# INTRODUCTION

This book is for people who want to learn more about personal health, protecting health, and wider health issues. When you complete the book, you will understand more about how a human body works, what is happening when you are ill, and how to prevent some common diseases and strengthen health. Health is not just about avoiding disease, and health and disease are about more than one person's body. Mental health, physical health, and social health are all considered in this book.

Each part in this book builds on the previous parts. Part A is mainly about personal health. It starts with the basic biology of health. Once you understand the biology, you can have a deeper understanding of prevention and treatment of diseases common in Southeast Asia. This part also encourages you to look at your own life and community from a health perspective, and collect some data about health. Activities start to connect the information in the book to the community you live in.

Part B brings in more of a community perspective. Insights about your own healthy behaviours are added to knowledge about diseases. You will examine ways that diseases affect communities, and communities affect diseases. You will think about how to improve and protect the health of your community.

Part C of the book visits again many of the same subjects as the first two parts, but this time as issues seen from wider perspectives. You will learn ways to look at the health of a whole country or region. You will be introduced to some of the organisations working in the health field. You will gain skills that will help you evaluate health policies, so you can express an informed opinion.

With this knowledge you will be able to better understand your own health, the health of your community, and national health issues as well. There is no end to learning about health. If you find a subject you are more interested in, there are suggestions at the end of chapters that you can use to start learning more on your own.



# CONTENTS

# Part A: Individual Health

Chapter 1: Disease	1
Chapter 2: Diarrhoea	9
Chapter 3: Malaria	14
Chapter 4: Tuberculosis	18
Chapter 5: HIV/AIDS	21
Chapter 6: Nutrition	28
Chapter 7: Starting a family and health	34
Chapter 8: Mental Health	40
Part A Review & Further Reading	47

# Part B: Community Health

Chapter 9: Introduction to Community Health .	52
Chapter 10: Healthy Communities	53
Chapter 11: Child Health	64
Chapter 12: Accidents and Disasters	69
Part B Review & Further Reading	76

# Part C: Global Health

Chapter 13: Measuring Health in Society	.79
Chapter 14: International Health Agencies	86
Part C Review & Further Reading	.92

# Appendices

A: Inference Tool	95
B: Diseases and Characteristics	96
C: Nutritional Values	97

# **PART A: INDIVIDUAL HEALTH**

After you complete this part, you will be able to:

- Suggest a minimum of three practical ways to maintain or improve your health. »
- Think about and discuss why people make their decisions to engage in healthy behaviours or not. »

# **Chapter 1: Disease**

# **Objectives**

- **1.** Explain why symptoms alone are not the best way to diagnosis a disease.
- 2. Explain some of the ways that people can control and prevent diseases.
- **3.** Explain the difference between treatment and cure in your own language.
- **4.** Explain, in terms of resistance, why it is important to have a diagnosis before starting treatment.

# **Key Words**

acute	cure	genes	prevention
allergy	disease	heatstroke	resistant
antibiotics	diagnose	immune system	side effect
cells	effective	micro-organism	symptom
chronic	expose	prescribe	treatment

# 1.1 The Body

What is a body? There are many ways to answer this, but one way to think about it is: organs, including the lungs, the skin, and the brain, all working together. Organs are a combination of tissues working together, and the tissues are a lot of similar cells working together. For example:

- muscle tissue is many muscle cells together
- each layer of the skin is a different kind of cell, and so a different tissue
- the hard part of bones is bone tissue
- the fat under your skin is a lot of fat cells, and so it is called fat tissue

The stomach is one example of an organ. Around the stomach is a strong tissue that covers it. Inside this cover is muscle tissue. Inside the muscle is a kind of soft tissue. There are also blood vessels and nerve tissue, to make the muscle work.

Disease can cause cells to stop working well, which prevents the tissues working together properly, which FIGURE 1: Cells, tissues, and organs affects the organs. You might have fever, diarrhoea or



a cough, or you may feel tiredness or pain. Tiredness, pain, fever, diarrhoea and cough are examples of symptoms. A disease affecting your body can cause symptoms like these, or many others. In order to cure a disease, it is useful to think about diseases and symptoms separately.

## **1.2** Diseases and symptoms

A disease can refer to anything that causes pain, distress, social problems or death. A disease affects the body so that it does not function properly. Diseases can be caused by genes, infections, or harmful environmental factors. Diseases and their causes are usually inside the body. Most of these causes cannot be seen.

Symptoms are changes or feelings that you have when part of your body is not functioning well. Some examples of symptoms are: a fever, becoming angry quickly without reason, stomachache, and weakness. Often symptoms are caused by disease. However, the relationship between diseases and symptoms is not always simple.

- Some diseases have different symptoms in different people.
- Similar symptoms can be produced by more than one disease.
- Some diseases have no symptoms, so people can have these diseases without knowing it. Although diseases without symptoms might not affect people who have them, they can pass them on to other people, who might get symptoms or not.
- Some symptoms only start months or years after a disease has begun.
- Headaches, tiredness, diarrhoea, itching and pains can happen even when there is no disease.

## **1.3 Causes of Disease**

### **Micro-organisms**

Micro-organisms are living things that are too small to be seen without the help of a microscope. Many of them are only one cell. Micro-organisms include bacteria, viruses, protists, fungi and parasites. Some parasites, like intestinal worms, are large enough to see, but most are not. Some micro-organisms cause disease but most do not. In fact, many micro-organisms contribute to health. Micro-organisms live on or in the bodies of people and animals, but they also live in water, soil, and can float in the air. Some micro-organisms can get into the cells and stop the cells and tissues from working properly. Others make poisons that harm the cells. Diseases caused by microorganisms include flu, malaria and TB.



fungus, HIV virus, E. coli bacterium, malaria

parasite inside a red blood cell.

## Environment

Sometimes sickness is caused by strong chemicals or situations

that affect the body. For example, too much heat and not enough water causes heatstroke; coming in contact

with lead in dust, air, and water causes lead poisoning; smoking causes cancers and heart disease; and not getting enough iron from food causes anaemia. These are all environmental causes, because they come from around us, and from the way we live, not from inside us or from an infection.





### Genes

Genes carry information from generation to generation about how to make cells, tissues, and organs. Some diseases are caused or influenced by genes. These diseases may be found in more than one member of a family. For example, whenparents or grandparents had diabetes or heart disease, their children and grandchildren have a higher risk of getting these than someone whose parents did not have diabetes or heart disease. There are genes that make it easier to get these diseases, and there are genes that protect against diseases. Half of a child's genes come from the mother, and half from the father, so genes affecting a disease in one parent may or may not be in each child.

The information in genes is not used only for babies to grow into adults. Cells continue to use information from genes as they divide, renewing tissues and repairing injuries. Changes in genes in any cell can also cause disease in the tissue it is part of. Cancer is caused by damaged genes in the cells. These body-cell genes are not carried on to the next generation, and so do not affect the children in a family.

Some diseases are caused by a combination of these three kinds of factors. For example, cancer is caused by damage to genes, but this damage may be caused by the chemicals or sunlight in the environment, or by micro-organisms. Sometimes it just happens by chance, without any outside cause. Some genes make it easier for one person to get a certain disease caused by a micro-organism, and these same genes can protect from other diseases with environmental or micro-organism causes as well. For example, there is a gene which makes malaria less dangerous for those who have the gene, but it also makes it more difficult for them to get enough iron from their food. So they have less malaria, but are more likely to have too little iron in their blood.

- 1. What are the three general causes of disease?
- 2. Which ones are easier to control? Which are more difficult or impossible? Why?

