called an **antibody test**. The test looks tor antibodies to the virus in a sample of the patient's blood. The body's immune system produces antibodies to HIV after infection with the virus. It can take up to 8 weeks for the body to produce antibodies. An **HIV test** will **not show whether** a **patient** has been infected with HIV **until up to 8 weeks after the infection**.

Area 4: Treatment for HIV and AIDS

There is **no treatment** available that **can completely cure HIV**. But:

- People with HIV can be **treated for other infections**.
- Children and adults can have all the usual **immunisations**.
- **Pregnant women** can **take vitamin A** in the last 3 months of pregnancy to reduce the chance of passing HIV to their babies.
- People with HIV can cope better with their illness if they receive **counselling** and practical help.
- You can help people with HIV to **stay well** by advising them to eat a **mixed diet**, including five pieces of fruit or vegetables every day, and to **go for treatment quickly** if they get ill.

Treatment for infections and illnesses which are made more common by HIV

POSTER 3:
(Student answer poster)

Answer

How to treat illnesses made more common by HIV
Ask the students how to treat the infections and illnesses below.

1. **Herpes zoster (shingles)** - Herpes zoster causes an area of skin on one side of the body to become red, blistered, ulcerated and painful. **Treat** in the **same** way **as** any **ulcer**. **Clean and cover the skin**. When the ulceration heals, it normally leaves a scar.

Answer 2. **Pneumonia or sinusitis** - If the patient has had pneumonia or sinusitis two times or more this year, he may have HIV infection. See Lesson 2.
PCP. PCP is a type of pneumonia. PCP is short for ***Pneumocystis carinii*** **pneumonia**. If a **child less than one year old has a cough for more than 3 weeks**, he may have PCP. Send him to hospital.
Sinusitis is an infection of a sinus. If a patient has pain in the face and yellow or green discharge coming from his nose, diagnose sinusitis. **Treat** with **antibiotics for 10 days**. Give children aged 12 or less amoxicillin or co-trimoxazole. Give patients aged 13 and over who are not pregnant, tetracycline 250mg four times a day.

Answer 3. **Tuberculosis** - see Lesson 12.

Answer 4. **Oral candida** - Oral candida (sometimes called thrush) causes a painful mouth. See Lesson 14.

Answer 5. **Oral hairy leucoplakia** - You will find white lines on the side of the tongue. Oral hairy leucoplakia is painless and **needs no treatment**.

Answer 6. **Weight loss with persistent diarrhoea** - Patients with HIV may have diarrhoea and fever often. This causes weight loss. Sometimes the diarrhoea is caused by unusual parasites. If the patient is dehydrated **give oral rehydration solution** (see Lesson 6). If he is not dehydrated, advise him to drink plenty of fluids. Advise all patients to eat a **mixed diet**. Send to hospital.

Answer 7. **Parotitis** - If a child **between 1 year old and 2 years old** has a painful swelling over the angle of the jaw, the child has **parotitis** and may have HIV. (Mumps can also cause parotitis and a fever. Mumps usually affects children aged over 5 years.) Give **paracetamol for pain** if needed.

Show students where the angle of the jaw is.
Patients with more advanced HIV disease or AIDS may get other illnesses, including non-typhi salmonellae, Kaposi's sarcoma and cryptococcus.

Answer
- **Non-typhi salmonellae** in HIV patients is like typhoid. Patients have fever that does not get better with malaria treatment, and they need to **go to hospital**.

Answer
- **Kaposi's sarcoma** is a cancer which shows as purple patches on the body. It grows slowly and usually **does not need treatment**.

Answer
- **Cryptococcus** is an infection that can cause a constant headache. It cannot usually be cured. You can give the patient **ibuprofen** 400 mg three times a day to reduce the pain.

POSTER 4:
(Student answer poster)

How to prevent HIV infections

How to prevent HIV infections

Ask the students how to prevent HIV infections.

Answer

1. Teach people to **use condoms** during sexual intercourse. Condoms protect against HIV and other sexually transmitted diseases.

Answer

2. Send people for **treatment for other sexually transmitted diseases**, and ask them to take their partners for treatment (see Poster 5).

Answer

3. Make sure **blood for transfusion is safe** by testing it for HIV.

Reduce unnecessary blood transfusions. Only give blood if it is needed to save a patient's life. Only give a transfusion:

- if a patient has a haemoglobin (Hb) of 5 g/dl or less
- if a woman in the last month of pregnancy has haemoglobin of 7 g/ dl or less
- if a patient is bleeding very heavily and the bleeding is not stopping.

Answer

4. Use **safe procedures in health centres**:

- cover open wounds or cuts on your hands and arms
- make sure that needles and syringes are properly sterilised
- put used needles in a tin with a lid to avoid injuries. Bury the tin if you do not re-use and sterilise the needles.

If a health worker cuts her skin with a dirty needle, she should make the cut bleed for 2 minutes. Next, wash the cut with soap and water. Some countries have medicines which can be used immediately to reduce the chance of injured health workers becoming infected with HIV.

Answer

5. **Counsel pregnant women** about HIV testing if it is possible to feed babies safely without breastfeeding.

Answer

6. Counsel pregnant women about HIV testing if special treatments are available to help prevent the baby from getting HIV from its mother during pregnancy and birth.

Answer

7. Teach people who inject drugs how to **sterilise needles and syringes** with bleach and water.

Sexually transmitted diseases

POSTER 5:
(Student answer poster)

Symptoms of sexually transmitted diseases

Ask the students to tell you the symptoms of sexually transmitted diseases (STDs).

Answer

1. **ulcers** on or near the private parts

Answer

2. passing **pus** or unusual material from the private parts

Answer 3. **pain** on **passing urine**
Answer 4. **pain on** having **sexual intercourse**

POSTER 6:
(Student answer poster)

Who needs to know about HIV and AIDS?

Ask your students which people need to know how to prevent HIV. Summarise their ideas on Poster 6 as students call them out. After the students have finished giving you their ideas, tell them *that all answers* to *this question are correct.* It is important for ***everyone*** **to know about HIV and AIDS**.

Answer ***Everyone*** **needs to know how to prevent HIV infections**.

Use a thick pen or large letters to write '**Everyone**' on Poster 6.

Refreshment break

How to counsel people about an HIV test

Counselling means helping patients to decide what to do. Your job is to answer questions and give the patient information so that he can decide what he wants to do. It is not your job to tell the patient what to do. Only the patient can decide whether he wants to have an HIV test.

POSTER 7:
(Summary poster)

How to counsel patients about HIV testing

1. Tell the patient (or the mother if the patient is a child) **why you think** that **he may have HIV**.

2. Explain to the patient that there is **no treatment that will remove HIV**. Explain that there are **treatments for** the **infections which are made more common by HIV**.

3. **Give** the patient **time to understand** what you have said to him.

4. **Encourage the patient to ask questions**. Answer questions and make sure the patient understands the information.

5. Talk to the patient about what may happen if he knows that he has HIV. If he knows that he is infected with HIV, he will be able to plan what to do with the rest of his life. Let the patient decide whether he wants to be tested for HIV.

6.Talk to the patient about what may happen if other people know he has HIV. Telling a close friend or relative can help the patient to cope. But it can also cause problems. For example, a woman may fear that her husband will leave her or that her family will reject her. It can be helpful for **all members of a family** to have counselling before someone is tested for HIV. Let the patient decide whether he wants the family to have counselling with him.

7. **Teach** the patient **how to prevent** other people from becoming infected with **HIV**.

SECTION 3: When to refer patients

Give each of your students a copy of Table 1.

Refer urgently to hospital or clinic for diagnosis and treatment if:

- The patient's fever is no better 2 days after treatment for malaria.
- The patient is a child less than 1 year old who has had a cough for more than 3 weeks.
- The patient has a severe headache and difficulty moving their neck or is behaving strangely.

Refer to the next clinic for diagnosis and treatment if:

- The patient has a sexually transmitted disease (send to the STD clinic).
- The patient has had a cough for more than 3 weeks or has blood in the sputum (send to the TB clinic).
- The patient has lost weight with no obvious cause.
- The patient has had diarrhoea for more than 2 weeks .
- The patient has severe herpes zoster.
- The patient has unusual skin rashes, especially if the patient is using thioacetazone. Stop the thioacetazone.

Refer for counselling and testing if:

- A patient wants to know if they have been infected with HIV.
- The patient has had herpes zoster, or oral candida or oral hairy leucoplakia .
- The patient has Kaposi's sarcoma.
- A child aged between 1 and 2 years has parotitis.
- A patient has had sinusitis or pneumonia two or more times in one year.

TABLE 1 When to refer patients who may have HIV to hospital

SECTION 4: Practical: How to avoid HIV

Tell your students that this game shows how easy it is for HIV to infect a large number of people. Make sure your students understand that in this game, they are *only pretending* to have sexual intercourse and they are *only pretending* to pass on HIV infection.

Some students may find a game about sexual intercourse embarrassing. Tell your students that HIV is a very important and serious health problem. This game will help them to understand how HIV is passed from one person to another person and they will be able to advise their patients better.

Game

Give a cup and an instruction card to each student (see page 169). Give one student the cup with starch solution and a card with the instruction 'You sleep with anyone .. .', Give all other students cups with water and a card.

Do not tell this student or the other students that one cup is different from the other cups. It is important that none of the students knows that one cup is different. This cup is the source of the 'HIV infection' in the game.

Tell the students:

- In this game, the water in the cups represents body fluids. Each time you mix your water with someone else's water, this represents sexual intercourse.
- Your card tells you who you can mix your water with. Follow the instructions on your card. Remember that if your card says 'You always use condoms', you *must not* mix your water with anyone else's water.
- You have 10 to 15 minutes to play the game. Walk around the classroom and talk to at least four other students. Tell each student you talk to what is written on your card.
- If your card *and* the card of the student you are talking to tells you to mix water together, pour *all* your water into the other person's cup. Next, pour *half* of the water back into your own cup.

After 10 to 15 minutes:

- Tell the students that you will test the water. You will pretend to test their 'blood' for HIV.
- Tell the students that the water in their cup will turn blue or black if they have 'been infected with HIV' during the game. Tell them the water will turn yellow or brown if they have 'not been infected with HIV'.
- Put four drops of povidone iodine 10% into each cup. Show the students that some of the water has turned blue or black and that some of the water has turned yellow or brown.
- Tell the students that at the beginning of the game, only one person in the class was 'infected with HIV'.
- Ask if anyone knew who was infected before the game. *Do not tell the students who was infected.*
- Tell the students what was written on the cards of the students who 'were infected with HIV' during the game.
- Next, tell the students what was written on the cards of the students who were 'not infected with HIV' during the game.
- Ask the students what they have learnt from this game. Look for the following answers:

Answer Most people with HIV do not know that they are infected. They may infect a large number of other people without knowing.

Answer It is not possible to know from looking at a person if he is infected with HIV or not.

Answer Condoms protect against HIV infection.

Answer If a person only has one sexual partner, he may still become infected with HIV if his partner has other sexual partners.

Answer People who have many sexual partners and who do not use condoms are most likely to become infected with HIV.

This is why it is important to teach everyone about HIV infection and to advise people to use condoms every time they have sexual intercourse.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. How is HIV passed from one person to another?
   - **Unprotected sexual intercourse (without a condom)**
   - **Infected blood transfusion**
   - **Unsterilised needles and syringes used for injecting medicines or drugs**
   - **From an infected mother to her baby during pregnancy, birth or through breastfeeding**

2. What infections and illnesses does HIV make more common?
   - **Herpes zoster**
   - **Pneumonia**
   - **Tuberculosis**
   - **Oral candida**
   - **Oral hairy leucoplakia**
   - **Diarrhoea**
   - **Parotitis**
   - **Non-typhi salmonella**
   - **Cryptococcus**
   - **Kaposi's sarcoma**

3. If a patient is infected with HIV today, when will a blood test show that he has been infected with HIV?
   - **Up to 8 weeks after the infection**

4. How can we prevent people from becoming infected with HIV?
   - **Encourage people to use condoms during sexual intercourse.**
   - **Send people for treatment for other sexually transmitted diseases and ask them to take their partners for treatment.**
   - **Make sure blood for transfusion is safe by testing it for HIV. Only give blood if it is needed to save a patient's life.**
   - **Using safe procedures in health centres.**
   - **Teach people who inject drugs how to sterilise needles and syringes with bleach and water.**

Lesson 14 Ear, nose and throat problems

BEFORE THE LESSON

• There are five posters in this lesson. (See p. 4 for information on how to use the posters.)
Prepared posters: 1, 2, 3
Summary posters: 4, 5
• Give each student a copy of Appendix 20.
• Ask one student to teach the other students how to make a toothbrush in section 2. He will need a piece of soft wood (for example, from a banana tree) and a knife.
• Prepare one copy of Tables 1 to 4 in section 3 for each student.
• You need a syringe (5 **ml** or larger), a cup of water, some soap, a bowl and a towel or cloth for the practical in section 4.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. A patient has a fever and a yellow or green discharge from his ear. How will you treat him?
2. What are the symptoms of diphtheria? How do you treat diphtheria?
3. What are the symptoms of epiglottitis? How do you treat epiglottitis?

SECTION 2: Diagnosis and management

Today you will learn about the most common and important ear, nose and throat problems. It is unusual for these problems to cause death.
If a patient has a problem that you do not know how to treat, send him to the ear, nose and throat clinic.

Ear problems

Ask the students to look at Appendix 20 and to tell you what the common symptoms of ear problems are.

Pain or swelling

If a patient has **pain in the ear or swelling near the ear**, press behind the outside part of the ear, the ear hole and in front of the ear:

- If a patient has a **tender swelling behind the ear** she may have a bacterial infection called **mastoiditis**.
- If the **ear itself is swollen**, the patient may have a bacterial infection called **cellulitis**. Treat cellulitis or mastoiditis with an intramuscular injection of procaine penicillin fortified or chloramphenicol (not if pregnant, breastfeeding or less than 1 month old) or benzylpenicillin. Next, send the patient to hospital immediately.
- If a patient has a **tender ear hole**, she may have **infected otitis externa**. Treat infected otitis externa with co-trimoxazole and steroid ear drops for 5 days.
- If the area in front of the ear is tender and swollen, ask the patient to bite her teeth together. If the patient has a **tooth abscess**, it will be painful to bite her teeth together.
- If there is a **swelling in front of and below the ear**, the patient usually has **mumps**. Mumps is a virus infection which causes the parotid glands at the corner of the jaw to swell. Many patients with mumps have a swelling on both sides of the face. The patient does not need an antibiotic. Advise her to eat a mixed diet. Tell the patient that the swelling will go away after about 1 or 2 weeks.

Discharge

If there is a **green or yellow discharge** from an ear, the patient may have **otitis media, infected otitis externa or a foreign body in the ear**. Treat with co-trimoxazole for 5 days in malaria areas. Or treat with amoxicillin if the patient is pregnant or there is no malaria in your area. If the discharge is no better 1 week after starting treatment, send the patient to the ear, nose and throat clinic.

Itching

If there is itching in both ears, the patient may have **otitis externa**. Give steroid ear drops. Prednisolone, betamethasone or triamcinolone ear drops are all suitable. Give 2 drops three times a day for 5 days.

Noises in the ears

If the patient has **noises in the ears** (tinnitus) this may be caused by anaemia, fever or poor hearing.

- If the noise is in time with the heart beat, the tinnitus is usually caused by anaemia or fever. Anaemia and fever make the blood go through the ears faster than normal.
- If the noise is constant and not in time with the heart beat. the tinnitus is caused by poor hearing from wax blocking the ear.

Throat pain

If a patient has pain in his throat, take a history and look at the back of the throat. Do not put anything into the throat. If the

patient is a young child, the best time to look at the throat is when he is crying.

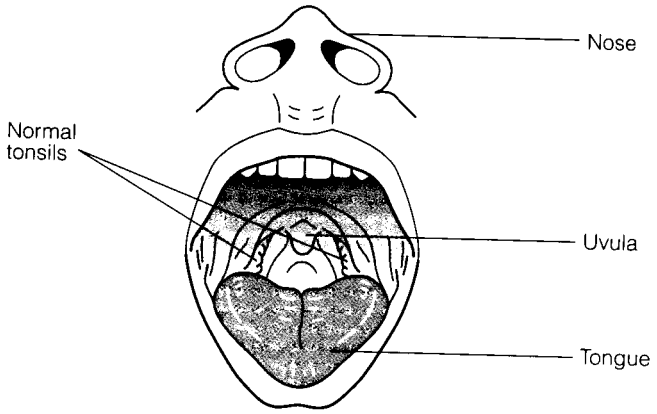
Ask an older patient to:

- look towards the window
- look upwards a little
- open his mouth and say 'gaaaaaaaaa'.

POSTER 2:
(Prepared poster)

The throat

Draw Picture 31 on Poster 2.



PICTURE 31 *The throat*

Show Poster 2 to the students and explain that:
Pain in the throat can be caused by tonsillitis, diphtheria or epiglottitis.

- **Tonsillitis** is an infection of the tonsils. Tonsillitis is caused by a virus or bacteria. It is difficult to know which type of tonsillitis a patient has. Normal tonsils are often big and often have white areas in the cracks.
- **Epiglottitis** is an infection of the epiglottis. The epiglottis is a piece of gristle behind the tongue, which prevents food and drink from going into the lungs. Severe epiglottitis stops air from going into the lungs.
- **Diphtheria** is an infection caused by diphtheria bacteria. Diphtheria can damage the heart and nerves.

Diagnosis

POSTER 3:
(Prepared poster)

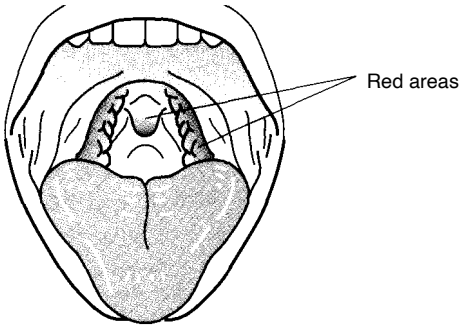
Causes of throat pain

Draw Pictures 32, 33 and 34 on Poster 3.
Explain Poster 3 to the students. Explain how to make a diagnosis in a patient with a painful throat.

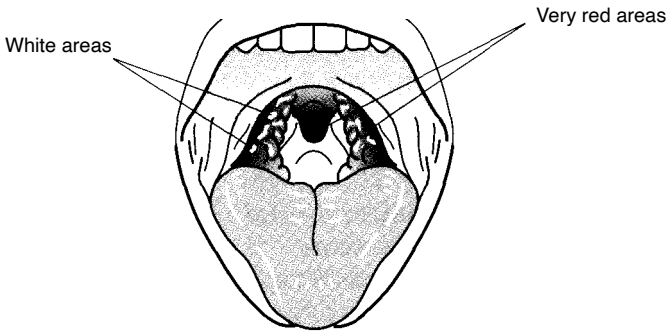
If the patient has a painful throat:

- and is **not able to drink**, diagnose **epiglottitis**
- and the throat is more red than usual but there are **no areas of white** on the tonsils, diagnose **tonsillitis caused by a virus**

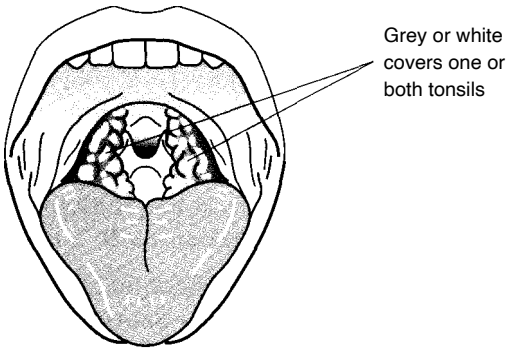
● and the throat is **very red** and there are areas of **white only in** the **cracks of** the **tonsils**, diagnose **tonsillitis caused by bacteria**
● and there are **white or grey areas** which cover the tonsils but the throat is only **slightly red**, diagnose **diphtheria**.



PICTURE 32 *Tonsillitis caused by* a *virus*



PICTURE 33 *Tonsillitis caused by bacteria*



PICTURE 34 *Diphtheria in the throat*

How to treat patients with throat pain

POSTER 4:
(Summary poster)

How to treat throat problems

Summarise the treatment for each throat problem below on Poster 4 as you teach.

Tonsillitis caused by a virus

Husseini is 6 years old. He has had a painful throat and a fever for 2 days. He also has a cough and a fever. He is able to drink, is not anaemic and does not have fast breathing. Ask Husseini to look towards the window, look up a little and to open his mouth and say 'gaaaaa'. Husseini's throat is more red than usual. There are no areas of white on the tonsils, but the tonsils look very big. Husseini has tonsillitis caused by a virus.

Treatment: Tell Husseini's mother to **feed** him **five times a day** until 1 week after he is better. Give Husseini the first-line **malaria treatment**. Ask his mother to **bring** Husseini **back** to the health centre **if** he is **no better after 3 days**.

Tonsillitis caused by bacteria

Juma is an 8-year-old boy with fever and pain in his throat. His throat is very red. There are white areas in the cracks of his tonsils. Juma is able to drink. Juma has tonsillitis caused by a bacteria infection.
Treatment: Give Juma **phenoxymethylpenicillin** 250 mg three times a day for 5 days. (He weighs more than 20 kg but less than 40 kg.) Ask Jurnas mother to bring him **back after 3 days if** he is **no better**. If there is malaria in your area you also give Juma the first-line malaria treatment if he is no better after 3 days.

Diphtheria

Amina is a 2-year-old girl who is unwell and has a painful throat. Amina was not given her immunisations. Amina has a fever but she is not anaemic and she does not have fast breathing. You look inside Arninas mouth when she coughs or cries. You can see large areas of **white or grey** on her throat. The white **areas cover both tonsils**. The throat is only **slightly red**. Amina's mouth smells bad. Amina has diphtheria.
Treatment: Give Amina an intramuscular injection of **benzylpenicillin** (0.1 million IU for each kg of body weight up to 2 million IU) and **send** her immediately **to hospital**.

Epiglottitis

Hassan, a 3-year-old boy, has been ill since yesterday. He has a fever and is **not able to eat or drink**. He is leaning forward and has a lot of saliva coming out of his mouth. Hassan has epiglottitis. **Do not look** at Hassan's **throat**.
Treatment: Give Hassan an intramuscular injection of **chlor-amphenicol** (40 mg for each kg of body weight up to 1000 mg) or **benzylpenicillin** and **send** him immediately **to hospital**.