# 1.4 Immune System, Treatment and Cure

The **immune system** protects from diseases by defending the body against micro-organisms. The immune system's combination of organs, tissues and cells inside the body stop some harmful micro-organisms entering your body, and kill most that do enter.

Many diseases are caused by micro-organisms, but not everyone who has been **exposed** to (comes in contact with) the causes will get a disease. For example, a student might go to school with the flu and sneeze micro-organisms into the classroom air. The flu micro-organisms float in the air and land all over – on the chairs, desks, door handles and pens. Other students and the teacher can breathe in the flu micro-organisms. Also, they might touch things with micro-organisms on them then rub their eyes, eat without washing their hands, or otherwise bring the flu micro-organism into their bodies. But not everyone will get the flu. The immune system of most of the people will destroy the micro-organisms before they can reproduce enough to cause flu.

Sometimes the immune system cannot stop the micro-organisms quickly or well enough. In this case, medical treatment can help kill the micro-organisms. To **treat** a disease, treat a symptom or treat a person means to try to stop the cause of the disease, relieve symptoms, and make the person feel better. For example, penicillin is a treatment for some infections, paracetamol is a treatment for pain, and massage is a treatment for aching muscles.

Many treatments result in a **cure**. To **cure** someone or to cure a disease means to make the disease and its cause disappear entirely. For example, someone who takes the whole course of tuberculosis (TB) medicine is usually cured of TB. The medicine and the immune system combine to kill all the TB micro-organisms.

Some treatments do not cure the disease. Some treatments make the patient feel better while the immune system kills the micro-organisms. Some treatments help the body function better without removing the cause of the disease. Treatment for HIV does not kill all of the HIV, but the treatment helps people who have HIV be healthy. Treatment for diabetes controls the effect of the disease, but does not usually cure it.

When you go to a clinic, you may have some tests to find out what is making you sick. The process of identifying a disease is called diagnosing or 'making a **diagnosis**'. Once a diagnosis has been made, the doctor may **prescribe** (tell you to take) a certain medicine.

Some diseases can be cured by taking by a kind of medicine called an **antibiotic**. There are many different anti-biotics. All antibiotics kill micro-organisms, but not every antibiotic kills every micro-organism. It is important to get a diagnosis from the clinic before taking medicine to make sure the disease is caused by micro-organism, and that there is a medicine that can kill that micro-organism. Sometimes treatments have **side effects** (unplanned or unwanted effects). For example, a side effect of some antibiotics is diarrhoea. Some people are allergic to some medicines, so the doctor will usually warn the patient what to do if there are side effects.

Some diseases have no real treatment or cure, and your immune system protects you from them. For example, there is no cure for a cold. You can treat some symptoms to be more comfortable, but there is no cure for the disease itself. Whether you take medicines or not, you will usually be sick for a few days, until your immune system removes the cold micro-organisms from the body.

### Box 1: Types of treatment

It is useful to look at what is a symptom and what is a disease when thinking about treatment. Sometimes treatment of the disease solves the whole problem. Malaria is like this. When all the malaria parasites are killed, the disease is cured and the symptoms soon go away.

Sometimes there is no cure for a disease, and you can treat only the symptoms. There is no cure for a cold, or for an allergy. All you can do is make someone more comfortable by treating the symptoms.

Sometimes there is no disease, just some pain. Many headaches are like this. Also, an injury might be painful, or an old injury might hurt again sometimes. In this case, all you can do is relieve the pain.

When people get treatment, they should understand whether it is the symptoms or the disease that are being treated. When treating symptoms, the treatment can stop when the person feels better. When the disease is being treated, it is normally very important to continue the treatment until the end, unless the patient has a bad reaction to the medicine.

See Section 1.6 for more about the development of resistance to medicines when people do not take enough. Always find out exactly what treatment is being prescribed by the doctor. **ASK** the nurse or doctor to explain it to you. Asking about your health is responsible, not disrespectful!

- 1. What is the difference between a treatment and a cure?
- **2.** Look at the table below. What symptoms do you associate with the diseases in the left column? The first one has been done for you.

Diseases	Symptoms
	a. Fever
Malaria (a,b,c,d,e,i)	b. Sweating
ТВ	c. Headache
Cholera	d. Muscle ache
Flu	e. Tiredness/fatigue
Heatstroke	f. Diarrhoea
Typhoid	g. Coughing
HIV	h. Dizziness
Diabetes	i. Vomiting
	j. Thirst

- **3.** Explain why symptoms alone are not the best way to diagnose a disease.
- **4.** Use the Inference Tool in Appendix A to answer the following question: What is the difference between treating a disease and treating symptoms?

# 1.5 Disease Classification

Diseases can be classified in a variety of different ways, depending on what characteristic is most important at the time. For example, sometimes it is important to know if a disease is mostly mental, somewhat mental, or mostly physical. Other times it is important to determine if a disease is serious, somewhat serious, or mild. Below are some other characteristics that are used to classify diseases.

Diseases that happen quickly and can disappear again are called **acute** diseases. The flu and cholera are acute diseases. The immune system can deal with many acute diseases, and treatment for many acute diseases cures them. That is, after treatment, the disease micro-organisms that were in the body are all killed, or the cause of the disease is removed and the person is cured. Acute diseases often have treatments and cures.

Some diseases, like heart problems, diabetes and HIV infection, have treatments but no cure. This means that the patient receives care and medication, but the disease remains. Without treatment, the disease would be worse. These are called **chronic** diseases, and they usually last a long time. Chronic diseases affect people both mentally and physically, as living with a disease can change one's life and personality. Other examples of chronic diseases are goitre, depression and gout. Many chronic diseases have treatments but no cure.

Some diseases can start acute and become chronic. Hepatitis B can give you a fever and make you tired and weak in its acute phase, when the infection is starting. Most people will overcome the infection and be cured, but some people's immune systems do not kill all of the hepatitis B micro-organisms, and they will have chronic hepatitis B. This means that after the acute phase, when the fever is gone, the virus can will continue to live in their body, even though they do not feel sick. It may cause symptoms again much later, or they may never feel ill.

Another way to classify disease is by whether it can spread from one living thing to another or not. Diseases that one person can get from another, directly or indirectly, are called '**infectious diseases**'. Most infectious diseases are caused by bacteria, viruses, fungi or other micro-organisms we often informally call 'germs'. TB, cholera, and avian influenza (bird flu) are examples of infectious diseases.

Some diseases do not spread from one person to another. They develop inside the body. We call these diseases **'non-infectious diseases'**. Gout, arthritis, diabetes, most cancers, mental illnesses, and diseases of malnutrition are examples of diseases that cannot spread from one person to another. They develop inside the body for very different reasons.

- **1.** What are the similarities and differences between caring for a person with an inffectious disease and someone with a non-infectious disease?
- 2. What are some other characteristics of a disease that might be useful for categorising them?

# 1.6 The Course of an Infection

When micro-organisms enter the body and start reproducing, your immune system recognises that something is happening, and it tries to remove the micro-organisms. Each disease is different, but look at Figure 4 to see the general course of an infection without treatment.

When a micro-organism first enters the body, the immune system may not recognise it, so the micro-organisms reproduce freely and the immune system needs some time to catch up. As the immune system responds to the infection, the number of micro-organisms falls, until the immune system kills them all.



**FIGURE 4:** Micro-organism and immune system activity in an acute infection without treatment

The time between point 1 and point 3 on the chart is a time when the person does not feel anything. This time could be just a day or two for a cold, or years for HIV. Between point 3 and point 4, the person begins to feel ill, but symptoms may be general. When the illness is worst, between about point 4 and point 7, symptoms may be more specific, so it is easier to diagnose the disease.

The immune system is a little behind the activity of the micro-organisms, but at about point 7, it has cut the number of micro-organisms quite low, so the person feels better again. However, there may still be micro-organisms which can infect other people, until 10 when the immune system clears all micro-organisms. If

the immune system finds the same microorganisms in the body another time, it will recognise them more quickly, and prevent them from reproducing so the person does not get sick at all.

In Figure 5 we see what happens in chronic diseases, and in low infections with no symptoms. The immune system still responds, but not as effectively. At the end of the immune system's response, the micro-organism is still in the body. It might be at a very low level that causes no symptoms. The immune system still tries to kill it, but it is not successful. The person may still be able to infect others  $\operatorname{Figure 5: Micro-organism an infection without treatment}$ 

with the micro-organism.



FIGURE 5: Micro-organism and immune system activity in a chronic infection without treatment

# 1.7 Antibiotics and Resistance

As mentioned above, antibiotics are a kind of medicine used to treat diseases caused by some micro-organisms. Penicillin, ampicillin and Ciprofloxacin (Cipro) are wellknown antibiotics. The antibiotic is a poison that kills the micro-organism, but is not very harmful to people. The more micro-organisms it kills, the better an infected person feels. But antibiotics can have dangerous side effects, espectially when more are taken than are prescribed.

Sometimes a sick person feels completely better before all of the micro-organisms are killed, and some people want to stop taking the antibiotic when they feel better. This is a problem because not all of the micro-organisms are dead, and the ones that are still alive will reproduce.

Just as all people are different, some stronger one way, others stronger another way, individual micro-organisms are slightly different from each other too. An antibiotic will kill most of them, but a few will be will not be affected by the medicine: they are **resistant** to the medicine. They continue to reproduce, and the new, stronger generation of micro-organisms is resistant to the medicine that killed it in the past. This means that the micro-organisms are not killed by the treatment that had originally worked. The treatment is no longer effective, and stronger antibiotics are needed for treatment. Stronger antibiotics usually





**FIGURE 6: Figure 6: Resistance to antibiotics** 

have more side effects. Stronger antibiotics also cost more, and may be harder to get.

Not only that, but these resistant micro-organisms can infect other people, whose disease will also be more difficult to treat. For example, in the past, penicillin was used to cure pneumonia. Now the micro-organisms

that cause pneumonia are resistant to penicillin. Pneumonia can still be treated, but now it takes stronger medicines with more side effects.

The same is true of malaria medicines. Quinine and chloroquine used to be effective cures for malaria in Southeast Asia. These medicines are no longer effective against many of the malaria-causing micro-organisms. More medicines were developed, but they soon lost effectiveness as the micro-organisms became resistant to them, too. Resistance developed quickly when people did not take the medicines as prescribed. Resistance also developed when people took medicines which do not have the full amount of antibiotics. Because this has happened, now more people suffer from more dangerous malaria micro-organisms.

Only take antibiotics when a health professional tells you to, and then take all of the tablets exactly as explained. Be sure you are getting good quality antibiotics, with the full amount of the medicine in them. Get advice from a doctor about which medicines are good quality. Do not stop taking the medicines after a few days if you feel better. Taking the whole amount of medicine slows the development of resistance to the medicines. In other words, it means the disease stays easy to treat.

Figure 8 shows what happens when the full course of an effective antibiotic is taken, and what happens when the person does not take enough medicine, but stops taking it when he feels better. The person starts

feeling sick at time point two, and the dot shows the start of treatment. The medicine in the body increases, and more micro-organisms die. The immune system is still working, and is helping to kill more micro-organisms than the medicine alone. By time point six, shown by the square, the person feels better, and stops taking the medicine. When someone stops taking medicines, it is the stronger micro-organisms, the ones which were not killed by the medicine, which are still surviving. The immune system will still be active and might kill

system may also find it harder to kill the



system will still be active, and might kill FIGURE 8: Activity of micro-organisms in full and partial course of all the micro-organisms. But the immune antibiotics

micro-organisms, and then the medicine used before will no longer work against them.

Look at the diagram above of activity of micro-organisms in full and partial course of medicine, and answer the following questions:

- 1. Which line shows the activity of the micro-organisms in the body of a person who did not take the full amount of medicine, and stopped taking the medicine early?
- 2. Which line shows the micro-organisms in the body of a person who took all of the medicine?
- 3. What happens at the dot (after 3 units of time)?
- 4. What happens at point 4?
- 5. What happens at point 6?
- **6.** Draw a cartoon to teach someone in your community about the proper use of antibiotics. Include the words *antibiotic, resistant* and *micro-organism.*

### Box 2: More on the immune system: Why am I not immune to a cold?

Normally the immune system learns to recognise a micro-organism, and then kills it. Then, when that micro-organism gets in the body again, the immune system can recognise it right away, and kill it before the micro-organism can reproduce very much. This is how vaccines work. When you are vaccinated, you get a small amount of a micro-organism that is weakened or dead, so your immune system can learn to recognise it without you getting sick. Then your immune system knows the disease micro-organism, and can respond quickly if you are exposed again. You are immune to that disease, you have immunity. Immunity usually lasts for years, sometimes for your whole life.

So, why can you get a cold or flu many times in a lifetime? Why are you not immune to these diseases? In fact, although you may feel you have the same cold over and over, in fact there are over 200 different cold viruses. Each has the same effect on you, so to you they feel the same, but each is different enough that your immune system does not immediately recognise it.

The same is true of the flu. The flu virus is always changing slightly. Your immune system might recognise some kinds of flu virus, but not others.

### **1.8 Habits**

Sometimes you decide to change a habit, and you can change right away. Other times, you know that a habit is good, but it is hard to do it all the time. One way to understand habits is to collect data and look for patterns.

Complete a data collection project over two weeks. Copy the following chart and start filling it in to collect information about your own health habits. After the data has been collected, analyse your data and look for patterns.

Behaviour	Yes or No?	Date and time it was completed	Reason for doing/not doing it
EXAMPLE: Slept under a bed net	Yes	10 June 2011, 9pm	It was already hanging, so I just slept under it
Slept under a bed net			
Add rows as needed			
Ate nutritious foods			
Add rows as needed			
Washed hands after using the toilet			
Add rows as needed			
Positively dealt with stress			
Add rows as needed			

# **Chapter 2: Diarrhoea**

# Objectives

- 1. Demonstrate understanding of how to promote a healthy habit in your school or office by making recommendations for small, easy changes that could increase the number of times people wash their hands.
- **2.** Calculate the amounts of salt, sugar, and water needed for diarrhoea treatment based on the given ratio.

# Key Words

dehydrate habit oral rehydrate therapy

# 2.1 Prevention

Diarrhoea is not a disease, but it can be a symptom of many diseases. Many diseases that cause diarrhoea are spread from person to person. Developing cleaner habits can prevent infection with micro-organisms that cause diarrhoea. Drinking clean water and washing your hands frequently are the simplest way to avoid these disease micro-organisms. Clean water does not have the micro-organisms that cause diarrhoea, and washing hands with soap washes micro-organisms away before they can start an infection.

## Clean water

There are a few ways for families to make their drinking water safe for drinking and washing vegetables.

**Boiling** is the safest method, and should be used if any member of the family has diarrhoea. It is simple: boil water for one minute. When the water cools, keep it in clean containers used only for drinking water. Keep these containers free from dust, and close them tightly after filling them. The cover should not touch the water. To be sure the containers are clean, you can rinse them with some of the boiled water, and pour it away before filling with the rest of the boiled water.

Boiling water takes fuel, but there are other ways to improve the quality of the water. Here are three simple ones.