Mouth pain

How to treat mouth problems

POSTER 5:
(Summary poster)

If a patient has pain in the mouth **press on** the **teeth**:

- If **one of the teeth** is **painful** when you touch it, treat the patient for a **tooth abscess**. A tooth abscess can be caused by tooth decay. Tooth decay happens if a person does not brush his teeth twice a day and does not eat a good mixed diet. Treat a tooth abscess with **metronidazole 200 mg three times a day for 5 days** or phenoxymethylpenicillin, at the normal dose, for 5 days. **Send** the patient **to** see a **dentist**.

Look at the **gums**:

- If the gums are painful. or blood comes from the gums, the patient may have **gingivitis** or an **ulcer in his mouth**. Gingivitis and mouth ulcers are caused by, or made worse by, a bad diet and not brushing the teeth. **Advise** the patient to eat a **mixed diet** and to **brush his teeth and to wash out his mouth with clean salted water twice a day**. He should not use sea water.

Ask one of the students to show the class how to make a toothbrush. Make a toothbrush from soft wood, for example the stalk of a banana tree. Use a knife to cut away the outer parts of the stalk. Next, bite the end of the stick until you produce a soft brush. Brush the teeth every morning and night. Use charcoal, salt or baking powder.

Oral candida

One cause of pain in the mouth is more common if a patient has HIV or malnutrition or is taking antibiotics.

Ask the students what this problem is and what it looks like. Look for the following answers:

Answer Oral candida. This is sometimes called thrush.

Answer You will see **white areas on top of painful red areas** inside the mouth.

Next, ask your students:
What is the treatment for oral candida? Look for the following answers:

Answer If nystatin is available, give the patient 100,000 units, after food, four times a day for 7 days. The patient should rinse the mouth and then swallow the nystatin.

Answer Rinse the mouth with gentian violet two times a day for 7 days. Tell the patient not to swallow the gentian violet.

SECTION 3: When to refer patients to hospital

Give each student a copy of Tables 1 to 4.

TABLE 1 Ear problems

Ear problem	Treatment
Green or yellow discharge from the ear no better 7 days after starting co-trimoxazole or amoxicillin	Send to ear, nose and throat clinic
Foreign body in the ear and discharge from the ear	Send to ear, nose and throat clinic
Foreign body in the year that cannot be removed using a syringe and water	Send to ear, nose and throat clinic
Mastoiditis or cellulitis	Procaine penicillin fortified, chloramphenicol or benzyl-penicillin and send to hospital

TABLE 2 Throat problems

Throat problem	Treatment
Diphtheria	Give an injection of benzylpenicillin. Send immediately to hospital.
Epiglottitis	Do not look at throat. Given injection of chloramphenicol or benzylpenicillin. Send immediately to hospital.

TABLE 3 Mouth problems

Mouth problem	Treatment
Oral candida	Gentian violet or nystatin for 7 days. Advise about HIV and send to an HIV counselling and testing centre
Tooth abscess	Metronidazole 200 mg three times a day for 5 days or phenoxymethylpenicillin for 5 days. Send to a dentist.

TABLE 4 Nose problems

Nose problem	Treatment
Blood coming from the nose. Patient feels light-headed and the pulse is faster than 110 beats in one minute.	Press the soft part of the nose on both sides continuously. Lean forward. Give oral rehydration solution 5 ml every minute. Send hospital to immediately.
If there is still blood coming from the nose one hour after you started to treat the patient.	Send to hospital. He should see an ear nose and throat doctor if possible.
Foreign body in the nose has not come out after he has blown hard through his nose 10 times.	Send to hospital. He should see an ear nose and throat doctor if possible.

Refreshment break

SECTION 3: Practical

Blood coming from the nose

Demonstration 1: Ask one student to play the part of a 50 yea old woman called Damu. Ask the second student to play the doctor. Damu has blood coming from her nose. Tell the student who is playing the part of the doctor to do the following things to help Damu as you read them out:

1. Gently press the soft part of the nose on both sides for 10 minutes. Bleeding usually comes from near the front of the nose.
2. Lean Damu forward to stop blood going down the back of the throat.
3. Put something between her teeth, a pen for example, to stop her swallowing blood. This will also help the blood to clot in the nose. If there is still bleeding 1 hour after starting treatment, send the patient to hospital, to see and ear, nose and throat doctor is possible.
4. Count how many times the pulse beats in one minute. If the patient has lost a large amount of blood, feels light-headed and her pulse beats 110 or more times in 1 minute, she is ill with shock. Give her oral rehydration solution, 5ml every minute. Send to hospital.

5. Measure the blood pressure. High blood pressure sometimes causes blood to come from the nose. If the patient's blood pressure is 120 mmHg or more, send the patient to hospital immediately.
6. If the patient does not need to go to hospital and the bleeding stops, put some vaseline inside the nose 2 hours after blood has stopped coming out. Tell the patient to put vaseline inside the nose two times a day for 5 days. This will help the nose to heal.

Foreign body in the nose

DEMONSTRATION 2: Ask one student to play the patient, a 4-year-old boy called Fadhil.
Ask another student to play the part of the doctor. For the last 2 days, pus has come out of Fadhil's left nostril. Tell the student who is playing the part of the doctor to do the following things to help Fadhil as you read them out:

1. The doctor wipes the nose. She looks up the nose. There is something hard in the left nostril.
2. Next, the doctor presses firmly on the soft part of the nostril which does not have a foreign body in it.
3. Place a cloth over the end of Fadhil's nose. Ask him to close his mouth and to blow hard through his nose.
4. If the foreign body has not come out after blowing the nose 10 times, send the patient to hospital, to see an ear, nose and throat doctor if possible.

Foreign body in the ear

- If a patient has something in his ear and there is pus coming out of the ear, send him to the ear, nose and throat clinic.
- If there is no pus, use a syringe and soapy water to take the foreign body out.

DEMONSTRATION 3: You need a syringe (5 ml or larger), a cup of water, some soap, a bowl and a towel or cloth. Ask one student play a doctor and another student to play a girl called Sita. Sita has something in her ear. There is no pus coming from her ear. Tell the student who is playing the part of the doctor to do the following things to help Sita as you read them out:

1. Put a towel or a cloth on the patient's shoulder. Put a bowl underneath the ear.
2. Put some warm soapy water in a cup.
3. Fill a syringe with warm soapy water.
4. Put the end of the syringe into the top of the ear hole. Push the syringe so that water comes out very quickly.
5. Do this several times until the foreign body has come out of the ear.
6. If the foreign body will not come out of the ear, send the patient to the ear, nose and throat clinic.

Wax blocking the ear

Wax which has been pushed against the eardrum may cause poor hearing. If a patient has poor hearing and there is no pus in the ear, treat the patient for ear wax. The following demonstration shows you how to treat ear wax.

DEMONSTRATION 4: Ask one student to play a doctor and another student to play a patient called Thomas. Thomas has been having problems hearing recently. There is no pus coming from his ear. Tell the student who is playing the part of the doctor to do the following things to help Thomas as you read them out:

1. Advise the patient not to clean the ear with a stick. Explain that trying to clean the ear with a stick may cause permanent deafness.
2. Put three drops of vegetable oil into the ear twice a day for five days. Vegetable oil, such as coconut oil, makes the wax soft. When the wax is soft it is easier to remove. Often the wax and dirt will come out with no other treatment.
3. If after 2 weeks the patient still has poor hearing he should come back to the health centre. Use a syringe and soapy water to clean the ear.

SECTION 5: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1. A patient has a fever and a yellow or green discharge from his ear. How do you treat him?
Give him co-trimoxazole for 5 days in malaria areas. Or give amoxicillin if the patient is pregnant or there is no malaria in your area. If the discharge is no better 1 week after starting treatment, send the patient to the ear, nose and throat clinic.

2. What are the symptoms of diphtheria? How do you treat diphtheria?
The throat is painful. There are white or grey areas which cover the tonsils but the throat is only slightly red. Give an intramuscular injection of benzylpenicillin and send immediately to hospital.

3. What are the symptoms of epiglottitis? How do you treat epiglottitis?
The throat is painful. The patient is not able to drink. Do not examine the throat. Give an intramuscular injection of chloramphenicol or benzylpenicillin. Send the patient to hospital immediately.

Lesson 15 Eye problems

BEFORE THE LESSON

- There are four posters in this lesson. (See p. 4 for information on how to use the posters.) Prepared posters: 1, 2, 3, 4
- Prepare one copy of Appendix 21 for each student.
- You need some thin sticks, thin cardboard, pins and scissors for the practicals in section 3.
- Draw large copies of Pictures 38, 39, 40, 41, 42, 43, 44, 46, 47, 48, 49 and 51 of 12 eye problems. Do not label the pictures. Give these pictures to students for the practical in section 4.

SECTION 1: Quiz

POSTER 1:
(Prepared poster)

Quiz

Ask the students to answer the questions on their own. Do not give the answers until the end of the lesson.

1. A 2-week-old baby has had pus coming out of both eyes for 2 days. What could cause this?
2. Name three causes of pain in the eye.
3. Name three causes of poor eyesight when the eye is not red.
4. A patient has a red eye which is painful. Her eyesight in that eye is worse than normal. How will you treat her?

SECTION 2: Information about the eyes

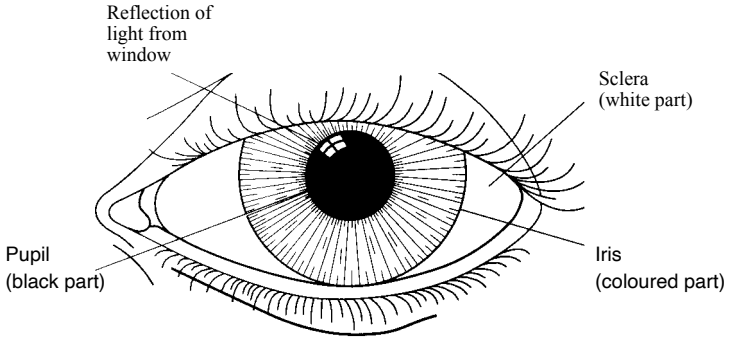
In developing countries, most types of blindness can be prevented or cured. For example. we can prevent blindness caused by lack of vitamin A deficiency and we can treat cataracts. Today you will learn how to identify and treat common and important eye problems.
If you know what a healthy eye looks like, you will know when the patient has an eye problem.

POSTER 2:
(Prepared poster)

The front of a normal eye

Draw Picture 35 on Poster 2.

Point to each part of the eye and explain how it works.
- **Eyelids** close to prevent the eye from becoming dry.
- The **conjunctiva** is a clear wet skin that covers the white part of the eye the inside of the eyelids.



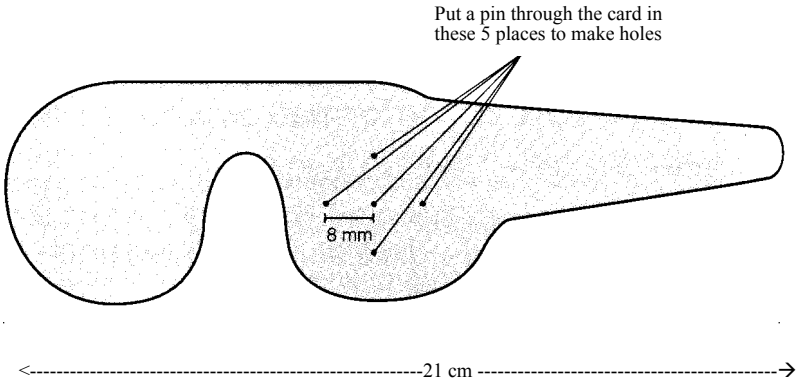
PICTURE 35 *The front of* a *normal eye*

- The black **pupil** gets bigger at night to let in more light. The coloured **iris** is a circle of muscle that changes size to make the black pupil bigger.
- Behind the black pupil is a clear piece of jelly called the lens. The lens allows us to see both things that are near to us and things that are far away from us.
- The **cornea** is the window of the eye in front of the black pupil and coloured iris.

SECTION 3:

Practical: How to examine the eye

Show students how to make a multiple pin-hole occluder. You will need thin cardboard, several small pins, several pairs of scissors. Copy picture 36 of an occluder with five pin-holes. Make the occluder 21 cm long and the pin-holes approximately 8 mm apart in a cross.

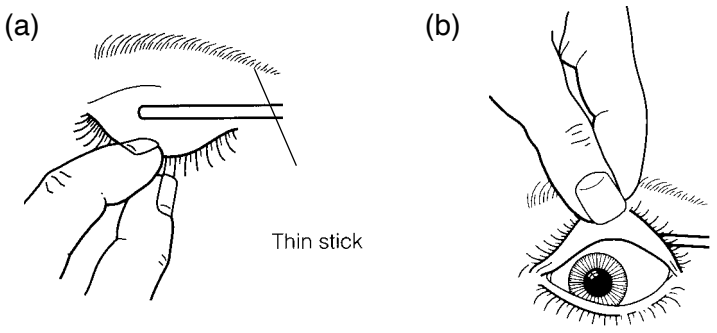


PICTURE 36 *Multiple pin-hole occluder*

Ask a student volunteer to stand with you at the front of the class. Examine the volunteer's eye as shown in Picture 37. Slowly show the other students how to examine the eye. Explain how to examine the eye.

1. The patient should sit facing a window.

2. Look at the eyelids.



PICTURE 37 *How to examine the upper eyelid*

- Put a finger on the lower eyelid and gently pull it down. Look at the inside of the eyelid.
- If the patient has pain in the eye, also look under the upper eyelid. Put a thin stick on the upper eyelid. Hold the stick with your left hand to examine the right eye. With the fingers of your other hand gently pull the eyelashes down. Ask the patient to look down. Lift the eyelid so that it folds over the stick. Wipe the inside of the eyelid with a clean soft cloth or cotton wool.

3. Look at the white part of the eye.
   - Is it the normal colour?
   - Is the white part of the eye more red than usual?
   - Is the area next to the cornea most red?

4. Look at the cornea and the iris. In a healthy eye, the cornea is clear with no marks on it and you can see the iris clearly.

5. Look at the pupil. Normal pupils are black and the same size.

6. Finally, ask the patient if his eyesight, **in that eye**, is worse than usual. Put the pin-holes of the occluder directly in front of the bad eye. Cover the good eye completely. Ask the patient if he can see better or read better through the little holes. If the patient is a child, ask the patient to pick up a small object.

Ask the students to sit together in pairs and to practise examining each other's eyes. Give one stick each to two students. Observe them and make sure they know how to do this correctly.

If after examining a patient's eyes you still do not know why a patient has poor eyesight:
1. look for a fever
2. look for anaemia
3. measure the blood pressure
4. test a urine sample for sugar (to see if the patient has diabetes).

You may need to send the patient to hospital for this test.

Fever, anaemia, high blood pressure or diabetes may cause poor eyesight.

SECTION 4: Diagnosis and management

Symptoms and signs

Give each student a copy of Appendix 21. Explain how to use Appendix 21:

Column 1 of Appendix 21 tells you about the three groups of eye problems:
1. red eye or eyes
2. poor eyesight when the eye is not red
3. swelling next to the eye.

You use column 1 of Appendix 21 to decide which type of eye problems your patient has.

Column 2 tells you the questions you need to ask to find out about the main symptoms and signs of the eye problem. If the answer to *any* question in column 2 is 'yes', look at the group diagnosis in column 3.

Next, look for the other symptoms and signs for that group diagnosis in column 4. When you find the symptom or sign that your patient has, you can make a full diagnosis.

The treatment for each diagnosis is described in column 5.

Tell the students that they will now use Appendix 21 to identify 19 eye problems in the following examples.

Give the pictures of eye problems to 12 students. Explain that each picture shows a different eye problem.

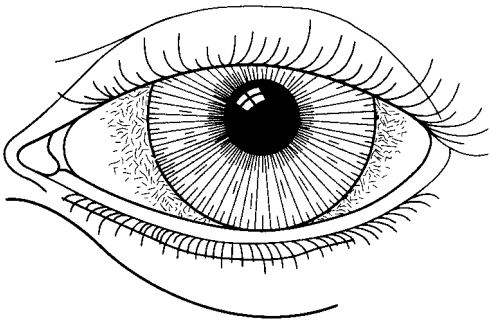
Next, tell the students that you will describe patients with symptoms and signs of different eye problems. The students should use Appendix 21 to decide which eye problem each patient has. If a student thinks that her picture shows that eye problem, she will stand up and tell the class why her picture shows that eye problem. Tell the students that it does not matter if they get it wrong.

Red eye

Group diagnosis 1: Painful red eye

Eye problem* 1: *Iritis

Amina is a 30-year-old woman. She has had pain in her left eye since yesterday. Amina does not have any other illness. Amina's eyelids are normal. The white part of the eye is more red than usual. The white part of the eye next to the cornea is very red. The cornea looks cloudy. The left pupil is smaller than the right pupil. Amina tells you she *cannot* see well with her left eye. Amina has iritis. Iritis is caused by an allergy. Amina's symptoms and signs could also be caused by a corneal ulcer.

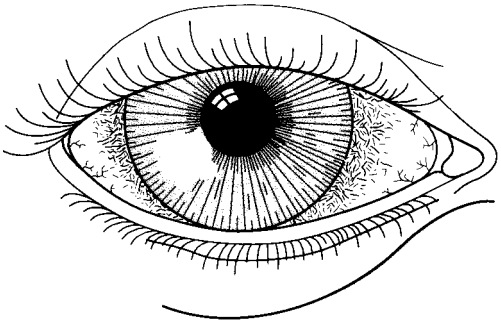


PICTURE 38 *Eye problem* 1: *iritis*

Ask the students: 'Does your picture show iritis? Why?'

Treatment: Put tetracycline eye ointment in the eye. Give Amina an intramuscular injection of benzylpenicillin and send her to hospital immediately. If the patient is a child less than 6 years old, give vitamin A.

Eye problem 2: *Corneal ulcer*



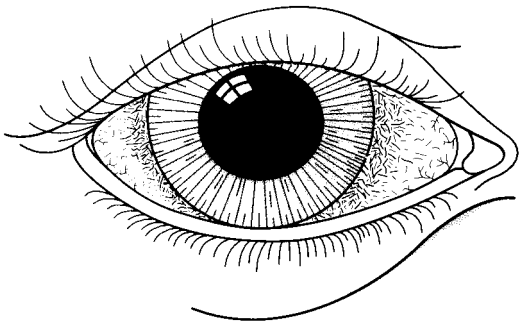
PICTURE 39 *Eye problem* 2. *corneal ulcer*

Maulidi is a 52-year-old man. He has had pain and a large amount of water coming out of his right eye for 3 days. Maulidi does not have any other illness. His eyelids look normal. The white part of the eye next to the cornea is very red. There is a mark on the cornea. The pupil is black. Maulidi tells you he cannot see well with his right eye. Maulidi has a corneal ulcer.

Ask the students: 'Does your picture show a corneal ulcer? Why?'

Treatment: rut tetracycline eye ointment in the right eye and give an intramuscular injection of benzylpenicillin. Next, send Maulidi to hospital immeadiately. Corneal ulcers may be caused by herpes virus, bacteria or fungus infections, or by lack of vitamin A. Give vitamin A if a patient is less than 6 years old.

Eye problem 3: *Acute glaucoma*



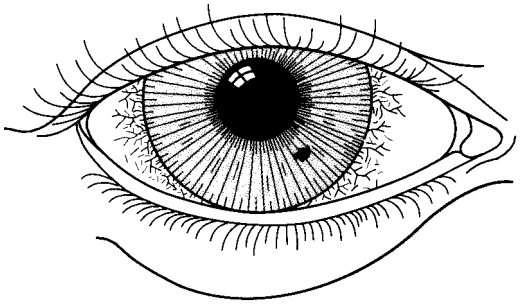
PICTURE 40 *Eye problem* 3: *acute glaucoma*

Mosi is a 50-year-old woman. Her right eye is red. Mosi has had severe pain in her right eye for 2 hours. She does not have any other illness. The eyelids are normal. The white part of the eye next 10 the cornea is very red. There is a large amount of water coming out of t he eye. The cornea is not clear. The right pupil is bigger than the left pupil. The pupil is not black because the cornea is not clear. Mosi cannot see well with the right eye. Mosi has acute glaucoma. A corneal ulcer can cause the same symptoms and signs.

Ask the students: 'Does your picture show acute glaucoma? Why?'

Treatment: Put tetracycline eye ointment in the right eye. Give Mosi an intramuscular injection of benzylpenicillin and send her to the eye hospital immediately. Give vitamin A if a patient is less than 6 years old.

Eye problem 4: *Corneal foreign body*



PICTURE 41 *Eye problem* 4: *corneal foreign body*

Hassan is a 32-year-old man. Yesterday, he felt something go into his right eye. Hassan was not able to sleep because of pain. Hassan does not have any other illness. The insides of the eyelids are

normal. The white part of the eye next to the cornea is red. There is a large amount of water coming out of the eye. You can see a small black object on the cornea. The pupil is black. Hassan says that he can see well with his right eye but that it is difficult to keep the eye open. Hassan has a foreign body in his cornea or a corneal abrasion.

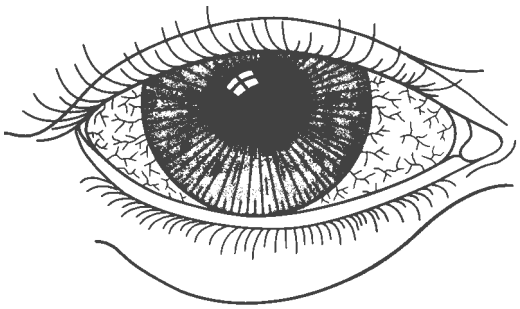
Ask the students: 'Does your picture show a corneal foreign body? Why?'

Treatment: Try to wash the foreign body out of the eye with clean water. Wipe the inside of the upper eyelid. Put tetracycline eye ointment in the eye. If the eye is still painful, send the patient to hospital immediately.

Some foreign bodies go fast enough to go inside the eye. If the patient was using a hammer or chisel, or cannot see well following an accident, or there is blood behind the cornea, send him to an eye hospital immediately.

Group diagnosis 2: Irritated red eye. No pain. Eyesight is normal

Eye problem 5: *Viral conjunctivitis*



PICTURE 42 *Eye problem* 5: *viral conjunctivitis*

Two children, Ali aged 3 years and Saidi aged 5 years, have runny noses and irritated eyes. Ali and Saidi do not have any other illness. In both children, the inside of the eyelids are very red. The white part of the eye is more red than usual. The cornea is clear. The pupil is black. Saidi and Ali are able to pick up a pen easily. Ali and Saidi have viral conjunctivitis. With viral conjunctivitis, there is little or no pus and the eyes are red for less than 7 days. Measles is a virus that can cause conjunctivitis.