• Water can be **filtered** through six or eight layers of clean fine cloth, like an old longyi. One layer of cloth or a plastic screen will remove only large organisms. Most micro-organisms are so small that

they will pass through the cloth or screen, but six fine layers catch most of the micro-organisms.

- Micro-organisms die when exposed to sunlight. Fill clear containers, and set in full sunlight for six hours, if possible, in clear plastic bottles lying down at an angle exposing them most to the sun, on a hot surface such as a metal roof. Expose for 12 hours if it is cloudy. Clear plastic works better than clear glass. Coloured glass cannot be used.
- ▶ lodine tincture (liquid) will also kill most microorganisms. Add five drops per litre, then leave for 30 minutes before using.



FIGURE 9: Treatment of water with sunlight.

- **1.** Discuss which is better to store drinking water in: a container with a wide mouth, or one with a narrow mouth? Why?
- 2. What is the problem with rinsing out containers to be filled with boiled or filtered water with water which has not been boiled or filtered? Is this also a problem for water which will be exposed to sun or treated with iodine?
- 3. Why is it important that the cover not touch the water?

## Clean hands

Below are some times when you should ALWAYS wash vour hands:

- After using the toilet
- After helping someone else with the toilet
- After touching animals
- Before handling drinking or cooking water or water containers
- Before preparing food

to keep them clean, too.

- Before eating a meal or snack
- Before feeding someone



FIGURE 10: Hand washing

Making hand washing a habit is important. To make something a habit, it needs to be added into your daily life so that you do it automatically, without thinking about it. For example, when you walk into a house, you automatically remove your shoes. If you forget, someone in your house will remind you. To make something a habit, it needs to be easy to do. If the soap and the water are far away from the toilet, hand washing with soap will not be easy and will not become a habit. Having soap and water near the toilet will help make hand washing a habit. Another way to make something a habit is to work with others to remind each other to do it. Ask each other: "Did you wash your hands?"

In Figure 9, there are instructions for hand-washing. The important thing is to rub your hands carefully with soap and water, EVERY TIME you go to the toilet. Keeping fingernails short makes it easy

Sometimes you need to wash your hands but there is no soap. What can you do? Use ash! Using the ash from a fire is as effective as soap at stopping diarrhoea-causing diseases. Also, in some areas there a plants that can be used to make natural soap.

The girl in Figure 10 lives in Bolivia. The students in her school learnt about hand-washing and were worried that they did not have water and soap near the toilet. In order to help themselves and others remember to wash their hands after using the toilet, they made a system so that it is easier for everyone to remember FIGURE 11: A girl in Bolivia uses a system and do.



of hanging bottles to wash her hands at school.

- 1. Look at the toilet used by the students at your school or office, or in your neighbourhood. Is it easy to wash your hands? If not, how can you make it a habit to wash your hands with soap?
- 2. If your school or office decides to use ash, where will you get the ash? How will you store it close to the toilet?
- 3. If your school or office decides to use soap, who will buy the soap? Who will replace it close to the toilet?
- 4. What happens if you wash your hands well and then dry them on an unwashed cloth?

### **Food safety**

Another way of preventing the spread of micro-organisms that cause diarrhoea is to be careful when preparing food.

Use care when preparing raw meat, because micro-organisms that can make us sick can grow in the meat. To be safe, make sure meat is properly cooked before serving. Avoid eating any uncooked or partly cooked eggs, shrimp or meat.

When cooking, use different spoons, knives, dishes and cutting boards for raw food and cooked food, and wash them with soap before using them again. Do not let raw meat touch any cooked meat.

Milk and voghurt can also grow micro-organisms that can

make people sick. Raw cow's or goat's milk may have micro- FIGURE 12: Washing vegetables organisms which can be killed by heating the milk until small bubbles begin to form.

Fruit and vegetables that are going to be eaten raw should be thoroughly rinsed in clean water. This is because micro-organisms from the soil, from animal faeces, or from other people could be on the outside of the vegetables.

Hand washing is especially important before preparing food. Micro-organisms are easily washed off with soap and water. But still, it is safer if people who have diarrhoea do not prepare food for others. There is a risk of passing on the micro-organisms to others.

Of 10 people who get diarrhoea, five typically get it from their own hands after touching something with micro-organisms on it. The other five eat or drink the micro-organisms.

If you are at school or in your office and, during a break, you decide to eat a piece of fruit, where could you go to wash your fruit?

# 2.2 Treatment of Diarrhoea

Diarrhoea can be a dangerous symptom, so it is important to treat it early. If a person is healthy, most diarrhoea goes away within a few days, when the immune system defends the body against the disease that is causing the diarrhoea.

Diarrhoea can be dangerous for anyone, but especially for small children. The problem is not the diarrhoea itself, but the fact that it **dehvdrates**, or removes water from, the body. It is the lack of water that causes the danger.

Sometimes people stop drinking when they have diarrhoea because they want to stop the

water and the diarrhoea will stop, but they may then be very ill and need a drip to replace the



diarrhoea. Eventually their body will run out of **FIGURE 13: Skin that is dehydrated will stay 'pinched' and go** down slowly.

water and save their life. It is better to let the diarrhoea continue and replace the water by drinking.

There is a simple skin test for dehydration. You can try it now. Softly pinch the skin on your own hand. See how quickly it goes flat again. When you have lost too much water, it will go back slowly. Also, any urine will be dark yellow. If you have signs of dehydration, you need to rehydrate.

The best way to **rehydrate**, or replace the lost water, when you have diarrhoea is to keep drinking. Drinking appropriate liquids to replace the water lost to diarrhoea is called oral rehydration therapy (ORT). If people with diarrhoea drink energy drinks, sports drinks, cola, black tea, coffee, or any sweet drinks, these will not help them and can make them sicker. The best thing to drink is water mixed with both salt and sugar. The



combination of salt and sugar is sometimes called oral rehydration salts, or oral rehydration mix. Packets of it are widely available in towns and cities. You can also make your own with salt and sugar.

This is a recipe for one litre of rehydration drink to use for ORT. One litre is the size of a standard water bottle, about five drinking cups.

Before you start, make sure you have clean water (purified water, filtered water, or boiled and cooled water), a clean bottle or other container, and a clean cup and teaspoon. Wash your hands with soap. Rinse the bottle, spoon and cup with clean water before starting.

Put six teaspoons of sugar and half a teaspoon of salt into one litre of water. Stir with a clean spoon until it is dissolved. Use within one day.

The sugar and salt help the body to take in the water. **Remember, the water is the important part – do not add more salt or sugar.** The mixture should be about as salty as tears.

Give children the same amount as they lose though diarrhoea, about 1-2 cups each time they have diarrhoea. An older child or adult should drink at least three litres a day. Small children should continue breastfeeding.



FIGURE 14: A recipe for an oral rehydration drink

If the diarrhoea is bloody, if diarrhoea is accompanied by a a high fever, or if the condition gets worse, get medical help, but continue to give ORT as well.

### Box 3: Too hot, can't cool down

Most people avoid heavy work in the heat when they can. Normally the evaporation of sweat keeps us cool. But sometimes people still get too hot for their health, and the body's cooling system stops working. There can be different causes, but a common one is that the body has run out of water for sweat. When your body needs more water, you get thirsty. Then you drink, and everything should be fine.

But a few things can go wrong. First, there is a delay between the loss of water and the thirst. Second, some people just drink a small cup of water, even though they have sweat away much more than that. Third, some people don't drink water, but a sweet drink, an energy drink, or coffee or tea. Fourth, some people think that if they drink water when they are hot, they could have a stroke, so they try to avoid water.