Ask the students: 'Does your picture show viral conjunctivitis? Why?'

Treatment: Tell the patients (or the mother) to wash their faces and hands three or four times a day. Each child should not use the same towel as anyone else. Tell the mother to bring the children back if their eyes are no better after 7 days.

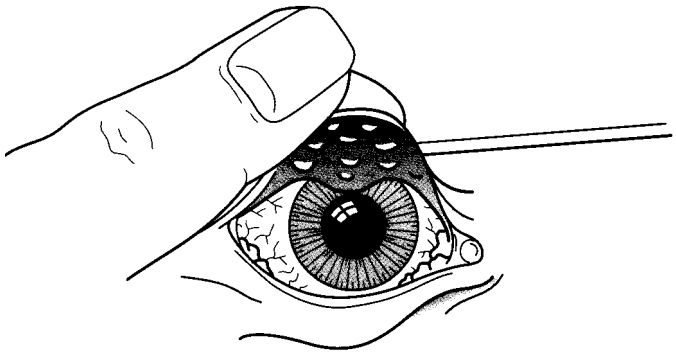
A patient with measles has a rash on his body and a fever. If you think a child may have measles, treat him with vitamin A. Vitamin A prevents serious eye problems and death in children. Give the first dose of vitamin A at the health centre. If a child has fever and there is malaria in the area, give the first line malaria treatment.

Eye problem 6: *Bacterial conjunctivitis*

Conjunctivitis may also be caused by bacterial infection. A patient has bacterial conjunctivitis if there is a large amount of pus in the eye and the eye has been red for less than 7 days.

Treatment: Give tetracycline eye ointment two times a day for 5 days. Tell the patient to go to the eye hospital if he is no better after 3 days.

Eye problem 7: *Trachoma or allergic conjunctivitis*



PICTURE 43 *Eye problem* 7: *trachoma or allergic conjunctivitis*

Asha is 11 years old. Both of her eyes are red and irritated. Ten days ago, Asha was given tetracycline eye ointment. Asha does not have any other illness. You turn Asha's top eyelids inside out. There are many small swellings on the inside of the eyelids. The white part of the eye is more red than usual. There is a small amount of pus in her eyes. The cornea is clear. The pupil is black. Asha tells you that she can see well.

Asha may have conjunctivitis caused by trachoma or an allergy to the eye ointment. If conjunctivitis is no better 7 days after starting eye ointment, it may be caused by an allergy to eye ointment. Stop the eye ointment.

If conjunctivitis is no better 3 days after stopping eye ointment, it could be caused by trachoma. Trachoma is passed from person to person on dirty fingers and by flies. In most countries is is fairly rare.

It causes mild conjunctivitis which continues for a long time. If a patient has many trachoma infections over many years, trachoma can scar the eyelids. These scars may cause the eyelids to bend and to rub against the cornea. If the cornea is damaged it will become scarred and white. Corneal scarring causes blindness.

Ask the students 'Does your picture show trachoma or allergic conjunctivitis? Why?'

Treatment: Tell Asha to stop using the eye ointment, she may have allergic conjunctivitis. Tell her to go to the eye clinic if she is no better after 3 days. Trachoma is treated with tetracycline eye ointment for at least 6 weeks. Normally an eye nurse or doctor will start this treatment. Washing the face and eyes two times a day can prevent trachoma. Using latrines and burying rubbish will reduce the number of flies. There is no treatment for corneal scarring.

Eye problem 8: *Gonococcal conjunctivitis*

Pili was born less than 5 days ago. Pili has a large amount of pus coming out of both eyes. Her eyelids are swollen. Pili does not have any other illness. The inside of the eyelids are very red. The white parts of the eyes are more red than usual. The corneas are clear. The pupils are black. Pili has gonococcal conjunctivitis.

Treatment: Put tetracycline ointment in both eyes six times a day for 5 days. Give Pili the first-line treatment for gonorrhoea, or intramuscular injections of procaine penicillin fortified once a day, or intramuscular benzylpenicillin two times each day, for 5 days. Tell the mother that Pili was infected with gonococcal conjunctivitis during birth. This can happen to a baby if the mother has gonorrhoea. Tell the parents that they have gonorrhoea, which is a sexually transmitted disease. Send the mother and father to the sexually transmitted disease clinic.

Eye problem 9: *Chlamydia conjunctivitis*

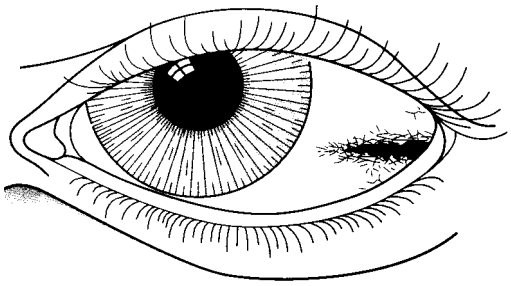
If a baby is more than 5 days old but less than 1 month old and has pus coming out of the eyes, the baby may have chlamydia conjunctivitis. A baby is infected with chlamydia conjunctivitis during birth if the mother has chlamydia infection.

Ask the students 'Does your picture show conjunctivitis which could be caused by gonorrhoea or chlamydia? Why?' The correct picture is the picture of viral conjunctivitis but there must also be pus in the eyes for gonococcal or chlamydia conjunctivitis.

Treatment: Put tetracycline ointment in the eyes once a day for 3 weeks. Also give the baby erythromycin (liquid or crushed tablets) 10 mg for each kg of body weight, four times a day for 3 weeks. Tell the parents that they may have chlamydia, and send them to the sexually transmitted disease clinic.

Group diagnosis 3: Red eye. No irritation. No pain. Eyesight is normal

Eye problem 10: Sub-conjunctival haemorrhage



PICTURE 44 *Eye problem* 10: *sub-conjunctival haemorrhage*

Tracey has just given birth. There is a small collection of blood in the white part of Tracey's left eye. Her eye is not painful. Tracey does not have any other illness. The insides of the eyelids are normal. The cornea is clear. The pupil is black. Tracey is able to see well with her left eye. Her blood pressure is normal. Tracey has a sub-conjunctival haemorrhage. Small accidents, coughing, giving birth, or high blood pressure may cause a small amount of blood to collect under the conjunctiva in front of the white part of the eye.

Ask the students 'Does your picture show a sub-conjunctival haemorrhage. Why?'

Treatment: Tell the patient that the sub-conjunctival haemorrhage will go away after 2 or 3 weeks. Do not give any medicine.

Refreshment break

Poor eyesight, eye not red

Group diagnosis 4: Needs glasses or hand lens

Eye problem 11: *Needs glasses or hand lens*

Salim. a 50-year-old teacher, has found it difficult to read his books for the last 2 years. Salim does not have any other illness. The eyelids and the white part of the eye are normal. The cornea is clear. The pupil is black. You ask Salim to look at a book through multiple pin-holes in daylight. Salim tells you that he can read through the pin-holes. The lenses in Salim's eyes are old. Salim needs glasses or a hand lens to help him to read.

Treatment: Refer Salim to the eye clinic where he may be able to get glasses.

Group diagnosis 5: ***Eye problem* 12: *Cross-eyed***
Cross-eyed *Window reflections are in DIFFERENT positions related to pupils)*

PICTURE 45 *Eye problem* 12: *cross-eyes*

Abduli is a 3-year-old boy. His eyes always look in different directions. Abduli does not have any other illness. The eyelids and the white parts of the eyes are normal. The corneas are clear. The pupils are black. Abduli is able to pick up a pen if you cover the left or the right eye.

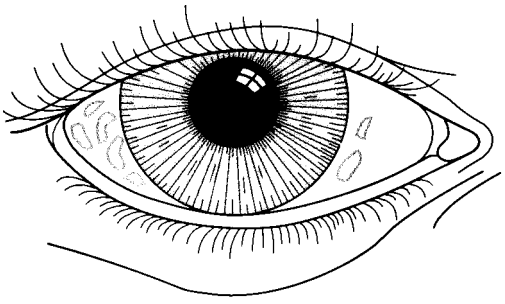
Do the light reflection test. Abduli looks towards the window. You look at the reflections of the window on Abduli's corneas. You compare the positions of the reflections on Abduli's corneas with the position of the pupils. You decide that Abduli is cross-eyed, because the reflections on his corneas are in different places.

POSTER 3:
(Prepared poster)

Draw Picture 45 on Poster 3. Show students the features of cross-eyes.

Treatment: Send Abduli to the eye clinic.

Group diagnosis 6: ***Eye problem* 13: *Lack of vitamin A***
Poor eyesight at night



Siti is a 4-year-old girl. She cannot see well at night and often has accidents when it is dark. Siti does not have any other illness.

The eyelids and the white parts of the eyes are normal. The corneas are clear. There are dry areas on the corneas. The pupils are black. You give Siti your pen. Siti is able to pick up your pen. Siti's brother Usiku is 5 years old. He has little bubbles on either side of the cornea. These are called Bitot's spots. Siti and Usiku both have night blindness. This is caused by a lack of vitamin A.

Ask the students: 'Does your picture show lack of vitamin A? Why?' Ask the student who has a picture of a normal eye to stand up also.

Tell the students that it takes some time for lack of vitamin A to affect the eyes. If the patient has early vitamin A deficiency, the eye will look normal except for dry areas on the cornea. It is important to look carefully at the cornea if you think a patient may lack vitamin A.

Treatment: Give Siti and Usiku three doses of vitamin A:

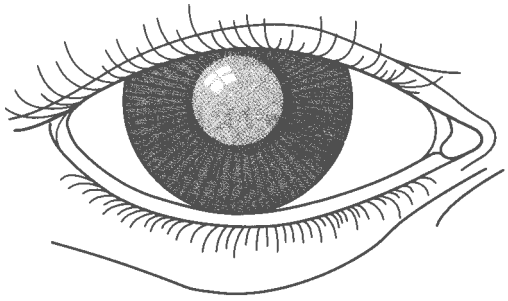
- Give the first dose today.
- Give the second dose tomorrow.
- Give the third dose on day 14.

For children aged less than 1 year, give three doses of 100,000 ID. For children aged more than one year, give three doses of 200,000 IV.

Tell the mother about foods that contain vitamin A. Explain that her children need to eat these foods. Orange fruits and vegetables, and dark green leafy vegetables provide vitamin A. There is also some vitamin A in breastmilk.

Group diagnosis 7: Poor eyesight day and night

Eye problem 14: *Cataract*



PICTURE 47 *Eye problem* 14: *cataract*

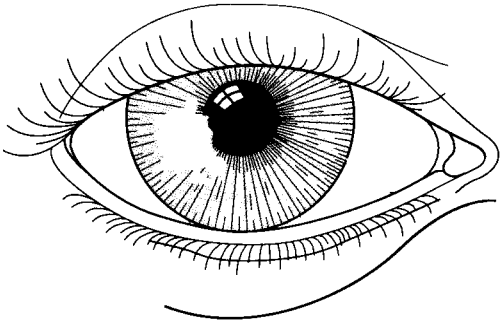
Rashid. a 70-year-old man, has had poor eyesight for many years. His eyesight is slowly getting worse. Rashid does not have any other illness. The insides of the eyelids are normal and the white parts of the eyes are normal. The corneas are clear. The pupils are cloudy white. You hold up your fingers 3 metres in front of Rashid and ask him to tell you how many fingers he can see. He cannot see your fingers. Rashid has cataracts. As the lenses in the

eyes get old or damaged, they become cloudy white. A cloudy white lens is called a cataract.

Ask the students: 'Does your picture show a cataract? Why?'

Treatment: A short operation can sometimes cure cataracts. Tell Rashid that there is an operation which may allow him to sec again. The operation is sometimes free and is not painful. Tell Rashid to go to the eye clinic.

Eye problem 15: *Corneal scar from trachoma or onchocerciasis*



PICTURE 48 *Eye problem* 15: *corneal scar*

Justine is a 30-year-old woman. Her eyesight is slowly getting worse. Justine does not have any other illness. The eyelids are scarred but the white parts of the eyes arc normal. Part of the cornea is white. The pupil is not black because the cornea is not clear. Justine is able to count your fingers from 3 metres but she cannot see well enough to read. Justine has a corneal scar, caused by repeated infections with trachoma.

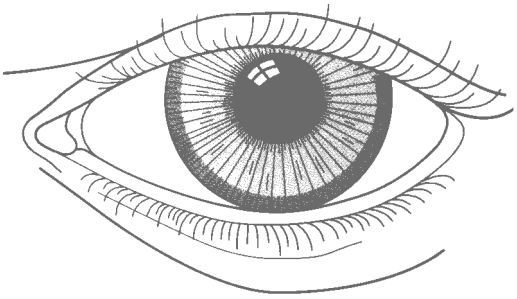
Onchocerciasis can also damage the cornea or the iris or the back of the eye. Onchocerciasis is only seen ill a few countries. The flies which give people onchocerciasis live in fast-flowing rivers.

Ask the students: 'Does your picture show a corneal scar? Why?'

Treatment: If the eye is painful, put tetracycline eye ointment in the eye and send Justine to hospital immediately. If Justine lives in an onchocerciasis area treat her and all the people in her village with ivermectin. Give ivermectin 6 mg one time every year.

Eye problem 16: *Chronic glaucoma*

A patient with chronic glaucoma may complain of blurry vision after they have become blind in the other eye. When you check their eyesight they find it difficult to see things on either side. After a time, the vision directly in front of him goes blurry too.



PICTURE 49 *Eye problem* 16: *normal eye*

Chronic glaucoma does not cause pain. The eyes look normal. Often someone else in the family is blind because of chronic glaucoma,

Ask the students: 'Could your picture show chronic glaucoma? Why?'

Treatment: Chronic glaucoma is treated with a simple operation or with eye drops every day for the rest of the patient's life. Everyone in the patient's family should go to the eye clinic when they reach the age of 40.

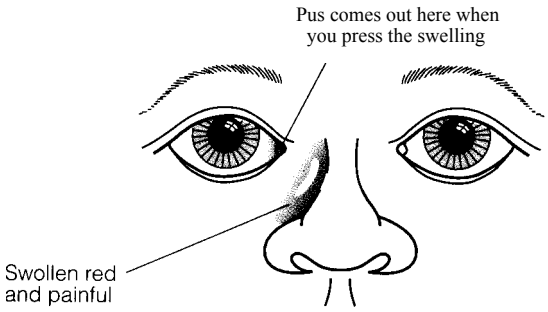
Swellings next to the eye

Eye problem 17: *Orbital cellulitis*

Ravi, a 4-year-old child, has a swollen and painful left eye, Ravi has a fever. The top and bottom eyelids of the left eye are swollen, The white part of the eye is red and swollen. The cornea is clear. The pupil is black. Ravi is able to see with his left eye but can only look forwards. Ravi has orbital cellulitis.

Treatment: Put tetracycline ointment in his eye. You give Ravi an intramuscular injection of benzylpenicillin and send him to hospital immediately.

Eye problem 18: *Acute dacrocystitis*



PICTURE 50 *Eye problem* 18: *acute dacrocystitis*

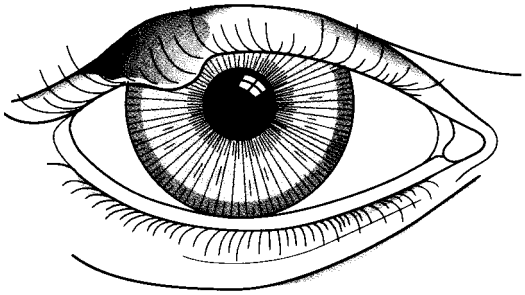
Mwanaasha, a 40-year-old woman, has pain underneath her right eye. Pus has been coming out of her eye for 2 days. Mwanaasha does not have any other illness. The eyelids are normal. The white part of the eye is red. The cornea is clear. The pupil is black. Mwanaasha can see as normal with her lclt eye. There is a red swelling next to the nose. When you touch the swelling. pus comes out of the eye and Mwanaasha tells you that it makes the pain worse. Mwanaasha has acute dacrocystitis.

POSTER 4:
(Prepared poster)

Draw Picture 50 on Poster 4. Show students the symptoms of acute dacrocystitis.

Treatment: Give phenoxymethylpenicillin 500 mg three times a day for 5 days. Give a lower dose if the patient weighs less than 40 kg (see dosages in Appendix 2l). Also tell the patient to press the swelling, from the bottom to the top, three times a day. Tell th« patient to go to the eye hospital if the eye is not better after 5 days.

Eye problem 19: *Stye or infected meibomian cyst*



PICTURE 51 *Eye problem* 19: *stye or infected meibomian cyst*

Eight-year-old Suleirnan has had a swelling above his right eye for 4 days. Suleiman does not have any other illness. There is a red swelling in his right eyelid near to the eyelashes. The swelling is painful when you touch it. The white part of the eye is normal. The cornea is clear. The pupil is black. Suleirnan is able to see as normal with his right eye. Suleiman has a stye or an infected meibomian cyst.

Ask the students: 'Could your picture show a stye or infected meibomian cyst? Why?'

Treatment: Give Sulci mans mother tetracycline eye ointment to put in his right eye two times a day for 5 days. Tell her to take Suleiman to the eye clinic if he is not better after a week.

SECTION 5: When to refer patients to hospital

Ask the students to use Appendix 21 to tell you which patients to send to an eye hospital or clinic.

SECTION 6: Answers to the quiz

Ask the students to call out the answers to each question in the quiz.

1 A 2-week-old baby has had pus coming out of both eyes for two days. What could cause this?
Chlamydia conjunctivitis

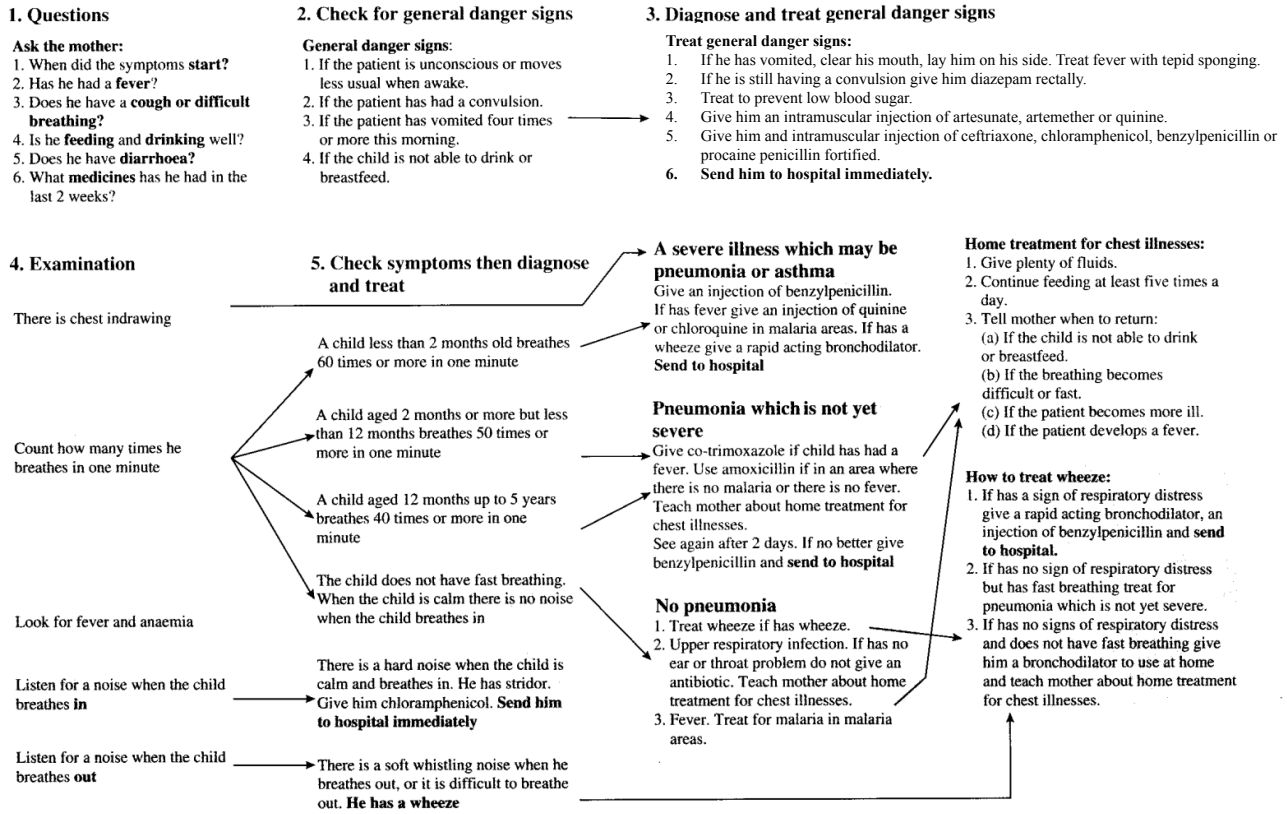
2 Name three causes of pain in the eye.
Corneal ulcer
Iritis
Acute glaucoma
Foreign body in the cornea or corneal abrasion
Orbital cellulitis
Acute dacrocystitis
Stye or infected meibomian cyst

3 Name three causes of poor eyesight when the eye is not red.
Needs glasses
Lack of vitamin A
Cataract
Chronic glaucoma
Corneal scar from trachoma or onchocerciasis

4 A patient has a red eye which is painful. Her eyesight in that eye is worse than normal. How will you treat her?
Put tetracycline eye ointment in the eye.
Give benzylpenicillin intramuscularly.
Send to eye hospital immediately.