People can die when they get too hot, first sweat a lot, and then stop sweating, and the best way to prevent this is to drink a lot of water before working in high heat. When you are sweating a lot, do not wait until you are thirsty to drink. Normally you might drink one litre of water in a day (one standard water bottle), but when you are sweating a lot, you could easily drink three. If you are working in the heat, you might need to drink six litres of water.

The body is mostly water. It is not just the blood that is a liquid, water is needed in all parts of the body. Often the first sign of getting too hot is a headache. The heat can make people feel weak or very tired, too. They might get dizzy, or even faint. And the strange thing is that they might not be thirsty anymore. They might not want to drink water. But it is very important that they do.

Just plain water, not hot or cold, is the best thing to drink. They should drink as much as they can, until they have to urinate. Don't forget that energy drinks or any other sweet drink can make them worse.

If sweating has stopped in the heat, find other ways to cool down. You could wet clothing, hair, and skin, and fan a person while they drink water. An electric fan or air conditioning is also good. Wet towels or cloths laid on the skin are another way to cool down. But drinking water is the most important thing. Start with a small glass, but start quickly. It is important to lower their body temperature as quickly as possible, so use the closest materials, do not wait.

- **1.** The directions given above says that you must use the rehydration drink by the end of the day. What could you do in order to have some ready whenever you need it?
- 2. What do the words dehydration and rehydration have in common? How are they different? Using the context of the paragraphs, what do you think 're-' and 'de-' mean? What do you think 'hydrate' means?
- **3.** The ORT recipe calls for 1 litre of water, 6 teaspoons of sugar, and 0.5 teaspoon of salt. How much sugar and salt would you need if you wanted to make 3 litres? How much water and salt would you need it you only had 2 teaspoons of sugar?

# **Chapter 3: Malaria**

# Objectives

- **1.** Understand more about how malaria is transmitted, treated and prevented.
- 2. Recommend simple ways to prevent malaria by reducing the number of mosquito bites.

# Key Terms

bed net data analysis falciparum insecticide larva, larvae repellent semiconscious transfusion transmission unconscious

Have you ever had malaria? Do you know how you got it?

## 3.1 Malaria Basics

The micro-organism which causes malaria is a tiny parasite. It must live part of its life in a mosquito, but also part in the blood of another animal. Many animals in the forest have malaria parasites in their blood, though often they carry the parasites with no harm to their health.

The parasites can only live inside a few kinds of mosquito. These mosquitoes bite mainly in the evening and very early in the morning. When a mosquito bites a person or animal with malaria parasites, it drinks some in with the blood. These parasites take about a week to get from the mosquito's stomach to her mouth. Once the parasites are living at the mosquito's mouth, the parasites will get into the blood of any person or animal when the mosquito bites.



FIGURE 15: Mosquito biting.

Remember the course of infection from Chapter 1? If a malaria parasite gets into **biting.** your body, at first you feel fine. Symptoms of malaria usually start to appear one

to three weeks later. At first it feels like flu, but the parasites reproduce very quickly, and soon you have a high fever and feel terrible. Other symptoms can include vomiting, nausea (feeling like you want to vomit) and headaches. Your immune system has a hard time killing all the parasites, because they reproduce so quickly.

There are actually four different kinds of malaria which infect people in Southeast Asia. They are caused by related but slightly different parasites. The best medicine for each of them is different. That is why it is important to have a blood test, to find out which kind you have, and take the best medicine against that one.

Only one of these four types is deadly for a healthy person: *falciparum malaria*. The others will make you sick, but if you rest, you will get better.

- What do you think?
  - 1. Can you get malaria from drinking or bathing in dirty water?
  - 2. Can you get it directly from contact with other people with malaria?
  - 3. Are you more likely to get malaria if you spend time in the forest?
  - 4. Can you get malaria from eating too many bananas?
  - 5. Are you more likely to get malaria if you eat cooling foods like watermelon on a hot day?
  - 6. Can you get malaria from stream water?
  - 7. Can you get malaria from a blood transfusion?

# 3.2 History of Malaria

Malaria has been known throughout history, but it is only in the last 120 years that the true causes were understood. Previously, there were many theories about the cause of malaria, including bad air, gas from swamps, eating certain foods, birds flying overhead, and imbalances in the body. People acted on these

beliefs to prevent malaria by providing fresh air, avoiding certain foods, and so on. However, malaria remained a serious problem throughout much of the world.

The malaria parasite was discovered in 1889 by Charles Louis Alphonse Laveran. In 1897 Ronald Ross proved that the mosquito carried the malaria parasite. After these discoveries people were able to work more effectively to stop malaria. There were two ways they tried: by killing and driving away mosquitoes, and by treating the disease. These were effective for a time, but resistance soon developed in both efforts. Some regions could end malaria infections, but even in the twenty-first century, malaria is still found in about 100 countries, and is still a very serious health problem.

## **3.3** Prevention of Malaria

The best way to prevent malaria is to avoid being bitten by mosquitoes. Since the mosquitoes that carry the malaria micro-organisms usually bite around sunrise and sunset, and during the late afternoon, try to avoid bites around those times in particular.

Sleeping under a **mosquito net** is very important, especially for children. The most effective nets are the ones that have insecticide in them, so mosquitoes which rest on them are killed.

**7** If possible, wear **clothing** that mosquitoes cannot easily

Light- FIGURE 16: Using a bed net is one of the best coloured clothing is less attractive to mosquitoes than dark ways to prevent malaria clothing.

**N**Reducing the number of **J** mosquitoes around your house will also help. Mosquitoes lay their eggs in **water**, so if you store water near your house, make sure that it is tightly covered to prevent the mosquitoes from laying eggs in it. It also helps to keep small fish in ponds as they eat the developing mosquitoes. Wherever you have uncovered or loosely covered water, like in a bathing tank, change the water entirely every few days to get rid of the developing mosquitoes.

### **Box 4: Insect Repellent**

DEET is a strong chemical that biting insects do not like. It is very effective at preventing mosquito bites, but it must be used with care. Do not use insect repellent with more than 30% DEET, and follow guidelines on the bottle, including:

- 1. Use only where needed, e.g., only around the ankles if mosquitoes are biting only there.
- 2. Do not use near mouth, eyes, ears, nose, on sensitive skin, or under clothing.
- 3. Wash off with soap and water within eight hours.
- 4. Keep away from children, and especially if children touch DEET, wash their hands with soap as soon as possible.
- 5. Do not use on skin with cuts or sores.

✓ You may be able to buy insect

**Trepellent** to put on your skin. Some types have a chemical called DEET in them, and some types have natural herbs and plant extracts, like citronella, that mosquitoes do not like. These are good for temporary protection, but they cannot be used on babies, and they must be washed off with soap and water after some hours. See box 4 for more information about insect repellent with DEET.

**5** You can burn *coils or sticks* that give off a smoke that mosquitoes do not like. However, smoke is also not good for people to breathe, and they sometimes cause burns and fires.

- 1. Why do you think it is especially important for children to sleep under a mosquito net?
- 2. Think about your own house. How could you help to make it a habit to sleep under a net every night? Refer to your record of sleeping under a bed net.
- **3.** Do you have malaria larvae in your water containers? Empty a tank or container, refill it, and check it regularly. How soon can you see new larvae? Is there more than one kind of larva? How many days does it take them to start hatching? What else do you notice about their life cycle?

# 3.4 Treatment of Malaria

To prevent the serious consequences of malaria, it is important to have a blood test as soon as you feel ill. Falciparum is the kind of malaria that can cause problems in your brain. If a malaria patient is semiconscious or unconscious, the chance of them dying is already about one in ten, even if they get treatment. Without treatment, they have little chance of surviving. That is why it is important to quickly find out if someone with a fever has malaria and if so, which kind of malaria it is.

With a blood test, the health professional can be sure that the disease is malaria, and give the correct treatment for the type of malaria. Taking the correct treatment early can prevent the disease from becoming more serious. It may be possible to save the life of someone who gets the treatment later, as well.

To prevent resistance, it is important that the patient take all the medicine, even if he already feels better before the medicine is finished.

Find out:

- 1. Where in your community can you go for a malaria test? How much does it cost?
- 2. Where can you go to buy malaria medicines? How much do they cost?

## 3.5 Gender and Malaria

In Thailand and Myanmar, about twice as many men as women get malaria. Why do you think this is?

The main reason men get malaria more than women is that they generally spend more time in the forest. In villages, towns, and cities, only people are likely to have malaria, but in the forest, mosquitoes bite many animals that carry malaria micro-organisms. Also, people in towns and cities are more likely to get treated. After they are treated, mosquitoes that bite them can no longer get malaria parasites from them. In forests, however, people do not usually get treatment, so they can still pass on the micro-organisms. For these reasons, mosquitoes in forests are more likely to carry malaria micro-organisms than are mosquitoes in towns and cities.

Malaria is particularly dangerous for pregnant women. It can harm both the woman and the foetus. Pregnant women with fever, aches or other symptoms that could be malaria should be tested for malaria immediately.

- 1. Do you know any other diseases with symptoms similar to malaria?
- **2.** If malaria is treated correctly and quickly less than one person in a thousand who gets malaria will die of it. But many thousands of people die from malaria every year in Southeast Asia. Why do you think this is?
- **3.** Make a fact sheet with the important points to know about malaria. As well as using what you have learned in this chapter, you can collect more information from books, health workers, pamphlets, the Internet or other places. Make sure you cover the following topics:
  - Cause
  - Symptoms
  - Transmission
  - Diagnosis
  - Treatment
  - Prevention

**Optional activity:** Split into two groups. Each group learns about dengue fever. One group presents ways in which dengue is similar to malaria; the other presents ways in which it is different.

### Box 5: Different kinds of risk in health

You have often heard that something is good or bad for health. Yet, when you change your habits, you might not feel any different. Also, you may know people who have good habits, but still get ill, or have bad habits, and live a long healthy life. That is because there are different kinds of health risk. Some conditions happen slowly, over many years. Some happen quickly.

#### **Risk that grows**

Imagine creation of a new path across a field of grass. At first, there is no path. But as many people walk the same way, slowly a path will form. The grass will get thinner, and then the path will become bare earth. The more that people use it, the wider and deeper it will be. How long it will take to form a path depends on how hard the earth is, the weather, how often people use the path, and whether bicycles and horses use it too.

This is similar to many conditions like heart disease, worms and diabetes. There is a little weakening in the body, a little damage, and the condition slowly gets worse. How quickly the disease develops depends on your basic health and your habits.

To prevent these kinds of diseases, you have to have good habits over a long period of time. You will not feel very different right away, because the change is slow. But if you look at a large group of people, you can see what happens to most of them.

Some people are naturally stronger than others. They will be able to resist the damage longer. But over a lifetime, when you look at who is strong and healthy when they get older, and who gets tired and ill young, most of the healthy people will eat a lot of vegetables, not drink too much, not be too fat or too thin, and most of the others will have poor health habits which have gradually weakened them.

#### Separate risks

Now imagine a football game. There is a player who scores a goal four times out of every ten tries. No one knows which four will score. Sometimes he might kick the ball ten times in a row, without scoring any goals. Sometimes all ten go in. That does not show that his regular level of four out of ten is wrong. If he kicks the ball a hundred times, he will make about 35 to 45 goals. If he kicks the ball a thousand times, he will make very close to 400 goals.

This is similar to diseases like the flu, malaria, and the ones that cause diarrhoea. These diseases do not develop slowly. No one can predict exactly who will be infected. If there is flu in a community, you might be able to say that half the people will get the flu, but you cannot say which people. You might even be able to say that half of all the people will get the flu, but only one out of ten people who wash their hands often will get the flu. But no one can say which individuals. We can only know averages.

Say one in every 200 mosquitoes is carrying malaria. If a hundred mosquitoes bite you, your chances are 50/50 that one of them will have malaria. But you do not know if it will be one of the first ones, or only later, or not at all.

The same is true of road accidents. You may ride a motorbike a thousand times without having an accident. But that is not proof that you will not have one. Each time you go out, you are taking the same risk again. That is why motorcycle riders should always wear a helmet, and people in cars should always wear seatbelts.

#### Improve your chances

There are no guarantees in most health matters, but there are a few things you can do to maintain your health. For example, if you never drink, you will never become addicted to alcohol. One really important thing you can do is never start smoking, or quit if you smoke.

- **1.** Make a list of diseases including malaria, a cold and diseases you know or have experienced. Explain about the kinds of risk of having these different diseases.
- 2. How is prevention different for diseases with different kinds of risk?

# **Chapter 4: Tuberculosis**

# Objectives

- 1. Demonstrate three ways to prevent the spread of tuberculosis.
- 2. Have a basic understanding of epidemics.
- 3. Explain why stigma does not prevent disease.

# Key Words

active

epidemic

latent

stigma

What do you know about TB? Think about symptoms, transmission and treatment and discuss your understanding of TB with your classmates.

## 4.1 Introduction

Remember how an infectious disease works. A micro-organism gets into someone's body, and starts to reproduce. At the same time, the immune system recognises that micro-organisms are in the body, and tries to catch and kill them. If the micro-organism is faster at reproducing, the person will get infected. If the immune system is faster, the person may never know he was exposed to the micro-organism. In fact, your immune system is like a farmer who is constantly removing unwanted plants (weeds) from the fields, keeping crops healthy. If there are too many weeds for the farmer to remove with tools, pesticide can be

used to kill most of them. In the same way, we use medicines when our immune systems are not killing micro-organisms fast enough.

Tuberculosis is often shortened to TB. Amazingly, one person in three in the world has been infected by TB. TB micro-organisms can infect the lungs. Some people develop the disease soon after becoming infected. Other people may get sick later, when their immune system becomes weak for some reason. But most people infected with TB will never become ill, and will never know they were infected.

TB infects the lungs more than other parts of the body, but sometimes TB can infect bones, the liver, or other organs. This is more common in children than adults, but can happen to anyone. TB which is not in the lungs is not usually infectious. In this chapter, we will learn about TB in the lungs.



FIGURE 17: Tuberculosis in the lungs

# 4.2 Infection

In nine out of ten people who breathe in TB micro-organisms, the immune system stops the microorganisms from growing. However, it cannot always remove them. TB infection in the lungs which does not spread is called **latent** TB. The TB micro-organisms are still alive, but they reproduce slowly, and the immune system kills one micro-organism for every new one that is produced, on average. People with latent TB infection have no symptoms, and cannot spread TB to others. Usually the micro-organisms stay inactive as long as the person lives.

But if the person's immune system becomes weak – because of other diseases, because of age, because of poor nutrition – the TB can become active. When TB micro-organisms reproduce more quickly, it is called **active** TB. If the immune system cannot keep up with the new micro-organisms, the number inside the body increases, making the person feel sick. People with active TB have symptoms, such as a cough for a long time. They may also have a fever, especially at night. Some people feel weak, and lose weight. People with active untreated TB infect 15-20 new people per year on average.

- 1. If someone has latent TB, are the TB micro-organisms alive inside their body?
- 2. If someone has active TB, are the TB micro-organisms alive inside their body?
- 3. How are latent and active TB different?