PART 3 **Appendices**

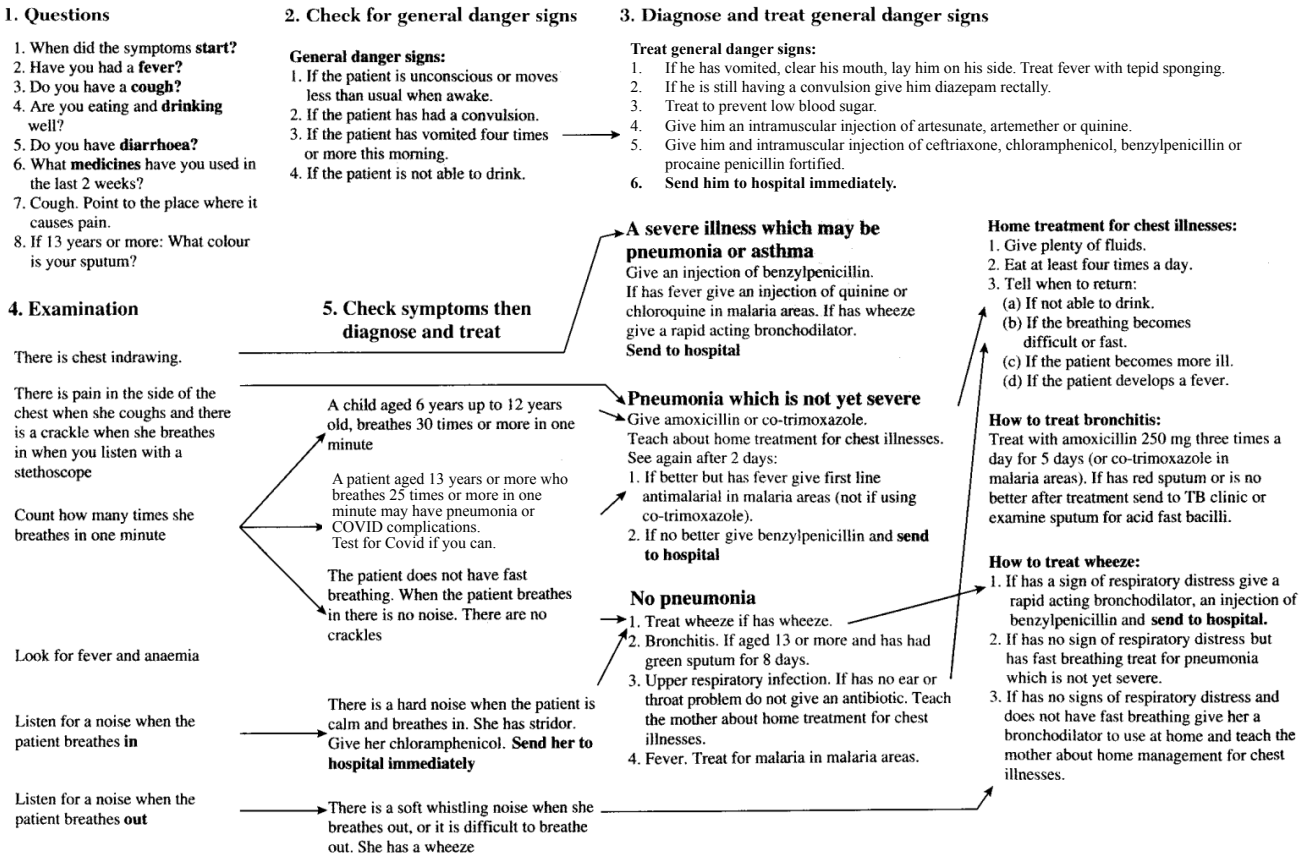
APPENDIX 1 How to treat children aged 5 years or less, who have a cough or difficult breathing



Other emergency options for moderate and severe asthma

- Hydrocortisone 100mg (4mg/kg) can be injected intravenously for severe asthma if you have been taught intravenous injection skills.
- Moderate and severe asthma can be treated with oral steroid tablets. For example prednisolone 2mg/kg per day.

APPENDIX 2 How to treat patients aged 6 years or more, who have a cough or difficult breathing



Other emergency options for moderate and severe asthma

- Hydrocortisone 100mg (4mg/kg if less than 25kg) can be injected intravenously for severe asthma if you have been taught intravenous injection skills.
- Moderate and severe asthma can be treated with oral steroid tablets. For example prednisolone 30mg daily after food for 3 days for patients weighing 15kg or more (2mg/kg per day if less than 15kg).

If COVID test has been positive and symptoms started more than 5 days ago:

If the oxygen level is less than 92%, or they have fast breathing (consistently more than 25 breaths per minute) they need urgent steroid treatment and specialist assessment.

APPENDIX 3 How to give injections

Do not give injections if there is a safer way of giving medicine.
If you give medicines by injection, you will use two types of injection:

- **Intramuscular injections** - for example, these are used to give many antibiotics, malaria treatments, ergometrine to prevent or treat postpartum haemorrhage, epinephrine to treat anaphylaxis.
- **Subcutaneous injections** - for example, these are used to give epinephrine to treat respiratory distress.

Before the injection

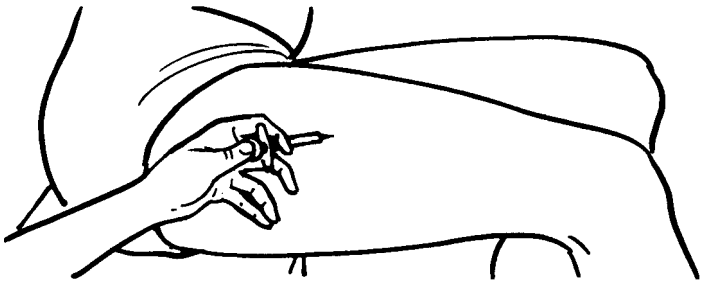
1. Clean your hands with soap or ash, and water.
2. Use a new or sterile needle and syringe.
3. Do not touch the metal end of the needle.
4. Learn how to draw up each medicine.
5. Put the needle and syringe together and draw up the medicine.
6. Ask the patient to sit or lie down.
7. Clean the skin at the injection site with alcohol or soap and water.

How to give intramuscular injections

Give intramuscular injections into the front outer part of the upper leg as shown in Picture 52. Do not inject into the buttocks.

If you are injecting more than 3 ml, inject half of the medicine into each leg.

1. Put the needle into the muscle.
2. Pull the plunger gently. If blood enters the syringe take the needle out and put it in at another clean area.
3. If no blood enters the syringe, inject the medicine slowly.
4. Remove the needle and clean the skin.



How to give subcutaneous injections

Give subcutaneous injections into the back of the upper arm as shown in Picture 53.

1. Hold the fatty part of the back of the upper arm with one hand.
2. Point the needle upwards so that it goes into the fat, *not* the muscle.

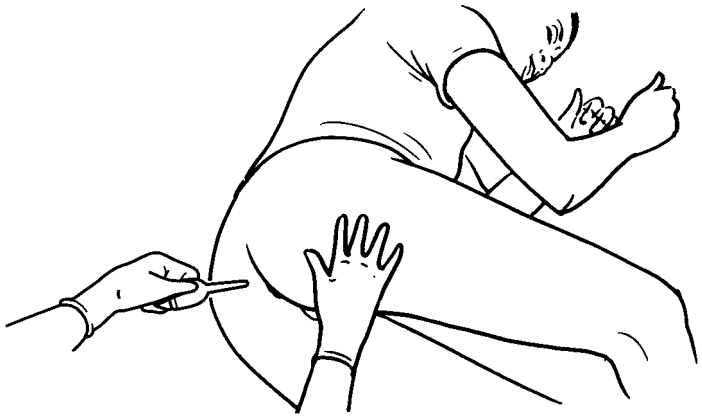
PICTURE 53 *How to give* a *subcutaneous injection*

After the injection

Discard the needle and syringe immediately after use.
If you have to reuse needles and syringes:

1. Push bleach or soapy water through the needle and syringe three times.
2. Take everything apart.
3. Steam or boil the syringe and needle for 20 minutes. *(Note:* at altitudes over 2000 m boil for 40 minutes.)
4. Leave the syringe and needle covered until you use them again.

APPENDIX 4 How to give diazepam rectally



PICTURE 54 *How to give diazepam rectally*

1. Lay the patient on his left side
2. Ask the patient to bend his knees up so that they touch his abdomen.
3. Wet the end of the diazepam rectal tube with water.
4. Put the end of the rectal tube into the anus (Picture 54).
5. Push the tube gently into the rectum.
6. Squeeze the diazepam into the rectum.

APPENDIX 5 How to make a measuring bottle for liquid medicines

It is important to give the correct amount of medicine.

- If we give our patients too little medicine they will not get better.
- If we give our patients too much medicine we will not have enough medicine for other patients.

Making a measuring bottle

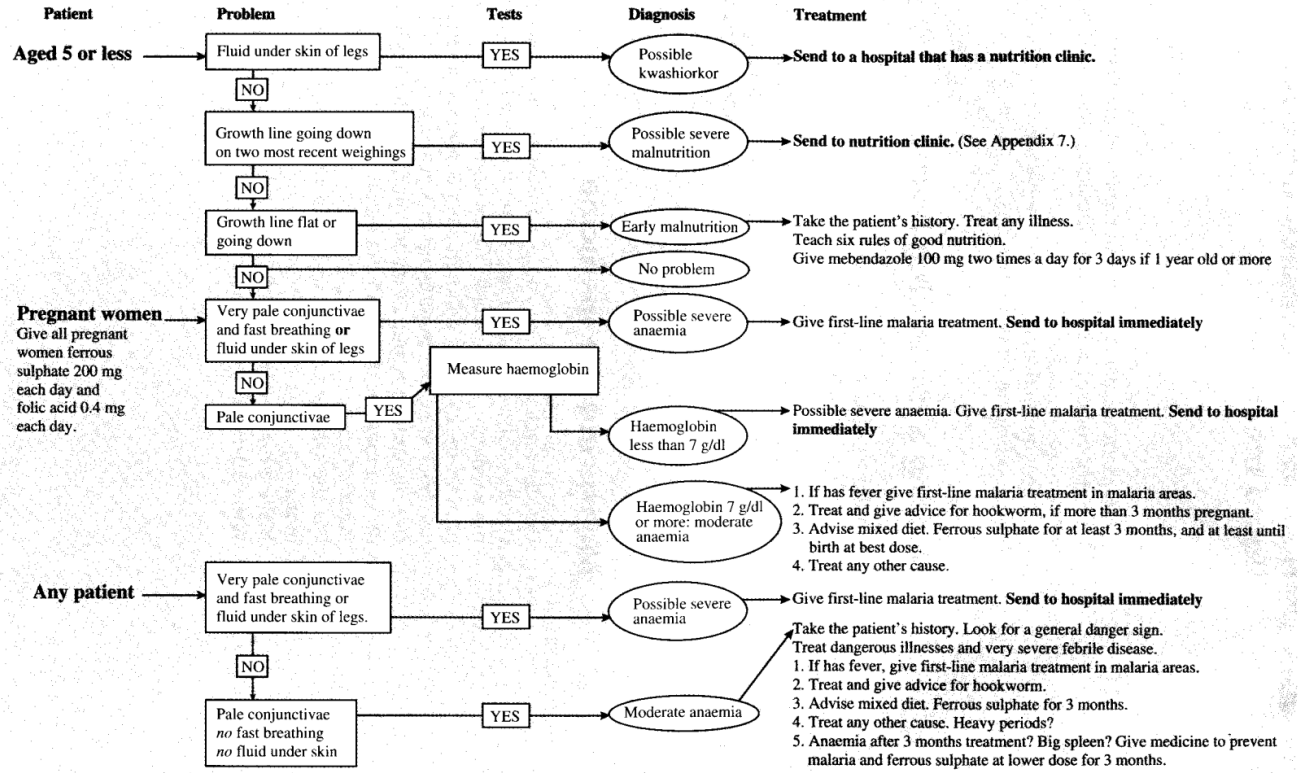
If you do not have a way of measuring liquid medicine, you can make a measuring bottle. You will need:

- a syringe
- a clear narrow bottle that is big enough to contain the largest amount of liquid medicine that you will measure
- tape or a pen with permanent ink to mark the side of the bottle
- liquid medicine.

Measuring the medicine

1. Decide which medicine you will measure with this bottle.
2. Decide what amounts of liquid you will need to measure for this medicine. For example, for amoxicillin (125 mg in 5 ml) you might 37.5 ml for babies less than 2 months or 75 ml for ages 2-11 months.
3. Use the syringe to put 37.5 ml of liquid into the bottle.
4. Make a mark at the top of the liquid.
5. Write 37.5 ml next to the mark.
6. Use the syringe to put a further 37.5 ml of liquid into the bottle.
7. Make a mark at the top of the liquid.
8. Write 75 ml next to this mark.

APPENDIX 6 How to treat malnutrition and anaemia



APPENDIX 7 How to set up a nutrition clinic

A nutrition clinic needs:

- a microscope and staff with the skills to examine blood and faeces to look for parasites
- a method of measuring haemoglobin and blood sugar
- trained staff to teach mothers how to grow and prepare foods that follow the six rules of good nutrition
- trained staff to decide what treatment to give each child and to review each child every week

Examination and diagnosis of a child who may have severe malnutrition

1. Look at the child's record card to see what problems, tests and treatment the child has had.
2. Test the blood for malaria and anaemia.
3. Examine the faeces with a microscope to look for eggs of worms and other parasites.
4. Measure the child's blood sugar. If the blood sugar is 2 mmolll or less, give the patient 50 ml of sugar water or milk immediately.
5. Make sure that the child is not cold.
6. Weigh the child without her clothes. Weigh her again twice a week. Use the same scales each time. Weigh the child at the same time of day each time. Write the weights on the child's record card.

Treatment

1. If the child has malaria parasites in the blood, treat for malaria.
2. If the child has anaemia:

- If the haemoglobin is less than 5 g/dl, give the child a blood transfusion slowly *(in hospital)*. Give 20 ml of blood for each kg of body weight. Also give one dose of
- furosemide 20 mg by mouth.
- If the child has fast breathing or swelling of the legs give a blood transfusion slowly *(in hospital)*.
- Treat all patients with a haemoglobin below 10 g/ dl with ferrous sulphate (or a combination of ferrous sulphate with folic acid) at the full dose for 3 months.

3. If the child has worms, treat with mebendazole. If the child is less than 1 year old, give mebendazole 50 mg two times a day for 3 days.
4. Treat any other infections.
5. Give all patients vitamin A.
6. Give multivitamins every day, if multi vitamins are available.
7. Feed the child (see below).

Feeding a child with severe malnutrition

1. Make the child feel comfortable when you are feeding him. Give the child time. Use a cup and a small spoon. Try using brightly-coloured cups.
2. Ask the mother to breastfeed the child if he is 2 years old or less. Breastfeed a child with malnutrition every 2 hours. If the child is not well enough to feed from the breast, the mother can express milk into a cup by pressing the nipple between two fingers and squeezing the breast for several minutes. She should do this for both breasts every 2 hours. Feed the milk to the baby using a small spoon.
3. If the child will not feed using a cup and a spoon, put in a nasogastric tube. Use a syringe to feed the child.
4. If the mother is ill and not producing enough breastrnilk, also give the child nutrition milk (see recipe below) after each breastfeed. Use a cup and a spoon

- Do not give children who have fluid underneath their skin or a nasogastric tube too much nutrition milk, because this may cause heart failure.
- Give children who have fluid underneath the skin or a nasogastric tube 100 ml of nutrition milk for each kg body weight in a day.
- Make enough nutrition milk for one day. For example a child who weighs 8 kg needs 100 ml for each kg of body weight. This is a total of 800 ml in one day. Feed the child every 2 hours during the day. Give eight feeds of 100 ml each day.
- If the child does not have fluid under the skin or a nasogastric tube, give him between 150 ml and 200 ml nutrition milk for each kg of body weight in a day.

5. Give nutrition porridge to the child as soon as the child is able to eat. Give nutrition porridge two times a day at first if the child has not been eating.
6. Give nutrition porridge four times a day as soon as the child is able to play. Give fruit and vegetables between feeds. Stop giving nutrition milk. Continue to breastfeed.
7. Next, give the child solid foods to chew. Let the child feed himself with his hands or a spoon.

Recipes

Nutrition milk

To make 1000 ml you need:

- 750ml cows' milk or goats' milk
- 1 egg
- 6 teaspoonfuls (6 x 5 ml) of sugar
- 6 teaspoonfuls (6 x 5 ml) of cooking oil

1. Put these foods into a cooking pot and mix.
2. Heat until the food boils.
3. Stir occasionally.
4. Remove the pot from the heat and cover.
5. Let the milk cool before giving to the child.

Nutrition porridge

To make enough for one meal you need:

- 2 large spoons of ground maize, sorghum, cassava or rice
- 1 handful of peanuts, small fish or 1 egg
- 2 teaspoonfuls of sugar
- 1 teaspoonful (5 ml) of cooking oil
- one and a half cups of water

1. For children less than 1 year old, grind the peanuts or small fish.
2. Put the foods into a cooking pot and mix.
3. Heat until the food boils.
4. Stir occasionally.
5. Remove the pot from the heat and cover.
6. Let it cool a little before giving to the child.

Watch for changes

If the child is doing well:

- Her weight will start to increase.
- If the child had fluid underneath the skin, her weight may decrease before increasing. This is because the fluid underneath the skin is disappearing as the child gets better.
- The child will start to eat well, play and smile when she is better.

If the child is not doing well:

- Her weight will not increase or it may decrease.
- If the child continues to have diarrhoea, look again for an infection.
- Examine the faeces for parasites.
- Examine the urine.
- Look for TB or HIV.
- Sometimes milk will make the diarrhoea worse. Do not stop the milk.

Teach the mother

1. Start to teach the mother immediately.
   - Explain to the mother why her child is in hospital.
   - Tell the mother that you will help her to make sure her child grows.
   - Tell her that a mixed diet is the most important part of the child's treatment.
   - Tell her that you will also give her child treatment for problems which are stopping him from growing.
2. Ask respected local women to teach groups of mothers how to grow and cook nutritious foods for a mixed diet. They can show the mothers how to improve the meals they cook already.
3. Show mothers how they can follow the six rules of good nutrition.
4. Send the mother and child home:
   - when the mother knows how to feed her child
   - if the child smiles
   - when the child can eat four meals of nutrition porridge each day and can eat other solid foods.
5. Ask the mother to bring him back to the nutrition clinic after 1 month.

APPENDIX 8 Sickle cell disease

People with sickle cell disease are born with the disease, but they do not become ill before 6 months of age. Their bodies make red blood cells that do not work correctly. Without preventative treatment. children with sickle cell disease usually die before they are 4 years old. If you think that a patient may have sickle cell disease, send him to hospital for a test.

Problems and signs of sickle cell disease

Anaemia

The red blood cells of a person with sickle cell disease die more quickly than normal. Malaria and other infections can cause sickle cell disease red blood cells to die very quickly, causing anaemia. Look for and treat malaria and anaemia.

Pain and swelling of joints and bones

Sickle cell disease often causes fingers or toes to swell. Pain in the chest or abdomen is also common. This because damaged red blood cells block blood vessels and cause part of the joint, bone or other part of the body to die. The swelling is very painful. If a bone is hot or red, treat for osteomyelitis. If a joint is hot or tender treat for septic arthritis.

Frequent infections

Patients with sickle cell disease are more likely to get pneumococcal pneumonia and sinusitis.

Tall forehead

Patients with sickle cell disease make red blood cells in the front of the skull. Children with sickle cell disease who are older than 4 years have a tall forehead.

Slow growth

Children with sickle cell disease grow more slowly than other children. They are often slow to learn how to sit up and to talk.

Advice for parents of children with sickle cell disease

1. The child was born with sickle cell disease. He got the disease from both his father and his mother.
2. Any future children the couple has will have a one-in-four chance of being born with the disease.
3. This disease will not go away.
4. The child should eat a mixed diet.
5. It is very important that the child drinks plenty of fluids if he gets diarrhoea.

6. The blood is weak, so the child may be out of breath.
7. The blood may become solid inside parts of the body, causing pain in the bones, the chest or the stomach.
8. Although the disease cannot be cured, medicines will make the child stronger.
9. It is important for the child to take one 5 mg tablet of folic acid each day to make the blood stronger.
10. The child must take treatment to prevent malaria.
11. It is important to come to the health centre as soon as possible if the child is ill.
12. Get more tablets before his folic acid or malaria tablets are finished.

Preventative treatment

1. Give folic acid 5 mg every day and eat a mixed diet.
2. If possible, give the child medicine to prevent malaria. The doctor at the hospital should tell you what the first-line malaria treatment is in your country.
3. The child should sleep under a mosquito net that has been treated with an insecticide (permethrin every 6 months or deltamethrin every 12 months).
4. Tell the mother that the child must be treated very quickly if he gets malaria or other infections.
5. Do not give the child treatment with ferrous sulphate.
6. Give the child all of the normal immunisations.

Treatment when a child with sickle cell disease is ill

1. It is very important to prevent dehydration. Give the child 1 teaspoonful of oral rehydration solution every minute until he passes pale urine.
2. Give the child something to reduce pain, for example paracetamol.
3. Treat any infections immediately. If the child has a fever, treat or test for malaria immediately.
4. If the child becomes ill with severe pain, treat with:
   - oral rehydration solution
   - first-line malaria treatment
   - paracetamol
   - two times the normal dose of co-trimoxazole
   - send the child to hospital
5. The child may become severely anaemic. He will have very white conjunctivae and may breathe faster than normal. He child may have swollen legs. Give the child:
   - first-line malaria treatment
   - folic acid
   - benzylpenicillin
   - send the child to hospital. The child may need a blood transfusion.

APPENDIX 9 How to make treatments for fungus infections

These two medicines are for putting on to the skin to treat yeast or fungus infections. Do not drink these medicines. The recipes and the picture are reproduced with kind permission from the book *Natural Medicine in the Tropics,* by Dr Hans Martin-Hirt and Bindanda M'Pia.

Recipe 1

1. Press the sap (juice) out of the fresh leaves of the *Cassia alata,* the ringworm bush, using a wooden stick in a wooden pounding bowl.
2. Rub the sap on the affected area two or three times each day.

Alternatively, mix the sap with the same amount of palm oil.
This medicine will only keep for one day.

Recipe 2

1. Collect the white latex or sap from the skin of unripe papaya (pawpaw) fruit. Leave the fruit on the tree when you collect the sap.
2. Mix the sap as follows:

- 10 drops of papaya latex (sap)
- 1 handful of young fresh *Cassia alata* leaves pounded
- 1 large spoonful of vegetable oil. Palm oil or ricinus (castor) oil are suitable.

3. Rub this mixture onto the infected area three times a day. This preparation will only keep for one day.

PICTURE 55 *Cassia alata*

Appendix 10 How to treat diarrhoea

1 Questions

1. How many times have you passed faeces this moming?
2. Do you have a fever?
3. Is there any blood in your faeces?
4. How long have you had diarrhoea?

2. Check for general danger signs

General danger signs:

1. If the patient is unconscious or lethargic despite being awake.
2. If the patient has had a convulsion
3. If the patient has vomited four times or more this morning.
4. If the patient is not able to drink or breastfeed.

3 Diagnosis and Treatment

Treat general danger signs

1. If he has vomited, clear his mouth, lay him on his side. Treat fever with tepid sponging.
2. If he is still having a convulsions give him diazepam rectally.
3. Give oral rehydration solution 5 ml each minute.
4. Give him an intramuscular injection of artesunate in malaria areas unless you can do a malaria test.
5. Give him an intramuscular injection of ceftriaxone, chloramphenicol, benzylpenicillin or procaine penicillin fortified.
6. **Send him to hospital immediately.**

Dysentery: Often only home treatment. If a child had dysentery or has malnutrition give co-trimoxazole for 5 days. If an adult is very ill, or not getting better after 5 days, give co-trimoxazole

Peritonitis: Send to a hospital where operations are done

4 Examination

Examine the abdomen if:

1. There is blood in the diarrhoea or
2. There is pain in the abdomen.
3. Pinch a fold of skin
4. Look for fever and anaemia

5. Findings

There is blood in the diarrhoea but the patient does not have an abdominal problem.

There is guarding or rebound tenderness.

The skin goes back very slowly. The skin takes more than 2 seconds to become flat again. Mouth is dry.

The skin takes less than 2 seconds to become flat again. Mouth is dry.

The skin goes back quickly. Mouth is not dry

6. Immediate treatment

Severe dehydration: Put in a nasogastric tube if available. Give 20 ml oral rehydration solution for each kg body weight every hour, for 6 hours.

Some dehydration: Give 20 ml oral rehydration solution for each kg body weight every hour, for 4 hours.

Persistent diarrhoea: Treat patients who have had diarrhoea for more than 2 weeks for Giardia. They should go to hospital if they don't start to improve within 2 further weeks or if they become unwell.

Home treatment:

1.Give as much fluid as the patient will take between feeds. Aim to make urine clear.
2. Continue feeding at least five times a day.
3. Tell mother when to return:
 a. If the patient is not able to drink or breastfeed.
 b. If the patient becomes more ill.
 c. If the patient develops a fever
 d. If there is blood in the patient's faeces.

Fever: Treat cause of fever.

7. Treatment after 4-6 hours

If the patient has passed very watery faeces six times or more this morning:
Send him to a cholera treatment centre. Continue to give oral rehydration solution 5 ml each minute

Pinch a fold of skin again:

If the skin takes more than 2 seconds to become flat again **send to hospital.**
Continue to give oral rehydration 5ml each minute.

If the skin takes less than 2 seconds to become flat again:
Give **20 ml** oral for each kg body weight every **4** hours.

If the skin goes back quickly. Give **home treatment** if he is able to drink rehydration solution. Give oral rehydration solution. Show how to make up the solution.

APPENDIX 11 How to put in a nasogastric tube

1. Use a clean rubber or plastic nasogastric tube:
   - For a child use a tube 2.0 mm to 2.7 mm in diameter.
   - For an adult use a tube 4.0 mm to 6.9 mm in diameter.
2. Sit the patient down. Raise the head slightly.
3. Measure the length of tube that the patient will swallow. Place one end of the tube just above the middle of the abdomen.
4. Next, take the rest of the tube over the back of the ear and forward to the end of the nose. Mark the tube with a piece of tape where it touches the end of the nose.
5. Wet the tube with water. Do not use oil.
6. Put the end of the tube into the larger nostril. Aim towards the back of the head. Push the tube slowly until the end is in the back of the throat.
7. Ask the patient to drink a little water if the patient is awake. Each time the patient swallows, push the tube another 3 cm.
8. If the patient coughs repeatedly, pull the tube back slowly until the coughing stops. Wait a minute. Next, slowly try to push the tube again.
9. Stop when the tape marker reaches the nose.
10. Put a stethoscope (or your ear) on the upper abdomen. Use a syringe to push air quickly into the tube. Listen.
    - If the end of the tube is in the stomach you will hear air entering the stomach.
    - If you cannot hear air bubbling into the stomach, do not put any fluid into the tube.
    - If you do not hear air entering the stomach, check that the tube is not all at the back of the throat.
    - If the tube is not all in the throat, and the patient is not coughing, push the tube 5 cm further. Next push air into the tube again.
11. When you hear air entering the stomach fasten the tube 10 the face with tape.
12. Use a syringe to give oral rehydration solution, milk or sugar water.
    - Give 20 ml of fluid for each kg body weight every hour slowly throughout the hour to treat dehydration.
    - Give 30-50 ml of milk or sugar water quickly to patients with a general danger sign.

APPENDIX 12 Other treatments for diarrhoea

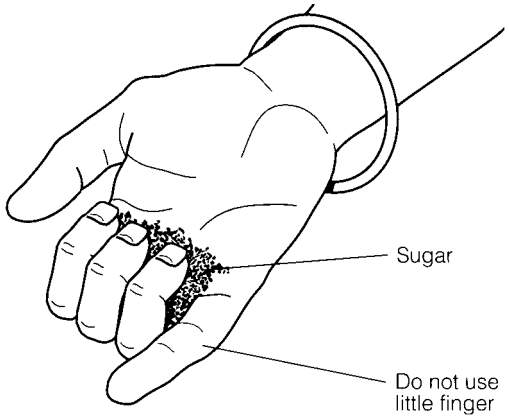
These are two treatments for diarrhoea which you can make if you have no oral rehydration salts for rehydration solution. These can help to prevent dehydration, or they can be used as an early treatment for dehydration. Sugar and salt solution and coconut water with a pinch of salt are suitable to give patients at home or on the way to the health centre. If a fold of skin goes back slowly after you pinch it, the patient needs a solution made up with oral rehydration salts.

Sugar and salt solution

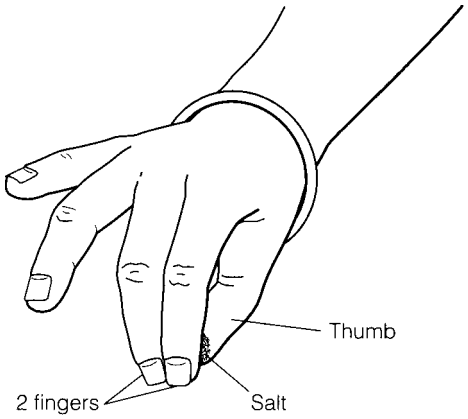
1. Use an empty clean soft drink bottle with '330ml' written on the side. Use a clean metal top of the bottle.
2. Pour three full bottles of water into a bowl. This is a litre of water.
3. Use water from a safe supply, such as a protected well, protected rainwater or tap water. If you use water from a river this should be boiled and cooled if possible.
4. Use the bottle top to measure the amount of sugar and salt. Put 10 full bottle-tops of sugar and one flattened bottle top of salt into the water.
5. Mix the water until the sugar and salt dissolve. The solution is now ready to drink.
6. You may prefer to measure the water using a cup. Most cups contain about 200 ml. Put five cups of water into a bowl. You can measure the sugar and salt with your hand. Take one scoop of sugar in your hand but do not use your little finger (Picture 56). Pinch the salt with two fingers and your thumb (Picture 57).

Coconut water with a pinch of salt

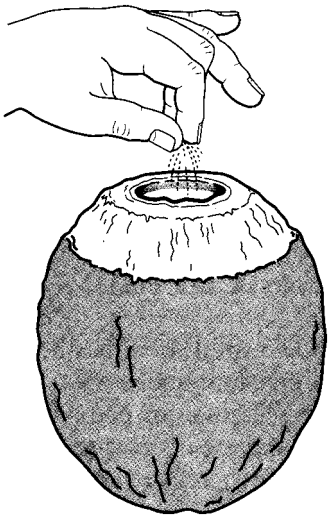
Fresh coconut water does not need to be boiled. Coconut water with a pinch of salt is suitable for patients to use at home.
I. Take one young (green) coconut. Cut off the top.
2. Add one pinch of salt with two fingers and your thumb (see Picture 58) to the fluid inside the coconut.
3. Mix the coconut water by shaking it a little. The coconut water is now ready to drink.



PICTURE 56 *How to measure* a *handful of sugar without using the little finger*



PICTURE 57 *How to measure* a *2-fingered pinch of salt*



PICTURE 58 *How to measure* a *2-fingered pinch of salt into* a *young coconut*

APPENDIX 13 Polio

Polio is also called poliomyelitis. Polio is a virus infection which is passed on in faeces.

Prevention

Polio infection is prevented by:

- vaccination
- good hygiene.

Polio vaccinations are given by mouth at birth, 6 weeks, 10 weeks, 14 weeks, and two more times between the age of 1 year and 5 years.

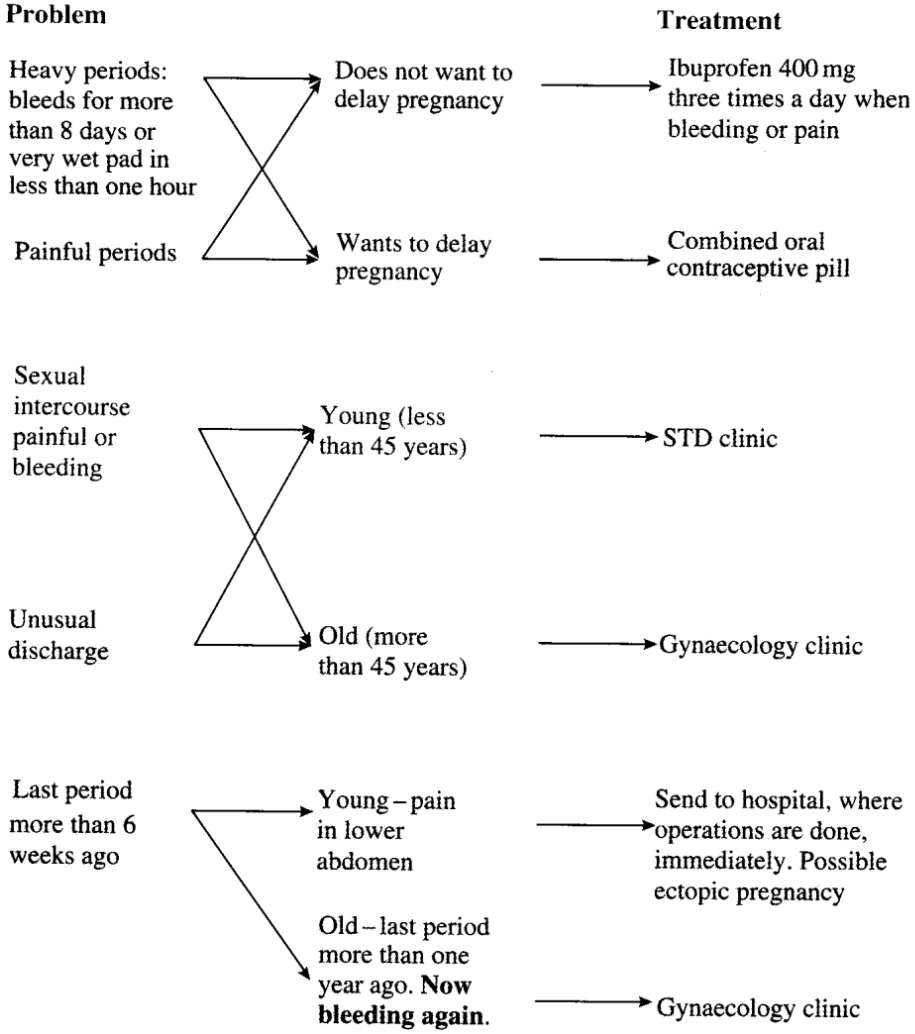
Signs and symptoms

1. Polio illness is usually very mild. The patient may have a sore throat, fever, headache and feel nauseated.
2. Sometimes, after 2 days, the patient has a more severe fever and has difficulty moving his leg or rarely his arm.
3. After 3 or 4 days, polio causes weakness which is worse on one side than the other. The muscles become painful and floppy. In a few weeks, the muscles become small. The muscles may become less weak over the next weeks or months.
4. The patient may not be able to breathe because the breathing muscles are weak and he could die.
5. To prevent these severe problems:
   - Make sure that children are given the polio vaccine, even if they are slightly unwell.
   - Teach people to follow the six rules of good nutrition.
   - Only give injections when there is no other suitable treatment.
6. If a patient develops muscle weakness 3 or 4 days after a fever and has painful muscles, treat him for acute polio.

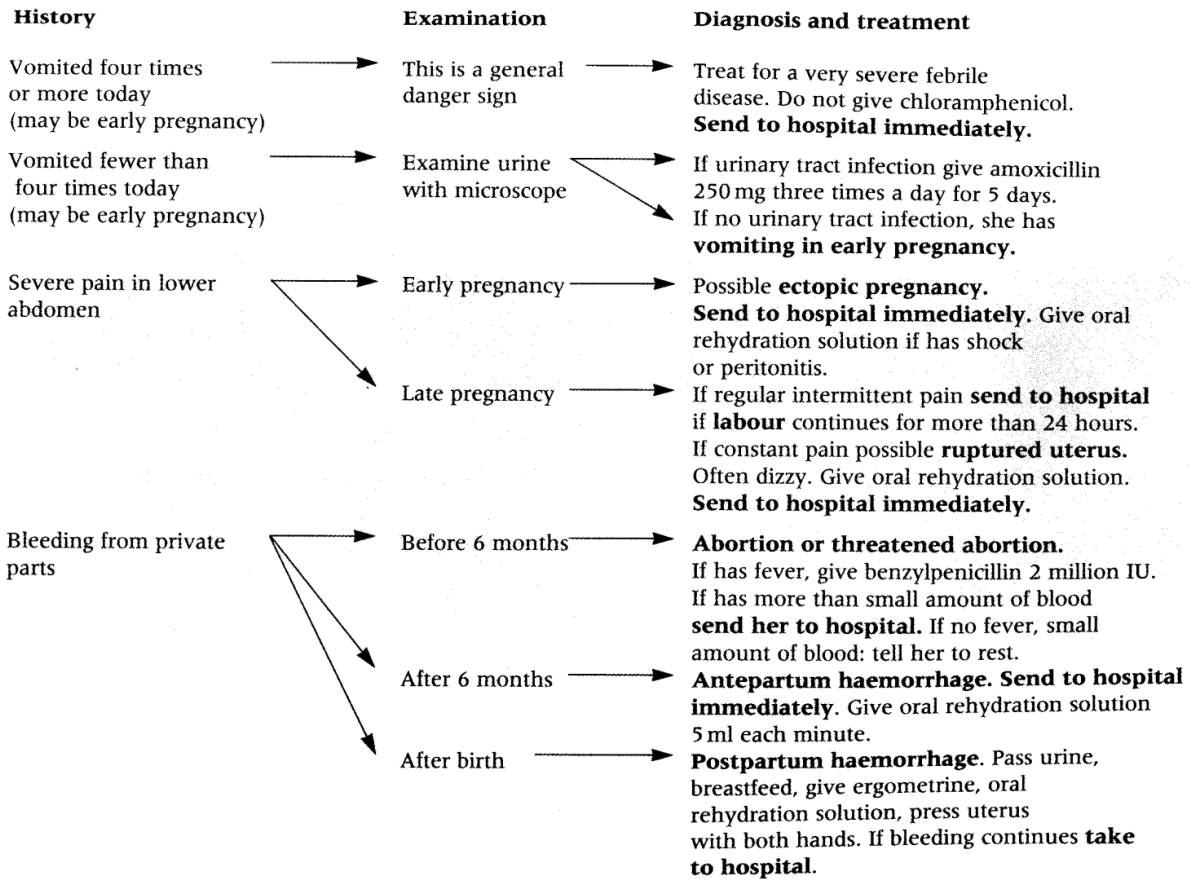
Treatment of acute polio

1. Rest in bed until there has been no fever for 5 days.
2. Do not give any injections.
3. Give paracetamol for pain.
4. Move the patient's feet so they are at right angles to the legs and slightly bend the knees. Support the knees from behind using a pillow. The hips and back should lie flat. The arms should be slightly bent.

APPENDIX 14 How to treat a woman with pain in the lower abdomen or unusual discharge from the private parts



APPENDIX 15 How to treat obstetric problems



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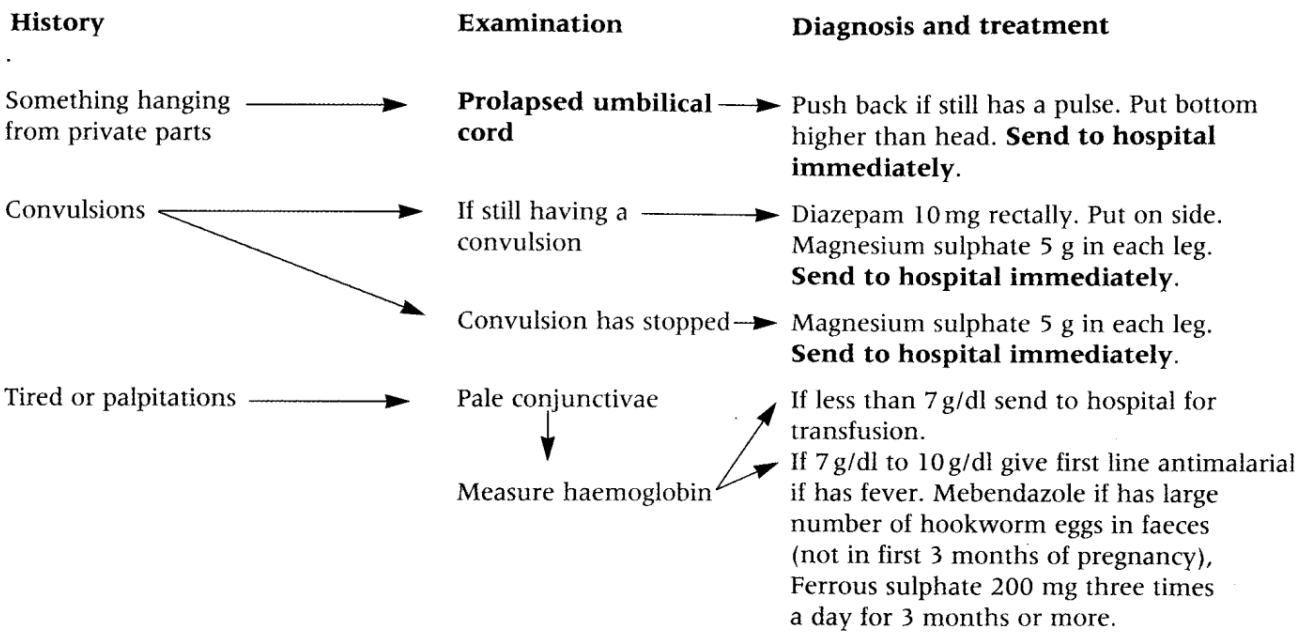
APPENDIX 15 How to treat obstetric problems *Continued*



APPENDIX 16 Diabetes

A person with diabetes is not able to take sugar out of the blood. Patients with diabetes may not have enough insulin. There are two main types of diabetes:
• Type 1 diabetes, also called insulin-dependent diabetes. Type 1 diabetes usually affects children and young adults. Patients with type 1 diabetes have to inject insulin.
• Type 2 diabetes, also called non-insulin-dependent diabetes. Type 2 diabetes usually affects older adults. Type 2 diabetes is treated by eating a healthy diet and often with tablets.

Most people with diabetes have type 2 diabetes. Very few patients have type 1 diabetes.

Signs and symptoms

Feeling thirsty all the time. Passing large amounts of urine.

The patient may also lose weight.

Frequent skin infections and ulcers, especially if an ulcer is no better 2 weeks after treatment.

If the patient has two of the following problems:
• weight loss
• becomes tired easily with no obvious reason
• poor eyesight
• a yeast infection of the skin or oral candida.

Send a patient with any of these symptoms to hospital. Send patients who have diabetes to hospital immediately if they have a skin ulcer.

Patients with type 1 diabetes will become very ill if they do not use insulin, and will die at a young age if insulin is not available. Patients with type 1 diabetes sometimes become very ill with diabetic ketoacidosis.

Both type 1 and type 2 diabetes damage the blood vessels. Damaged blood vessels cause many problems:
• blindness
• myocardial infarction
• cerebrovascular incident
• kidney damage
• gangrene (dead toes or feet)
• nerve damage.

Treatment

1. Teach the patient to eat a mixed diet and to avoid sugar foods.
2. A low GI diet is a healthy option for type 2 diabetes.
3. Teach the patient to eat more food before working hard or exercising.

4. Patients with type 1 diabetes need to inject themselves with insulin every day. The patient gives himself injections into the fat underneath the skin.
6. Other diabetes patients may take tablets to help the body take sugar out of the blood.
5. If a patient who uses injections or tablets (not metformin) feels light-headed. sweats or acts strangely, put some sugar into her mouth. Give her some carbohydrate food as soon as possible.
6. Teach the patient to eat more frequently when she is ill. Tell the patient to drink carbohydrate drinks regularly until she is well again. Thin maize porridge is an example of a carbohydrate drink. She should continue to take her tablets or to give herself injections as normal.
7. Advise all patients not to smoke.
8. Advise all patients to take regular exercise.
9. Healthy heart advice is very important for people with diabetes. Appendix 23 gives an idea of the benefits of this. Blood pressure control is particularly important if you have diabetes. Losing weight. if you are overweight with type 2 diabetes is very effective at improving the diabetes and protecting the heart.

When to send patients to hospital immediately

Send a diabetes patient to hospital:

If she is unconscious, or lethargic, despite being awake. or moves less than usual when awake, even after putting sugar into her mouth.

Low blood sugar will cause a patient to become unconscious. Low blood sugar can be caused by injecting too much insulin, or not eating enough food. Too much sugar in the blood may also cause a patient to become unconscious.

Before sending her to hospital, treat for very severe febrile disease. Give 50 ml of milk or sugar water through a nasogastric tube. Next, give oral rehydration solution, 5 ml each minute on the way to hospital. This is the correct treatment for both low blood sugar and diabetic ketoacidosis.

If a patient with diabetes is ill and her breath smells sweet, give her an injection of six units of insulin if possible. Give her oral rehydration solution, 5 ml each minute, on the way to the hospital.

APPENDIX 17 How to interpret urine results

White blood cells or Nitrites

White blood cells in the urine often mean that the patient has a urinary tract infection. Nitrites on a dipstick test are caused by a Urinary tract infection.