## 4.3 Prevention



FIGURE 18: Covering your mouth when you sneeze or cough is an important healthy habit.

Coughing, sneezing and spitting spread TB. Coughing and sneezing put TB micro-organisms in the air, where other people can breathe them in. When spit dries, the micro-organisms can be picked up by the wind and breathed in by others, too. When a person breathes in TB micro-organisms, they can enter the lungs and begin to grow. TB is not spread by sharing cups and dishes, but family members of TB sufferers are at risk of TB infection because they are exposed to the micro-organisms in the air.

TB in the lungs is a disease that develops over months, but it is important to treat it quickly to prevent it spreading to others. The first step is to test to find out whether TB is in the lungs. There are different ways to test, but usually the first step is to go to a lab to cough and spit in a cup. This is then tested to see if there are TB micro-organisms in it. TB micro-organisms do not come out in every cough, so usually the test has to be done more than once, over a few days.

To avoid infecting others with TB, everyone should cover their mouth when coughing, and should not spit on the ground. Instead of coughing openly and spitting, it is better to cough into a bent elbow. If someone has to spit, they

should spit into a tissue, and throw it away themselves immediately. Others should not have to touch the tissue. In general, there is no need to spit after you cough or sneeze. Stomach acid will kill any TB micro-organisms which are in spit, so swallowing will not do any harm.

What are two ways you can prevent the spread of TB micro-organisms?

# 4.4 Treatment

The medicines for TB are strong and often cause side effects, but they work well if they are taken for the full six months. After a few weeks, the micro-organism is under control, and the person cannot spread TB to other people. But it is very important to take all the medicines at the right time, without missing any doses. When people miss TB treatments, the micro-organisms become resistant to the medicines. The micro-organism which can survive the medicine will reproduce, and the medicine will no longer work. If other people get TB from a person whose TB is resistant to the medicines they are taking, the usual medicines will not work for them either, and they will have to take stronger medicines, with stronger side effects. About half the people who have untreated or untreatable TB die from the disease, so it is very important to take all the medicines, on time, for the whole time recommended by the health worker.

After taking the medicines for a few weeks, the TB infection is controlled, and the person is no longer infectious. However, TB micro-organisms are still in the body, and can become resistant to the drugs used, especially when people do not take them for the whole six months. These people remain infectious. People infected with the resistant TB micro-organisms cannot be cured so easily. They will have to take stronger medicines, and the medicines may not be effective.

## 4.5 TB in Myanmar

The Myanmar Ministry of Health (MoH) has announced that TB is the second most important disease that it has chosen for special attention. TB is an epidemic disease. An epidemic is a disease that happens to many people in one place and time. Because TB spreads to more and more people if no action is taken, a TB epidemic is a public issue.

It is difficult to collect good information on how many people get infected with TB, because many people

do not get tested. The MoH estimates that close to one per cent of the population is infected with tuberculosis every year. This includes people with latent TB. About five per cent of recorded deaths are caused by TB.

Testing for TB is important, as the symptoms of TB – coughing for weeks, fever, sweating at night, pain the chest – are not enough to diagnose the disease. Different people will have different symptoms, but the most common one is a cough that lasts for a long time. If someone has a cough for three weeks or more, they should go to a clinic and the health staff will be able to tell them if they should get tested.

In June 2008, the World Health Organisation (WHO) expressed concern that the devastation of Cyclone Nargis had prevented many TB patients from getting their TB treatment. They knew the health of these patients depended on them getting uninterrupted treatment. If treatment was interrupted for long, there would be a risk of the TB micro-organisms developing greater resistance to TB medicines. The WHO sent people FIGURE 19: TB screening laboratory in to the affected areas to find TB patients and help them maintain access to their TB treatment.



Myanmar

- 1. Look at the statements below. Are they true or false? If they are false, provide a correct statement.
  - **a.** It is easy to diagnose TB by the symptoms like coughing, fever, sweating and chest pain.
  - **b.** Cyclone Nargis did not affect TB patients in any special way.
  - c. Most people who breathe in TB micro-organisms do not need TB treatment.
  - d. TB micro-organisms cannot develop resistance to TB medicines.
  - e. About one per cent of people in Myanmar die of TB every year.
- 2. Someone with untreated TB can infect 20 people per year. Assuming a person with TB infects 20 people per year, and 10 per cent of those develop active TB, how many people will be infected in seven years if no one is cured or dies in that time?
- 3. Make a fact sheet with the most important things to know about TB, like the one you did for malaria in chapter 3.

### Box 6: Vitiligo and Stigma

When someone has vitiligo, the colour in their skin disappears, leaving white patches. Usually these are found mostly on the face, hands and feet, though some people get it all over the body. The reason the skin goes white is that the cells stop making the colour that usually protects the skin from sunlight. The skin is not diseased, and feels just the same as the skin with natural colour. The cause is entirely inside the body, and does not harm a person's health. In fact, it is similar to hair turning white. However, some people are afraid that they can catch it. Sometimes people lose their jobs, or their friends are afraid to visit them because they have vitiligo. They suffer from stigma.

Stigma is something that makes other people want to avoid the person who has it. When you think about it, you see that usually the real problem is not with the person who has the stigma. In this case, vitiligo is entirely harmless. It does not hurt the person who has it, nor anyone else. There is no reason that other people should be nervous, or that a person with vitiligo should lose their job or anything else. Yet sometimes it happens, because of the ignorance and fear of the people around them. Stigma damages the social health of a community.

What kinds of stigma have you seen? To make people feel excluded because of a stigma is to stigmatise them. Do you know people who stigmatise people who have certain diseases? Who have certain jobs? Who have been raped? Who have certain religions? Are children stigmatised for the actions or identity of their parents? What are the reasons for stigma in the cases you know of, and do you agree with the reasons?

# **Chapter 5: HIV/AIDS**

# **Objectives**

- 1. Correctly identify the ways of transmission and prevention of HIV infection.
- **2.** Know that HIV infection can be treated but not cured.
- 3. Express how stigma affects sufferers of this disease and others.

# **Key Words**

abstinence	disinfect	rumour	syndrome
acquire	emerge	semen	variation
deficiency, deficient	membrane	sperm	

# 5.1 History of HIV/AIDS

About once in five or ten years, a new disease is discovered. Sometimes it is a completely new disease, like Severe Acute Respiratory Syndrome (SARS) in 2003. Sometimes it is a new variation of a disease, like 'bird flu', which is a variation of the flu that emerged in the mid-2000s. Sometimes it is a disease that has existed for some time, but was not recognised, because too few people had it, or because it seemed to be similar to another disease. HIV/AIDS is a disease like that. It began



infecting people the early twentieth century, but in remote areas where many diseases are never diagnosed. It was recognised as a new disease only when more people in the USA and Canada started getting sick with it in the 1980s.

The earliest identified case of HIV/AIDS was discovered in a blood sample taken from an African man in 1959, but the sample was not analysed until 1998. It is now thought that people in Africa caught the disease from hunting, butchering, or being bitten by monkeys who carry a similar kind of infection. The first recognised signs of a new disease which later became known as AIDS were reported in the 1970s, mainly in the USA and Haiti, but the different patients were not connected. At the same time, a new disease known as 'slim' was spreading among young men and women in Africa as well, but was little known outside of Africa. There were several years when it was known that young people were dying of some new disease, but it was not clear how they got it. Only in 1983 was a virus discovered to be the cause of these illnesses. The virus was named the Human Immuno-deficiency Virus, HIV. When a test for the virus was developed, HIV infection could be confirmed in people with a set of symptoms. By 1984 there had been 8000 confirmed cases of HIV/AIDS in the US and 3700 deaths. There was a great effort to develop treatments, but little success.