Red blood cells

Red blood cells in the urine can be caused by:

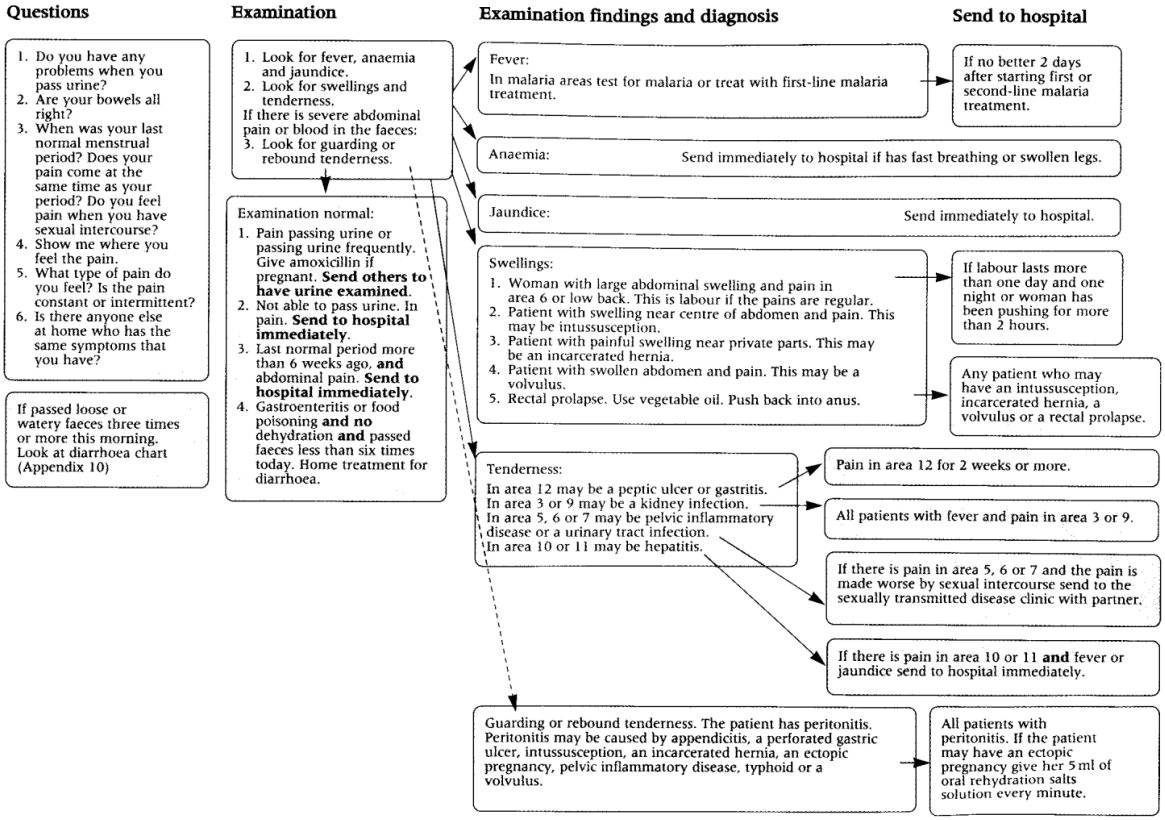
- Blood from inside a woman's uterus if she is having her period.
- A kidney stone if the patient has severe pain in area 3 or area 9 of the abdomen. (See Lesson 8.)
- A urinary tract infection. There will also be a lot of white blood cells in the urine. Nitrites on a dipstick test are caused by a Urinary tract infection.
- Schistosomiasis (Bilzarzia). There will often be schistosomiasis eggs in the settled urine. If you think a patient may have schistosomiasis in an area where schistosomiasis is common give a single dose of praziquantel, 40mg for each kg body weight. Examine the urine again after 2 to 3 months.
If schistosomiasis is uncommon collect his urine between 12 noon and 2 pm. Allow the urine to settle for about 2 hours. Next, examine the urine with a microscope, and look for the *Schistosoma haematobium* eggs.
- Nephritis, which is a disease of the kidneys.

Nothing

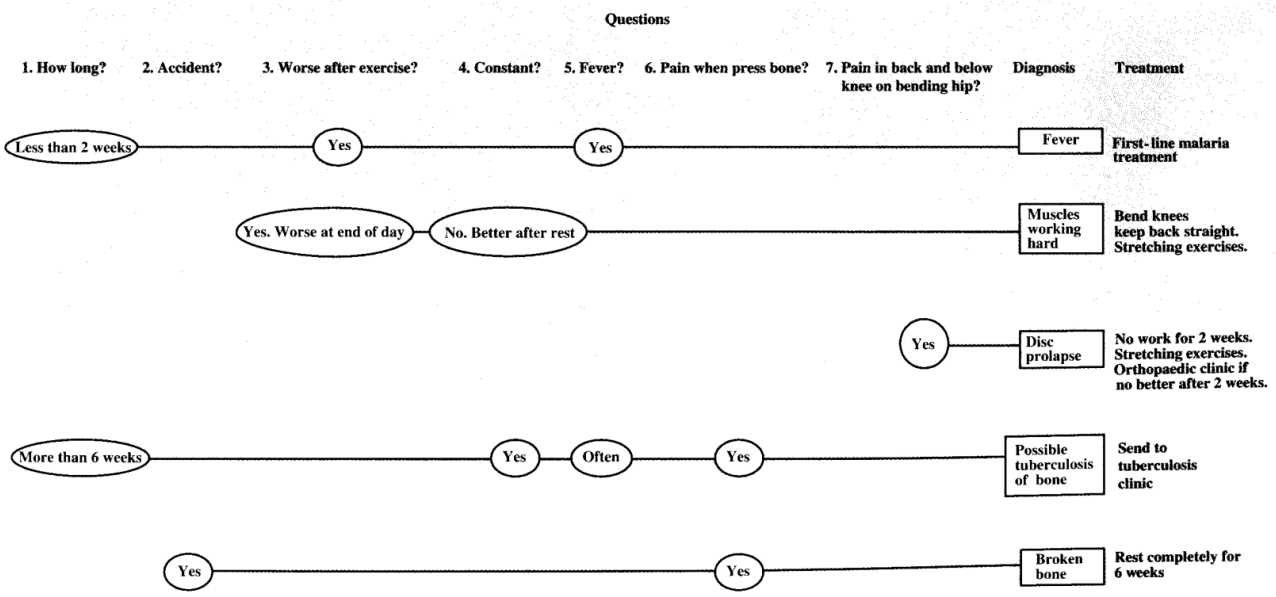
If nothing is found in the urine the patient may have:

- Sexually transmissible infection (STI) - send the patient to the STI clinic.
- Irritation of the urethra - this is sometimes caused when a woman has sexual intercourse when the vagina is not lubricated. She will also pass urine frequently. Advise her to drink plenty of water.
- Threadworms - if the patient is a girl who complains that her private parts or anus itches she may have threadworms. Boys and adults also get this problem. Treat with mebendazole 100 mg two times a day for 3 days. Advise patients to wash their hands with water and soap or ash, especially before they eat and after they use the latrine. Treat the whole family if possible.

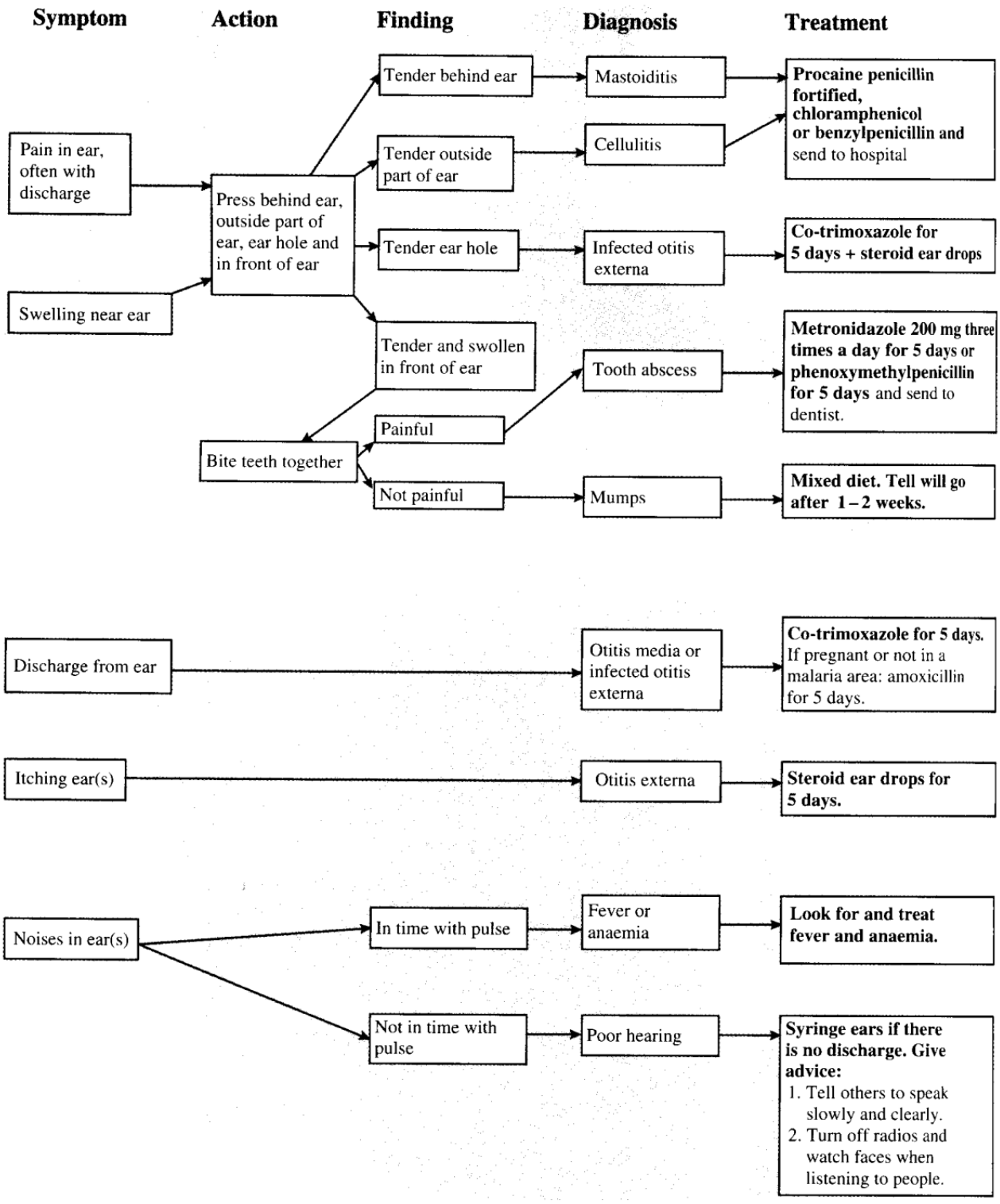
APPENDIX 18 How to treat a patient with abdominal pain or with blood in the faeces



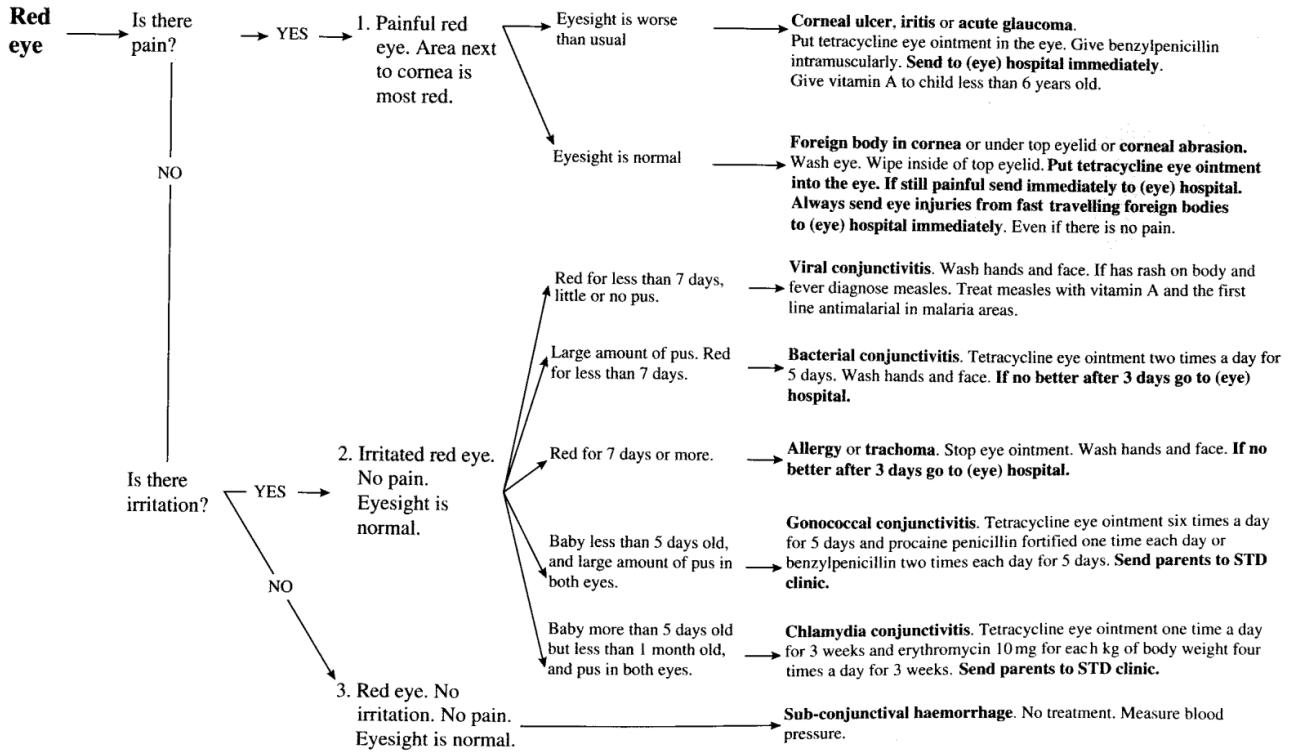
APPENDIX 19 How to diagnose the cause of back pain



APPENDIX 20 How to treat an ear problem



APPENDIX 21 How to treat an eye problem



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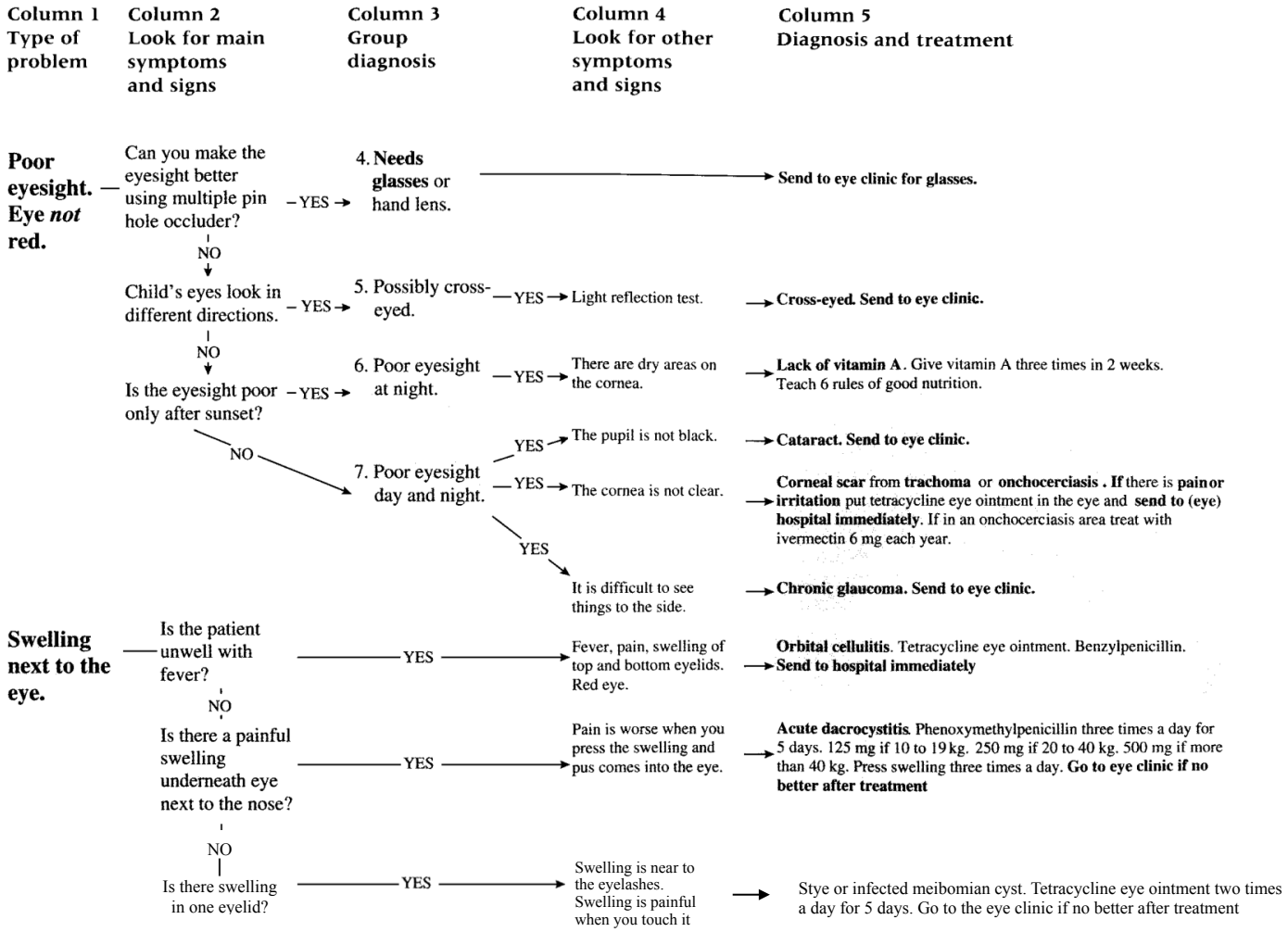


APPENDIX 22 COVID-19

Symptoms of COVID-19

Malaria of course is not the only cause of a fever. Many viral infections, including COVID-19 cause a fever in the first few days. Typically, new variants of COVID 19 cause a sore throat, a runny nose and a headache. Fatigue and sneezing are also common. Early variants of COVID cause either a cough (70% or less) and / or a loss of the sense of smell or taste (approx. 40%). COVID-19 can also cause a headache (25%), widespread muscle pain (17%), tiredness (30%), a sore throat (16%), sputum production (18%), diarrhoea or vomiting (20%) or a runny nose (8%).

Shortness of breath can happen (15%) in the first week but it is more typical 5 to 13 days after symptoms have started. If a patient describes that they can't get enough air into their lungs this is usually an anxiety related symptom rather than a symptom directly caused by COVID-19. Check their oxygen saturation to reassure them if possible or examine their chest.

Testing for COVID-19

Near patient (lateral flow) tests are typically not good at picking up COVID-19 in the first day of symptoms. So test on day 2 onwards. False negative tests are common. If there is a lot of COVID about and the lateral flow test is negative do not be confident that it is not COVID.

PCR tests are more sensitive than lateral flow tests, but even PCR tests can still give a falsely negative result! Whilst COVID-19 is common: If the history suggests COVID-19 and a malaria test is negative and you can find no other cause for a fever tell the patient that they probably have COVID-19 (fever is present in 77% of COVID patients with early variants). Treat them with the national treatment for COVID-19 and advise them when to come back. They should watch for complications of COVID-19 and come back urgently if they have any of the complications. A PCR test will remain positive for some time after the patient recovers from COVID-19 even though they are no longer infectious. After a mild infection there is usually no need to repeat a COVID test.

Treatment of patients with COVID-19 and COVID-19 complications

Tell patients with suspected COVID-19 to isolate for 7-10 days from the onset of symptoms. They should always wear a mask, or a visor, if they have to be in the same room as anyone else. They should keep at least 2 metres away from anyone else and wash their hands before touching anything that anyone else might touch.

Consider bringing vulnerable (high risk) patients back to see you on day 8 to check for complications. People with some long-term conditions, or who are older than say 50, may become very ill in the second, or third week, of a COVID-19 infection if the immune system becomes too active. Teach these patients to return urgently if they seem more poorly in the second week.

Breathlessness is one of the complications that typically affects patients 5 to 13 days after symptoms have started. Count their respiratory rate and if you can measure oxygen saturation, or listen to their chest, do so.

Patients with suspected COVID-19 complications, an oxygen saturation below 92%, fast breathing (consistently more than 25 breaths, per minute), or chest signs, should be given steroids* for 7 days and possibly antibiotics. These patients should also be referred urgently for specialist review.

Sepsis is also a complication of COVID-19. If a patient becomes very ill 5-13 days after having covid like symptoms, or testing positive for COVID-19, they may have COVID related sepsis. Treat them for a very severe febrile illness and consider giving them steroids for 7 days. Most of these patients should be sent urgently for specialist review.

COVID-19 increases the risk of clots in the lungs and elsewhere. Consider recommending aspirin 75mg daily, from day 5 until day 14, for high risk patients (see below). Patients who are very unwell with COVID-19 may be given low molecular weight heparin injections subcutaneously.

People over the age of 50 and people with another long-term health condition are at a much higher risk of having severe COVID-19 complications. These long-term health conditions include: obesity and diabetes; long term lung disease including severe asthma; heart failure; angina or heart attacks; untreated high blood pressure; chronic kidney disease or liver disease; cancer; stroke; and sickle cell disease.

COVID-19 vaccination is the safest and most effective way of preventing both COVID-19 infection and severe illness from complications. All types of vaccination are extremely safe. Until all vulnerable people are vaccinated it is sensible to wear a mask, and to wash hands to minimise transmission of the virus.

*Examples of steroid treatment for patients with an oxygen saturation below 92%, or another COVID-19 complication, are: dexamethasone 4-6mg daily for 7 days; prednisolone 30-40mg daily for 7 days (usually taken after breakfast). If you think there is evidence of pneumonia it may also be appropriate to use a 5 day course of antibiotics.

National treatments for COVID-19 in Zambia:

Treat fever with paracetamol (see our formulary for the dose). If this does not control fever or muscle soreness consider using ibuprofen. Also check for malaria and any other cause of fever.

Continue all treatments for HIV and TB and treat coexistent infections.

Optimise treatment of long-term conditions including blood pressure and heart failure.

Give steroid treatment for 7 days to those with an oxygen saturation below 92% or a complication from COVID-19. These patients should normally be given oxygen when available.

Treat symptoms consistent with pneumonia or sepsis (a very severe febrile disease) according to the guidelines in this manual.

Your clinician has given you this leaflet because your future risk of having a heart attack or stroke is higher than it should be, because of one, or more, of the following problems:

☐ High blood pressure ☐ You have diabetes ☐ You are overweight.

☐ You may have sleep apnoea syndrome (you fall asleep often during the day and snore badly)

Choose what you are capable of doing from the following list:

Use this website to find out what your future 10 year risk of a heart attack or stroke is and how much benefit each of the following options can give you: http://167.99.198.95:8000 (www.patientcentre.org)

** If for example you currently have a 20% risk of having a heart attack or stroke in the next 10 years:*

☐ **Move more, sit less (Increased physical activity)**

25% Relative Benefit

* This treatment would prevent 5 people like you in 100 from having a heart attack or stroke over 10 years.

Potential harm of Intervention

- Potential for activity-related injury

Additional Benefits

- Less depression; Improves sleep quality; Improves osteoarthritis pain and function.

☐ **Healthy Eating and safe alcohol consumption (for example the Mediterranean diet, the low GI diet or the DASH diet and less than 14 units of alcohol per week)**

30% Relative Benefit

* This treatment would prevent 6 people like you in 100 from having a heart attack or stroke in 10 years.

* Cutting back on alcohol will make it easier for you to lose weight if you are overweight, and will improve your emotional health and sleep.

Potential harm of Intervention

- No real harms

☐ **Smoking cessation**

26% Relative Benefit

* This treatment would prevent 5 people like you in 100 from having a heart attack or stroke in 10 years.

* Quitting smoking gives these benefits. Cutting back makes very little difference.

* Cytisine seems the most effective aid to stopping smoking. It is cost effective and safe. Temporary adverse effects include nausea, vomiting and sleep disturbance.

Potential harm of Intervention

- Services for helping you to stop smoking may not always be available.

☐ **Low or moderate intensity Statins (for example atorvastatin 10mg daily, Simvastatin 40mg daily)**

25% Relative Benefit

* This treatment would prevent 5 people like you in 100 from having a heart attack or stroke in 10 years.

Potential harm of Intervention

- Muscle and joint aches and stiffness are common (5-10 per 100 users) but are not appreciably more likely to happen with statins compared with placebo. Muscle soreness may be caused by the statin in perhaps 1 in 500 users
- 1 in 50,000 statin users will have severe muscle or kidney damage.
- Nausea, constipation or diarrhoea are common and often nothing to do with the statin
- Drug cost and the inconvenience of taking a tablet every day

☐ **Blood pressure medications (excluding atenolol and doxazosin) If your average systolic blood pressure is more than 140 mmHg (Tablets for blood pressure are usually best taken at night time.)**

30% Relative Benefit (if you have diabetes: 50% Relative Benefit)

* This treatment would prevent 6 (or 10) people like you in 100 from having a heart attack or stroke in 10 years.

Potential harm of Intervention

- Types of side effects vary between medicine
- 1 in 10 people have to stop medication because of side effects
- Medication Cost

☐ **Metformin - if you have type 2 Diabetes**

35% Relative Benefit if you have type 2 Diabetes

* This treatment would prevent 7 people like you in 100 from having a heart attack or stroke in 10 years.

Potential harm of Intervention

- Reduced appetite, mild nausea, loose stool. This is better tolerated with low doses increased very slowly. For example: start with half a tablet with the main meal and increase by half a tablet each month to 1 tablet with main meals (twice a day).
- Medication cost

☐

- Lose weight if you are overweight. (Body mass index more than 25).
- Ask your partner to watch you when you sleep (for half an hour). If your partner says that you stop breathing tell your clinician, especially if you tend to fall asleep a lot during the day. Sleep apnoea syndrome causes high blood pressure and heart attacks.
- Do not add normal salt to your food when cooking or eating (but low sodium salt is good for you).
- Either eat a banana on most days or add low sodium salt to your food when cooking or eating.

Appendix 24 The Choking child

This is a short practical session. It would be useful to have a doll for demonstration and practice (or something that you can pretend is a doll eg a cushion). It is helpful to teach this session in small groups. For example 6 or less for each trainer.

Aim of session
By the end of the session, you will be able to make an assessment of the choking child, know which of the 2 algorithms to follow and be able to manage the child appropriately.

Questions
- Why do children choke?
- What do they choke on?

Answers
- They try to swallow food before having chewed it.
- They put objects into their mouths whilst they are active.

Algorithm 1: <u>The child who can cough</u>

- Majority of incidents
- Sudden onset of coughing
- The child is distressed

1. Sit the child up
2. Support them
3. Encourage them to cough
4. Keep encouraging them
5. DO NOT reach into their mouths

Algorithm 2: <u>The child cannot cough</u>

- The child will be very distressed
- My have loud noise on inspiration (stridor)
- May not be able to breathe in or speak

1. If sat up – 5 back blows
2. Then see if anything dislodged
3. If possible, pick up and use gravity as do back blows
4. Look in mouth
5. Do not do blind finger sweep
6. No response, five abdominal thrusts
7. “Heimlich manoeuvre”
8. Assess if breathing
9. If not breathing consider mouth to mouth and 5 rescue breaths

Repeat back blows and abdominal thrusts

If starts coughing, encourage to cough

Appendix 25 **Sexually Transmissible infections - what do the symptoms mean?**

Symptoms	Sexually Transmissible Infections - what do the symptoms mean?
Painless genital ulcer	Treat for **early syphilis** (unless pregnant in which case treat for late syphilis) and also for **chancroid**. Review all painless genital ulcers after 14 days.
Painless ulcer with swollen groin nodes	Treat for **syphilis** first. Consider also treating for **lymphogranuloma,** which is more rare.
Vaginal discharge: coloured, or offensive smell NO abdominal pain	Treat for possible **gonorrhoea** and **chlamydia** unless testing is possible. If the discharge is smelly then consider adding metronidazole eg 2g stat or 400mg tds for 5 days (possible **bacterial vaginosis** or **trichomonas**). If the discharge is white, and not smelly, treat for **thrush** and review after one week.
Penile / urethral discharge	Treat for **gonorrhoea** and **chlamydia**
Swollen tender testicle or testicles	Orchitis. Treat for **chlamydia** and **gonorrhoea** The mumps virus can also cause orchitis. Suspect mumps if there has been swelling of the parotid glands in the previous week. Mumps needs no treatment apart from pain relief. A painless lump in a testicle might be testicular cancer. Arrange an ultrasound.
Tender epididymus	Epididymitis, Treat for **chlamydia** and **gonorrhoea**
Itchy white discharge (may smell yeasty) with sore vulva, or penis	Treat for **thrush** review after 1 week. If no better consider treatment for STI. Most white vaginal discharge is physiological (normal), not thrush.
Lower abdominal pain and vaginal discharge	**Possible PID -** Treat for **gonorrhoea** and **chlamydia** and add metronidazole 400mg bd for 7 days. It is important to make sure that this is not an ectopic pregnancy. Do a pregnancy test. If the pregnancy test is positive and she has lower abdominal pain, or tenderness, then the patient should see a doctor urgently.
Painful ulcer with, or without, swollen groin glands	(**Herpes genitalis** typically causes a painful collection of small blisters that quickly turn into an ulcer or ulcers. If this is a recurrence of typical blisters/ ulcers then treatment is often not necessary. If there is doubt about the cause (especially for a first attack) treat for chancroid) **Chancroid** painful ulcer with, or without, swollen groin glands.
Genital growths	**Genital warts** (Condylomata acuminata) - usually do not need treatment. If you are not sure ask a colleague. **Secondary syphilis** can present as flat growths (Condylomata lata) - This needs the same treatment as for **early syphilis**. If in doubt with warty growths treat for early syphilis. **Molluscum** have a typical appearance with a central dimple. No treatment is required. They usually disappear after months.

For all Sexually Transmissible Infections:

Don't forget to treat the partner(s) (not necessary for thrush). Advise either no sex until better or advise use condoms. Check HIV status and offer repeat testing 3 months after last exposure to risk

Appendix 26 **Sexually Transmissible infections - Treatment options**

Diagnosis or problem	Treatment options	With
Early syphilis	Benzathine penicillin 2.4 MU im stat (not if penicillin allergic)	ciprofloxacin 500mg bd for 3 days (syndromic treatment for chancroid)
	Doxycycline 100mg bd for 15 days (not if breast feeding or pregnant)	
	Ceftriaxone 1g im for 10 days	
	Azithromycin 2g orally on a single occasion	No need for ciprofloxacin
	Erythromycin 500mg qds for 14 days	
Alternative for syphilis if no Benzathine penicillin available	Procaine penicillin 1.2 MU daily for 10 days for early syphilis and 20 days for late (or unknown duration) syphilis	ciprofloxacin 500mg bd for 3 days (syndromic treatment for chancroid)
Late syphilis **(or unknown duration eg Positive syphilis test in pregnancy)**	Benzathine penicillin 2.4 MU IM weekly x3 (not if penicillin allergic)	ciprofloxacin 500mg bd for 3 days (syndromic treatment for chancroid)
	Doxycycline (not in pregnancy) 100mg bd for 30 days	
	Ceftriaxone 1g im for 10 days	
	Azithromycin 2g orally on a single occasion (does not cross the placenta)	No need for ciprofloxacin
	Erythromycin 500mg qds for 30 days (does not cross the placenta)	
	If using azithromycin or erthromycin in pregnancy: Also treat the baby shortly after delivery since they do not cross the placenta.	
Lymphogranuloma venereum	Doxycycline 100mg bd for 14 days (not if breast feeding or pregnant)	If fluctuant lymph node(s): aspirate with a white needle and syringe. Review after 2 weeks. If no better treat for Chancroid.
	Erythromycin 500mg qds for 14 days.	
Chancroid	Ciprofloxacin 500mg bd for 3 days	Review after 1 week. If no better treat for Lymphogranuloma venereum
	Erythromycin 500mg qds for 7 days	
Gonorrhoea	Single dose of ciprofloxacin 500mg oral	
	Single 500mg dose of intramuscular [IM] ceftriaxone	
	Single 240mg IM dose of gentamicin	
Chlamydia	Doxycycline 100mg bd 7 days (do not use in pregnancy)	
	Azithromycin 2g stat	
	Erythromycin 500mg qds for 10 days	

Diagnosis or problem	Treatment options	With
Thrush - vaginal	Fluconazole 150mg stat orally (not in pregnancy)	Partner treatment is generally not necessary. Review after one week. No sex until better. If symptoms persist or recur frequently: check HIV status, check urine or blood to exclude diabetes.
	Clotrimazole pessary 500mg stat. Inserted into vagina before sleep	
	Miconazole pessary 1200mg stat. Inserted into vagina before sleep. Or 200mg pessary at night on 3 days.	
Possible Pelvic Inflammatory Disease (PID)	Treat for **gonorrhoea** and **chlamydia** and add metronidazole 400mg tds or 500mg bd for 7 days then review. It is important to make sure that this is not an ectopic pregnancy. Do a pregnancy test. If the pregnancy test is positive and she has lower abdominal pain, or tenderness, then the patient should see a doctor urgently.	The patient may need a further 7 days of doxycycline and metronidazole. Normally you would only use a single IM dose of ceftriaxone or gentamicin
Herpes genitalis	Aciclovir 400mg tds for 5 days or Valaclovir 500mg bd for 5 days	If there is doubt about the cause (especially for a first attack) treat for chancroid)
	If this is a recurrence of typical small blisters/ ulcers then treatment is often not necessary.	
Genital warts Condylomata acuminata	Usually do not need treatment	Refer for colposcopy if only has cervical warts. Ask a colleague if these could be condylomata lata (early syphilis).
Flat growths Condylomata lata	Treat for early **syphilis**	
Vaginal discharge: coloured, or smelly NO abdominal pain	Treat for possible **gonorrhoea** and **chlamydia** unless testing is possible.	If the discharge is smelly then consider adding metronidazole eg 2g stat or 400mg tds for 7 days (possible **bacterial vaginosis** or **trichomonas**).
Penile / urethral discharge	Treat for **gonorrhoea** and **chlamydia**	If no better after 1 week consider treatment for trichomonas vaginalis eg metronidazole 2g stat.

Diagnosis or problem	Treatment options	With
Pregnant women	Ciprofloxacin is thought to probably be safe in pregnancy. But do not use as the first line treatment for uncomplicated UTIs. Treat STIs with ciprofloxacin if the risk of infection outweighs the risk of treatment. Avoid doxycycline.	
Children **eg neonatal conjunctivitis**	Gentamicin 5mg/kg/day IM or IV for 2 days for gonorrhoea	Erythromycin 50mg/kg/day oral in 4 divided doses for 14 days for chlamydia Also lid cleaning with saline or water and tetracycline eye ointment bd for 5 days (both eyes) If also septic add either: Procaine penicillin 50,000 U/kg IM daily, (50-100mg/kg/day) for 7 days or Ampicillin (IM or IV) or amoxicillin orally (both 50mg/kg bd) for 7 days
	Ceftriaxone 25–50 mg/kg body weight IV or IM in a single dose, not to exceed 250 mg for gonorrhoea	

For all Sexually Transmissible Infections:
Don't forget to treat the partner(s) (not necessary for thrush).
Advise either no sex until better or advise use condoms.
Check HIV status and offer repeat testing 3 months after last exposure to risk

Appendix 27 Epilepsy patient and relative information sheet

You have been given this leaflet because your clinician has told you that you have epilepsy.

This leaflet may not answer all of your questions about epilepsy. Please ask your clinician if you would like to know more.

Epilepsy is usually caused by damage to part of the brain. Often the damage to the brain is very minor. Epilepsy is not a psychiatric illness. However, many people *wrongly* think that people with epilepsy have a mental illness, or that epilepsy is caused by spirits. Both of these ideas are wrong. Seizures are not deliberate acts and people with epilepsy are neither prone to violence nor are they mentally disabled. Epilepsy does not affect your intelligence.

Patients with epilepsy have convulsions (also called fits or seizures). Convulsions can be caused by many other illnesses, such as **very severe febrile diseases**. If a person has a first ever convulsion, seizure or fit they should see a clinician urgently.

Some people may get convulsions because they drink **alcohol** in a harmful way. Drinking too much alcohol causes convulsions in some people. Or if you too drink too much alcohol for many days and then suddenly stop drinking, you might have a convulsion from alcohol withdrawal. If you drink excessively for more than a few days it is safer to stop your drinking slowly. For example half your drinking each week.

If you get a warning that you are about to have a convulsion:

Try to put yourself in a safe position. If you are driving or on a road: Stop driving and take yourself off the road. Lie on your front with your face to the side (see the picture of the coma position below). This will protect your airway (mouth and lungs).

If you are having more convulsions than usual: see your clinician urgently.

Do not drive a car. lorry or motorcycle unless you have not had a convulsion for more than 2 years (in some countries this may be 3 years). If you have no warning before a convulsion perhaps you should not handle fire or boiling water. Riding a bike or swimming can be dangerous if you get no warning before a convulsion. Epilepsy may prevent you from safely doing some jobs. For example it would not be safe to work at heights with epilepsy.

If you have had no convulsion for 2 years or more you may consider slowly stopping your epilepsy medicine with clinician support. But if you have a further convulsion you will have to stop driving for at least another year.

Epilepsy medicines prevents convulsions. Common medicines for epilepsy are carbamazepine, phenobarbital or phenytoin. Take the medicine every day. Please make sure that you do not run out of medicine.

Children with epilepsy should normally be able to go to mainstream schools and participate in most sports. Teachers and sports supervisors may need **training** to manage a convulsion.

Pill and pregnancy.

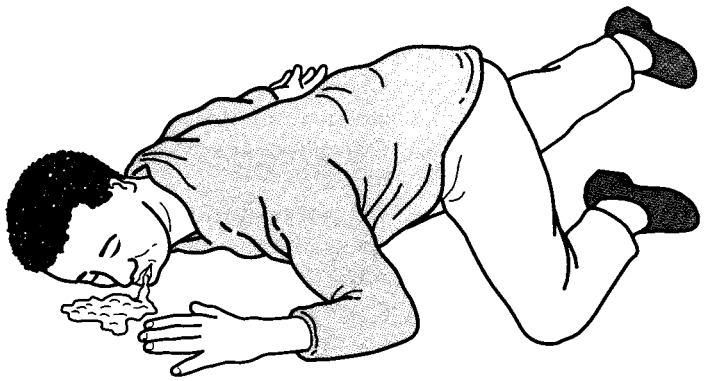
Some epilepsy medicines can interfere with how well contraceptive pills work. Check with your doctor that you are taking the right contraceptive. Pregnancy rarely makes any difference to epilepsy but some epilepsy medicines are not safe for the unborn child. You should not use sodium valproate if you plan to be pregnant. You should take extra folic acid around conception and for the first 12 weeks of your pregnancy.

Preventing seizures:

If you have epilepsy certain triggers can make a convulsion more likely. Avoid the following:
- Make sure that you do not run out of your epilepsy medicine
- Hazardous or harmful amounts of alcohol.
- Sleep deprivation or too much stress
- Street drugs
- Some medicines such as certain antidepressants. Check with your doctor.
- Occasionally troublesome periods (menstruation) can trigger convulsions
- Any illness that causes a fever (a temperature)

How to treat a patient who is having a convulsion

Move the patient to a safe place. Do not restrain them. Calmly tell other people what is happening. Loosen any tight clothing near the neck. Do not put anything in the mouth. The patient will not swallow their tongue. If they vomit turn them immediately on their side.
As soon as possible (perhaps after the shaking has subsided), lay the patient on his side in the coma position. This will help him to breathe. He will often need to sleep after a convulsion.
If a convulsion lasts more than 5 minutes take the patient straight to the health centre. Sometimes the patient may need to sleep for more than an hour after a convulsion. But if you can not wake them up after this it is sensible to make sure that they do not have any other illness. If in doubt see a clinician urgently.



PICTURE *The coma position*

Carbamazepine medicine to prevent convulsions
Carbamazepine is generally a safe and effective medicine to prevent convulsions. Rarely carbamazepine can harm the bone marrow. Your bone marrow makes white blood cells that help to fight infection. If your have symptoms of an infection (for example a fever or a bad sore throat) it is especially important to see a clinician urgently. Tell the clinician that you take carbamazepine. If you have nasty sores in your mouth see your clinician urgently.

Other medications may produce side affects.
The most common side effects are those related to the dose of the medicine. You may become drowsy, lose coordination, have a headache, lose your appetite or feel nauseated. You might drool, have a tremor, gain or lose weight, experience double or blurred vision, or dizziness. Your concentration or memory may be affected. If you have a new rash show your clinician.

APPENDIX 28 List of medicines and their uses

Abbreviations:
×1/day = one time a day; ×2/day = two times a day; ×3/day = three times a day; ×4/day = four times a day
×1 = one time only
½ = one half; ¼ = one quarter
+ = and above
Tab = tablet

Medicine	Uses	Dose
Acetylsalicylic acid (ASA), (aspirin). Tab 300 mg.	Reduces pain. Do *not* use for abdominal pain. Aspirin is a symptomatic medicine.	*Age* — *Dose* 1–2 years — ¼ tab 3–6 years — ½ tab 7–12 years — 1 tab 13+ years — 2 tab Take this dose no more than 4 times a day. Take after food.
Adrenaline: *see* epinephrine.		
Albendazole. Tab 200 mg or 400 mg.	Removes hookworm, roundworm, whipworm and threadworm. Do not give to pregnant women.	*Age* — *Dose* 2–5 years — 200 mg ×1 6 years or more — 400 mg ×1
Aluminium hydroxide. Tab 500 mg.	For gastritis. If patient has pain in the upper abdomen for less than 2 weeks (area 12) *but does not have* guarding or rebound tenderness. If the pain continues for more than 2 weeks, go to hospital. He may have a peptic ulcer.	Chew one tablet each time he feels pain in the upper abdomen. Give 30 tablets.
Aminophylline. Tab 100 mg.	For patients with wheeze *without* signs of respiratory distress and *no* fast breathing.	*Age* — *Dose* 0–11 months — ¼ tab ×3/day 1–5 years — ½ tab ×3/day 6+ years — 1 tab ×3/day Give 5 days treatment.

Medicine	Uses	Dose
Amoxicillin. Tab 250 mg or 500 mg. Liquid 125 mg in 5 ml.	For pregnant women with a UTI or sinusitis. For pregnant women with a kidney infection. For pneumonia, bronchitis, otitis media, infected otitis externa or sinusitis (for children). **NOT** for tonsillitis.	250 mg × 3/day 500 mg × 3/day *Age* — *Dose* 0–2 months — 62.5 mg × 3/day 2–11 months — 125 mg × 3/day 1–10 years — 250 mg × 3/day 11+ years — 500 mg × 3/day Give 5 days treatment.
Aspirin: *see* acetylsalicylic acid.		
Benzoic acid and salicylic acid (Whitfield ointment).	For a fungus infection of the skin.	Rub onto the affected area only × 1/day for many weeks. Use for at least 4 weeks. If no better after 4 weeks send the patient to the leprosy clinic. If the affected area is smaller after 4 weeks continue to use Whitfield ointment until the rash has gone completely, *and* for 1 more week.
Benzyl benzoate emulsion 25% (BBE). 100 ml (Dilute concentrate (90%) before use. Add one part of concentrate to three parts of clean warm water. Use within 4 weeks.)	For scabies. Treat whole family. Rub into every part of the body apart from the face and head. Do *not* wash for 24 hours. Put on again after 7 days.	One bottle of benzyl benzoate (25%) for two adults or children over the age of 5 (each bottle holds 100 ml). For children under the age of 2 years mix the benzyl benzoate with an equal amount of water. Give enough to treat the whole family, even if they have no symptoms.
Chloramphenicol. 1000 mg powder in vial. Add 5 ml sterile water. Shake until clear.	For severe infections that cause a *general danger sign*. For epiglottitis mastoiditis or cellulitis near the ear. Give intramuscularly.	40 mg (0.2 ml) for each kg one time. Do not give more than 1000 mg (5.6 ml). Repeat after 12 hours if the patient is not able to get to the hospital. Do not give for longer than 5 days.

Medicine	Uses	Dose
Chloroquinine phosphate. Tab 150mg (base) or liquid 50mg (base) in each 5ml	For malaria. If the patient has a fever in a malaria area and you cannot test for malaria.	Three days of treatment: Day 1: 10mg/kg x1 Day 2: 10mg/kg x1 Day 3: 5mg/kg x1 For an adult who weights 45.5mg or more do not give more than 600mg /600mg/300mg (4/4/2 tablets)
Chloroquinine phosphate. Injection 40mg in each 1ml	For malaria if the patient has a general danger sign. Give intramuscularly.	3.5mg for each kg one time. Do not give more than 200mg for an adult. Repeat after 8 hours if the patient is still vomiting. Give tablets when the patient is no longer vomiting.
Co-trimoxazole. Tab 480mg or liquid 240mg in each 5ml (5ml =1/2 tab) Note: 480mg of co-trimoxazole consists of sulphamethoxazole 400mg and trimethoprim 80mg	For pneumonia, bronchitis, cellulitis, abscess, large areas of impetigo, acute dacrocystitis, dysentery, otitis media, infected otitis external or sinusitis. Also for UTI after the urine has been checked for nitrites or under a microscope. For osteomyelitis or a sickle-cell crisis (and septic arthritis if will not be at hospital within 6 hours)	Age Dose 0-6 months 2.5ml (1/2 teaspoon) x2/day or 1/4 tab x2/day 7 months-5 years 1/2 tab 6-12 years. 1 tab x2/day 13+ years. 2 tabs x2/day Give 5 days treatment Give two times the normal dose
Combined oral contraceptive. Many types.	To delay pregnancy. To treat heavy periods or painful periods if does not want to become pregnant at present.	Most pills: one active pill every day for at least 21 days and often 63 days. Then a pill free 4 days during which you may have a withdrawal bleed. Then restart. All pills may be used for several years.
Diazepam. Rectal solution. 5mg or 10mg in a rectal tube.	When the patient is having a convulsion. Give rectally. For large broken bones	Age Dose Less than 1 year 2.5mg 1-3 years 5mg 4 years or more 10mg

Medicine	Uses	Dose
Diazepam (continued)		Give one more dose if still convulsing 5 minutes after first dose.
Epinephrine (adrenaline). Injection 1 in 1000.	If patient has signs of respiratory distress. Also give benzylpenicillin, chloramphenicol or procaine penicillin and send to hospital. *Inject sub-cutaneously* (under the skin). For anaphylaxis: *Inject intramuscularly.*	*Age* — *Dose* 0–11 months — 0.1 ml 1–4 years — 0.25 ml (¼ vial) 5+ years — 0.5 ml (½ vial) Repeat if still unconscious or unwell 10 minutes after first injection.
Ergometrine. Injection 0.5 mg for each ml (1 ml in vial). Store in a cool place, preferably a fridge.	Prevents or treats postpartum haemorrhage. For women who have just given birth. *After all the babies have been born.*	0.5 mg × 1 into a muscle to prevent postpartum haemorrhage. 0.5 mg × 1 into a vein (or muscle) to treat postpartum haemorrhage.
Erythromycin. Tab 250 mg.	For chlamydia conjunctitivitis.	10 mg for each kg × 3/day for 21 days.
Fansidar: *see* pyrimethamine + sulfadoxine.		
Ferrous sulphate. Tab 200 mg (60 mg of iron) or ferrous sulphate 200 mg with folic acid 0.25 mg.	For anaemia after its causes have been treated (treat for malaria and hookworm and advise about a mixed diet first). All pregnant women.	*Weight* — *Dose* 0–15 kg — ¼ tab × 2/day 16–29 kg — ½ tab × 2/day 30–44 kg — 1 tab × 2/day 45+ kg — 1 tab × 3/day Treat for at least 3 months. 1 tab every day for the whole pregnancy.
Folic acid. Tab 0.4 mg, Tab 1 mg or Tab 5 mg.	All pregnant women. For sickle cell disease: treats and prevents anaemia.	0.4 mg every day for the whole pregnancy. 5 mg every day, forever.
Gentian violet: *see* methylrosanilinium chloride.		

Medicine	Uses	Dose
Ibuprofen. Tab 200 mg or Tab 400 mg.	For painful periods and heavy periods. For kidney stones.	400 mg × 3/day only when the period starts and for 3–5 days. 600 mg × 3/day when there is pain. Stop ibuprofen if has pain in upper abdomen.
Lidocaine hydrochloride. (lignocaine). Injection 1% or 2%.	Inject into the muscle around a new wound before cleaning and stitching it. Make sure that the needle is not in a vein by pulling back the plunger on the syringe before injecting.	Not more than 20 ml of 1%. Not more than 10 ml of 2%.
Magnesium sulphate. Injection.	For eclampsia. If a pregnant woman has a convulsion.	5 g intramuscularly into *each* leg. After 4 hours give 2.5 g into *each* leg.
Mebendazole. Tab 100 mg.	Removes hookworm, roundworm, whipworm and threadworm. *Not* for women in the first 3 months of pregnancy.	*Age* — *Dose* 1+ year — 100 mg × 2/day Give treatment for 3 days.
Methylrosanilinium chloride (Gentian violet) crystals 5 g (one heaped teaspoon) to be dissolved in 1 litre of water. Strain mixture or carefully pour into a new bottle to remove any sediment.	For impetigo if less than 10 cm wide. For oral candida.	Paint one time a day for 5 days. Rinse mouth two times a day for 7 days.
Metronidazole. Tab 200 mg or 250 mg.	For a tooth abscess. Send the patient to the dentist.	200 mg or 250 mg × 3/day for 5 days. It is dangerous to drink alcohol when using metronidazole.
Multivitamins. Tab.	These are *not* useful to treat or prevent malnutrition. Teach patients how to grow and eat a mixed diet.	1 tab × 1/day for 5 days.

Medicine	Uses	Dose
Multivitamins (continued)	If a patient does not need any medicine but they insist that you give them a medicine, give them multivitamins. Multivitamins will not harm the patient.	
Nalidixic acid. Tab 500 mg.	Second-line treatment for dysentery.	*Age* — *Dose* 2–11 months — ¼ × 4/day 1–4 years — ½ × 4/day 5–12 years — 1 × 4/day 13 + years — 2 × 4/day Give treatment for 5 days.
Normal saline.	For cleaning wounds and ulcers.	On the first visit squirt normal saline or clean water quickly at the ulcer. Do this until all the dirt has been removed. On other visits clean *very gently* using a sterile swab or cloth dipped in normal saline to avoid damaging the healing red skin.
Oral rehydration salts (ORS). One packet to be dissolved in 1 litre of water (3 × 330 ml soft drink bottles).	To treat dehydration. To prevent dehydration after treating dehydration. To treat shock on the way to the hospital.	See Appendix 10: How to treat diarrhoea. To prevent dehydration tell patients to drink the fluids they usually drink and *extra* fluid. Give extra fluid after each loose faeces: *Age* — *Extra fluid* — *Take home* 0–2 years — 100 ml — 2 packets 2–9 years — 200 ml — 2 packets 10 + years — 400 ml — 4 packets Tell the patient that ORS will not stop the diarrhoea. Give ORS which has been made up. Tell her to drink 5 ml every minute.

Medicine	**Uses**	**Dose**
Paracetamol. Tab 500 mg.	Reduces pain. Paracetamol is a symptomatic medicine.	*Age* — *Dose* 0–5 years — ¼ tab ×4/day 6–12 years — ½ tab ×4/day 13+ years — 1 or 2 tab ×4/day *Do not use more than these doses.* Give enough tablets for 2 days treatment.
	For osteoarthritis or rheumatoid arthritis.	Give 8 tablets a day for osteoarthritis and rheumatoid arthritis.
Penicillin		
Benzylpenicillin (Crystalline penicillin or 'X pen'). Injection 5 million IU (3000 mg) in a vial. 1 million IU = 600 mg.	For severe infections that cause a *general danger sign*. Send patient to hospital immediately: For a painful red eye if the eyesight is worse than usual. For a sickle-cell crisis.	0.1 million IU (60 mg) for each kg of body weight ×1 (or 4 times a day if the patient is not able to get to the hospital immediately). Do not give more than 2 million IU. Inject into a muscle.
Procaine penicillin fortified (PPF). Injection 4 million IU (4000 mg) in a vial. 1 million IU = 1000 mg.	For infections which need a large dose of antibiotic. For cellulitis or mastoiditis. Send to hospital immediately. For gonococcal conjunctivitis (also give tetracycline eye ointment).	0.1 million IU (100 mg) for each kg of body weight one time every day for 5 days. Do not give more than 1.2 million IU. Inject intramuscularly.
Phenoxymethylpenicillin (Pen V). Tab 250 mg.	For tonsillitis, acute dacrocystitis, cellulitis, pneumonia, a tooth abscess or a large area of impetigo (greater than 10 cm across).	*Weight* — *Dose* 10–19 kg — 125 mg ×3/day 20–39 kg — 250 mg ×3/day 40 kg or more — 500 mg ×3/day Give 5 days treatment.
Polyvidone iodine 10%. (povidone iodine).	For cleaning wounds and ulcers.	On the first visit use a syringe to push normal saline or clean water quickly at the ulcer until all the dirt has been removed. Then put polyvidone iodine on the wound. On other

Medicine	Uses	Dose
Polyvidone iodine (continued)		visits clean *very gently* using a sterile swab or cloth dipped in polyvidone iodine to avoid damaging the healing red skin.
Pyrimethamine 25 mg + sulfadoxine 500 mg Tab. (Fansidar)	For malaria. If the patient has a fever in a malaria area and you cannot test for malaria.	*Age* — *Dose* less than 4 years — ½ tab × 1 4–6 years — 1 tab × 1 7–9 years — 1½ tab × 1 10–14 years — 2 tab × 1 15+ years — 3 tab × 1 Give only one dose.
Quinine. Tab 300 mg (sometimes 200 mg).	For malaria which is resistant to the first-line antimalarial in your country: • If a fever is no better after using chloroquine or Fansidar. • If a fever returns before 2 weeks have passed *and* there is no obvious cause for the fever. If the patient has a *general danger sign* or is less than 5 years old send him to hospital.	10 mg for each kg × 3/day. Do not give more than 600 mg × 3/day. Give 7 days treatment.
Quinine. Injection 150 mg in each 1 ml or 300 mg in each 1 ml.	For malaria if the patient has a *general danger sign*. Give quinine intramuscularly. Repeat after 4 hours and then after each 8 hours whilst the patient continues to vomit.	10 mg for each kg one time. Do not give more than 600 mg for an adult. Repeat after 8 hours if the patient is still vomiting. Give tablets when the patient is no longer vomiting.
Retinol (vitamin A). Tab (capsules) 25,000 IU, 50,000 IU, 100,000 IU, 200,000 IU.	For night blindness, Bitot's spots, patients under 6 years old with a corneal ulcer, severe malnutrition and measles.	*Age* — *Dose* 0–1 year — 100,000 IU 3 times 1+ years — 200,000 IU 3 times Give the first dose immediately. Give the second dose on the following day or after finishing an antimalarial.

Medicine	Uses	Dose
Retinol (continued)		Give the third dose 2 weeks later. Also advise about a mixed diet.
Salbutamol. Tab 2 mg or 4 mg.	For wheeze if there are *no* signs of respiratory distress and does *not* have fast breathing.	*Age* — *Dose* Less than 1 year — 1 mg × 3/day 1–4 years — 2 mg × 3/day 5+ years — 4 mg × 3/day Give 5 days treatment.
Salbutamol. Metered dose inhaler.	For patients with signs of respiratory distress. Also give benzylpenicillin and send to hospital.	Through a spacer (a plastic bottle). Shake before pressing Press 1 time for each time the patient breathes 5 times. Repeat 10 times.
Tetracycline. Tab 250 mg.	For sinusitis if patient is 13 years or more and *not* pregnant. (Also used in the treatment of cholera. The dose is different.)	250 mg × 3/day. Give 5 days treatment.
Tetracycline eye ointment. 4 g tube 1%.	For *conjunctivitis caused by bacteria.*	× 2/day for 5 days.
	For *trachoma.*	× 3/day for 1 week then × 2/day for 5 more weeks.
	For *conjunctivitis caused by chlamydia* (child older than 5 days but less than 1 month), together with erythromycin.	× 1/day for 3 weeks.
	For *conjunctivitis caused by gonococcus* (child less than 5 days old) together with procaine penicillin fortified.	6 times a day for 5 days.
	For a *corneal ulcer.*	× 1 also give an injection of Benzylpenicillin then send to hospital.
Vitamin A: *see* retinol.		
Whitfield Ointment: *see* benzoic acid and salicylic acid.		

Glossary

abscess: a swelling under the skin filled with *pus.*
abdomen: the part of the body that contains the stomach, bowel and many other organs.
abortion: the unborn baby dies inside the *uterus* before the woman has been pregnant for 6 months.
allergy: a reaction to medicine, food or an insect bite. The reaction is often sneezing, an itchy rash, or difficult breathing. Allergies can be very dangerous.
antibiotic: medicine used to fight *bacteria.*
antibodies: the weapons that the body uses to fight *infection.*
anus: the hole at the end of the *bowel* where *faeces* leave the body.
artery: a tube which carries blood away from the heart. There is a *pulse* when you touch an artery.
bacteria: small germs which can cause infectious illness. *Antibiotics* fight bacteria.
birth: the time when a baby comes out or the *uterus.*
bladder: the bag inside the *abdomen* that stores *urine.*
bowel: intestine.
cancer: a *disease* that spreads inside the body and may cause death.
cervix: the neck or opening of the *uterus* inside the *vagina.*
chest indrawing: the skin is pulled in when the patient breathes in.
cholera: an illness in which the patient passes a large amount 0/ very watery *faeces*.
clinic: a place where trained health workers see patients with a special type of problem, often in a hospital.
condom: a narrow rubber sheath that a man wears on his penis during *sexual intercourse.* Condoms prevent sexually transmitted diseases, including HIV, and prevent pregnancy.
consciousness: the patient is awake or is asleep but can be woken.
constipation: pain or difficulty passing *faeces.*
contraception: any method of delaying or preventing pregnancy.
convulsion: (also called a *fit):* the patient becomes stiff and may shake. The patient cannot stop the stiffness or control the shaking.
counselling: to help the patient to decide what to do.
dehydration: the result of loss of a large amount of water and salts from the body, usually caused by diarrhoea.
disease: an illness or group of illnesses. Very severe febrile disease is a group of diseases that includes several severe illnesses.
dysentery: diarrhoea with blood in the *faeces.*

examine: to look at. listen to, or feel, parts of the body to find out what is wrong.

faeces: stool. The waste that comes out of the end of the *bowel.*

fallopian tubes: the tubes through which eggs pass to reach the inside of the *uterus.*

family planning: to use methods to delay or to prevent pregnancy. To have the number of children that a family wants, when the family wants the children.

febrile: to have a *fever.*

fever: when the body temperature is high. This may mean: that the patient or mother tells you that the patient had a fever; the patient feels hot to touch; the temperature under the arm is 37.5 °C (99.5^{0}F) or higher, or in the *rectum* or mouth is 38°C (100.4 °F) or higher.

fit: see *convulsion.*

folic acid: folic acid or folate, is a *vitamin* found in food that the body needs to help it make red blood cells.

foreign body: a thing which is not part of the human body, for example a stone in the ear.

fungus: germs that grow like moulds and which can cause *infections.* Anti-fungal treatments fight fungus infections.

generic: the normal name of a medicine. Generic medicines are cheaper than brand name medicines.

haemoglobin: a red protein that contains iron. Haemoglobin carries *oxygen.*

hookworm: hookworm are small *parasites* which live in a person's intestine and suck blood.

hygiene: clean habits which prevent *disease.* This includes preparing food in a clean way, drinking water from a protected water source, putting *faeces* in latrines or covered holes, washing regularly.

hypoglycaemia: low blood sugar.

immune system: the system that helps the body to fight *disease.* The immune system makes *antibodies* or special cells to fight disease.

immunisation: a medicine which will protect against a *disease.* Also called *vaccines.* Some immunisations are injected and some are drunk. There are immunisations for tuberculosis, tetanus, polio, diphtheria, measles, mumps and rubella. Other immunisations may be available in some countries.

infection: an illness caused by *bacteria, viruses* or other very small living things.

intramuscular (IM) injection: an injection put into a muscle, usually into the upper leg.

intravenous (IV) injection: an injection put into a vein.

jaundice: a yellow colour in the white part of the eyes and the skin.

joints: places where bones meet.

Kernig's sign: a pain felt in the back, neck or head when the patient's hip is bent and the knee straightened. It is used to diagnose *meningitis.*

kidneys: two organs behind the *abdomen* which make *urine* by cleaning waste from the blood.
loss of consciousness: see *unconscious.*
lymph nodes: small lumps under the skin which trap and fight *infections.* Lymph nodes become swollen and often painful if they become infected.
mastoid: the part of the skull bone behind the ear.
measles complications: problems or *infections* that occur during or after measles. Diarrhoea, pneumonia and skin infections are examples of measles complications.
meningitis: meningitis is an infection of the outside of the brain. Meningitis is caused either by *bacteria* or *viruses.*
menstrual period: bloody fluid which leaves a woman's *uterus,* passes through the *vagina* and out of the private parts. This happens about every 28 days and lasts for a few days.
microscope: an instrument that makes very small things look larger.
minerals: simple substances in foods that help to build the body and help the body fight *disease.* Iron is an example of a mineral.
nausea: the patient feels as if he may vomit.
nipple: the middle of the round, dark part of the breast. In women, this is where milk for the baby comes out.
nutrition: the food people eat. Good nutrition is important: it means eating a mixed diet to help the body to grow and fight disease.
oral rehydration solution: a solution made with oral rehydration salts (ORS), a mixture of glucose and salts: sodium chloride 3.5 g/l; trisodium citrate 2.9 g/l, potassium chloride 1. 5 g/l; and glucose 20.0 g/l.
oxygen: a gas in air that the body needs to live.
parasite: very small worms and animals that can live inside people and cause *disease,* for example malaria and schistosomiasis.
period: a short way of referring to *menstrual period.*
prescriber: a trained health worker who decides what medicines to give to patients.
private parts: the parts of the bodies of men and women which allow people to have *sexual intercourse* to produce babies. These parts include the woman's *vagina* and the man's penis.
pulse: the movement of an artery each time the heart beats. The pulse rate tells you how many times the heart beats in one minute.
pus: yellow or green fluid in wounds or *abscesses* caused by the body fighting *infection.*
rectum: the lower part of the *bowel. Faeces* are stored in the rectum.
refer: to send a patient to be seen by another health worker.
respiratory distress: a patient with respiratory distress finds it very difficult to breathe.
schistosomiasis: a *parasite* that enters the body through the skin.

scrotum: the bag between a man's legs that holds his testes (testicles) .
sexual intercourse: sex with the penis in the *vagina.*
shock: a dangerous problem which results in not enough blood reaching the brain and other parts of the body.
sign: something that you see, hear or feel which helps you decide which *disease* the patient has, for example fast breathing or *chest indrawing.*
sterilise: to kill *bacteria, viruses* and *fungus* on a piece of equipment, usually by steaming or boiling it for 20 minutes. At high altitudes, the steaming or boiling time must be much longer.
stethoscope: an instrument used to listen to sounds inside the body.
subcutaneous injection: an injection given under the skin.
symptom: something the patient tells you about, or which you can see, which helps you to decide which *disease* the patient has.
syringe: an instrument used to inject medicine.
temperature: see *fever.*
tutorial: a lesson between a trainer and one student or a few students.
ulcer: a painful open sore.
unconscious: a state in which an ill or injured patient seems to be asleep but cannot be awakened.
ureter: tubes in the *abdomen* which carry *urine* from the *kidneys* to the *bladder.*
urine: fluid waste that collects in the *bladder.*
uterus: also called the womb. Where the baby grows inside a pregnant woman.
vaccinations or vaccines: an injection or medicine to drink which will protect against a *disease.*
vagina: a tube of muscle from the entrance of the *uterus* (called *cervix)* to the opening between a woman's legs. This is where a baby passes when it is born.
vein: a tube which carries blood towards the heart. There is no *pulse* when you touch a vein.
virus: a very tiny germ that causes *infections. Antibiotics* do *not* fight viruses.
vitamins: parts of food that help to build the body and help the body to fight *disease.* Vitamin C, vitamin A and folic acid are examples of vitamins.

List of useful resources for health workers

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VSO Books

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Care and Safe Use of Hospital Equipment, Muriel Skeet, David Fear, VSO Books, 188pp, ISBN 0 9509050 5 4

Culture, Cash and Housing - Community and tradition in low-income housing, Andy Bevan, Maurice Mitchell, VSO/ITP, 128pp, ISBN 1 85339 153 0

How to *Grow* a *Balanced Diet,* Ann Burgess, Grace Maina, Philip Harris, Stephanie Harris, VSO Books, 244pp, ISBN 0 9509050 6 2

Made in Africa - Learning from carpentry hand-tool projects, Janet Leek, Andrew Scott, Matthew Taylor, VSO/ITP, 70pp, ISBN 1 853392146

Managing for a *Change - How* to *run community development projects,* Anthony Davies, ITP, 160pp, ISBN 1 85339 339 1

Water Supplies for Rural Communities, Colin and Mog Ball, VSO/ITP, 56pp, ISBN 1 85339 112 3

Books for teachers

The Agricultural Science Teachers' Handbook, Peter Taylor, VSO Books, 148pp, ISBN 0 9509050 7 0

The English Language Teacher's Handbook, Joanna Baker/Heather Westrup, VSO/Continuum, 170pp, ISBN 0 304 70642 6

The Handbook for Teaching Sports, National Coaching Foundation, VSO/Heinemann, 160pp, ISBN 0 435 92320 X

How to *Make and Use Visual Aids,* Nicola Harford, Nicola Baird, VSO/Heinemann, 128pp, ISBN 043592317 X

Introductory Technology - A resource book, Adrian Owens, VSO/ITP, 142pp, ISBN 1 85339 064X

The Maths Teachers' Handbook, Jane Portman, Jeremy Richardson, *VSO/* Heinemann, 108pp, ISBN 0435923188

Participatory Forestry - The process of change in India and Nepal, Mary Hobley, 338pp, VSO/ODI, ISBN 0 85003 2040

The Science Teachers' Handbook, Andy Byers, Ann Childs, Chris Laine, *VSO/* Heinemann, 144pp, ISBN 043592302 1

Setting Up and Running a *School Library,* Nicola Baird, VSO/Heinemann, 144pp, ISBN 0 435 2304 8 4

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Note: Numbers in **bold** show pictures; numbers in *italics* show tables. Underlined numbers show an important entry.

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Every year, over 50 million people die worldwide, the majority of them in developing countries. Many of these deaths could be avoided by accurate diagnosis and correct treatment at primary health care centres.
Diagnosis and Treatment – A training manual for primary health care workers is for all health workers who see patients in a primary care setting.

This practical training manual teaches how to

- diagnose and treat the most common illnesses that present at rural and urban health centres
- prescribe rationally in line with WHO and national essential drugs guidelines
- deliver good patient care with scarce resources.

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Dr Keith Birrell and Dr Ginny Birrell are qualified medical practitioners who worked overseas with VSO to develop primary health care by training health workers in diagnosis, treatment and rational prescribing.

Based on extensive field experience and field testing, this manual will help primary health care workers use essential drugs to effectively combat the ill health that continues to hinder human well-being and development in the world's poorest countries.

Dr Jonathan D Quick, Director, Essential Drugs and Other Medicines, WHO

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