In Southeast Asia, many people began hearing about a 'terrible disease' with no cure in the 1990s. In Myanmar, this was widely known as A.I.D.S., or even just 'Four Letters Disease'. Information was not always very clear, there were many **rumours**, and many people were frightened. People were not only frightened of somehow getting the disease without knowing, but they were afraid of the people who they thought had the infection.

Now, most people know that AIDS is the weakening of the immune system by HIV. AIDS stands for Acquired Immuno-Deficiency **Syndrome**. (A syndrome is a group of symptoms that often occur together.) The syndrome is caused by infection with the virus, which slowly destroys the immune system. Once the immune system is very weak, it cannot protect against the micro-organisms that are all around, and as a result the HIV-infected person gets ill more often. AIDS is not caused by getting many other diseases, by being too tired, or any other way, only infection with HIV. Once you know how HIV can be transmitted from person to person, you can protect yourself from it. There is no need to be afraid of people who have HIV infection.

# 5.2 HIV transmission and prevention

When people are worried that they can get AIDS just by living near people with HIV, are they concerned about something that can really happen? In fact, as you will see you cannot get HIV from ordinary friendly contact with people.

Not only that, but you cannot know who has HIV. Most people who have HIV do not know they have it, and no one can guess who has it. Infection with HIV does not create specific symptoms. HIV infection develops very slowly in most people, and they will have HIV for years – often five or ten years – before they start to develop symptoms. In those five or ten years they are just as healthy as before. They look healthy, feel healthy and they have no way to know that they have an infection that they can pass on to other people. Even when people begin to have symptoms, the symptoms can be different in each person, and can be similar to symptoms of TB and other diseases.

HIV can be transmitted only through direct contact with a fluid from the body that has a high level of HIV in it. These fluids are: blood, mother's milk, and sexual fluids. Sweat, saliva, and tears do not transmit HIV. HIV cannot pass through healthy skin.

### Blood

The blood of people with HIV has enough virus in it to infect another person. In fact, an amount of blood too small to see can still have enough HIV to infect a person, if it comes in contact with blood. Healthy, unbroken skin does not let blood through.

A common way that people get HIV by blood is through syringes or needles which are used for more than one person. The needles and syringes may have only a tiny amount of blood still in them, but this is enough to transmit HIV from one person to another. Another way is by blood transfusion. It is also possible (but less likely) to get HIV by sharing shaving equipment, or by contact with blood and broken skin or the eyes, or by accidentally getting pricked by a needle which has been used by someone with HIV.

How many ways can you think of that someone else's blood could come in contact with your blood? How likely are these? Have you ever come in contact with someone's blood that way before? If so, how could it have been prevented?

The most common transmission through blood contact is from the sharing of needles, so the best way to avoid HIV infection is to reduce the number of injections given. If an injection cannot be avoided, always use a new needle and syringe, or use your own needle and syringe, and do not share it with anyone. In situations where needles and syringes must be used on more than one person, they can be disinfected by boiling for 20 minutes. Pouring hot water over them will not disinfect them.

Blood must be tested for HIV before blood transfusions, but even when it is tested there is a small risk. People should not get blood transfusions just because they feel weak.

People can get small cuts in their skin when they shave, whether they are shaving their beard, their head, or any other part of the body. Small amounts of blood get on the razor, and can infect the next person who uses it, especially if the razor is reused right away. Do not share razors; do not use other people's razors. Wiping off razors, or soaking them in hot water, does not disinfect them.

### Breastmilk

Most children with HIV caught it from their mothers, either by blood contact before or during childbirth, or through breastfeeding. If a new mother does not recieve treatment, about one in three babies of HIV-positive mothers will have HIV.

Breastfeeding can transmit HIV, especially when mixed with other food too early. If a mother breastfeeds without giving any other food or water for six months, about one baby in 20 will get HIV during this time. If she breastfeeds longer, or mixes food and breastfeeding in the first six months, the risk doubles.

One of the key ways to prevent transmission is to test pregnant women for HIV as early as possible in the pregnancy. If the woman is HIV positive, then steps can be

taken to try and prevent transmission to the baby. As most babies get HIV near the **FIGURE 22: Baby in the** time of birth, many mothers take HIV medicine just before and after the baby is born. **womb** With treatment, only one baby in 20 will be HIV positive.

Although breastfeeding can transmit HIV, there are also risks to not breastfeeding. Each family must decide whether or how to breastfeed. Counsellors or health professionals can give families the information they need to make a decision.

# Sexual fluids

HIV is found in the sexual fluids of both men and women who are infected with HIV. It is in the semen of the man, and the vaginal fluid of the woman. In fact the most common way HIV is spread is through sex without a condom. Correctly using a condom reduces the chance of getting HIV during sex. The more people understand about sex, the better they will be able to protect themselves against infection. More information about sexual health can be found in Chapter 7.

- **1.** Can you find condoms in your community? Why or why not?
- **2.** How many other ways can you think of to prevent sexual transmission of HIV?

# FIGURE 23: Always use a condom

### Box 7: Condom knowledge

The two kinds of condoms that are effective at preventing HIV from going from one person to another are latex and polyurethane.

Condoms are used together with 'lube', a slippery liquid that you can buy at the same time as the condoms.

There are male and female condoms. Female condoms are not as well known as male condoms, but they are actually better at preventing transmission of HIV and other micro-organisms.

HIV infection is not the only thing condoms prevent. They keep the man's sperm and the woman's eggs separate, so they prevent pregnancy. They also prevent most sexually transmitted infections, like syphilis.

Condoms should be stored in a cool place, outside of direct sunlight.

When people put holes in condoms, for example to add beads or feathers, the condoms are no longer effective at preventing HIV infection

It is a good idea to carry extra condoms for friends who might need them.





# 5.3 Infection with HIV and development of AIDS

All animals have an immune system, so micro-organisms which can infect them have different ways to try to survive as long as possible. Some micro-organisms, like malaria, reproduce more quickly than the immune system can kill them off. Others, like TB, reproduce very slowly, and sometimes can be so slow that the immune system does not attack them very much. HIV has a different method. It damages the immune system itself.

When HIV first infects someone, it reproduces quickly, and the immune system attacks the micro-organisms as in any infection. However, HIV gets inside immune system cells, and kills them. In most people, this happens gradually, over years. HIV may cause a brief illness with a slight fever at first infection, but many people have no symptoms at all. For the years when it is killing immune-system cells one by one, people feel perfectly normal until the number of immune-system cells falls very low. Then there are not enough immune-system cells to respond to other illnesses. The person who has been infected with HIV years earlier begins to get sick more often than before. If they have latent TB, that TB may become active. If they come in contact with just a few micro-organisms that cause diarrhoea, too few to have made them ill before, they can get sick because their immune system is weak. Only at this point does the infected person have AIDS. So AIDS is not a disease – it is the condition resulting from inability to respond well to infections, because HIV has damaged the immune system.

When people keep getting one disease after another, they may wonder if something is wrong. Many go to a doctor, get a blood test and find they have HIV only at this time. There are medicines to treat HIV, which can prevent HIV infection from becoming AIDS. However, the person remains infected with HIV, and can use that knowledge to protect other people from infection.

- **1.** Discuss each of the methods of prevention with your classmates. How realistic is the use of these methods of prevention in your community? What obstacles can you think of?
- **2.** In groups, look back through the section about HIV/AIDS prevention. Prepare five questions about prevention for other groups.
- **3.** Do you think people in your community are well informed about the transmission risks of HIV/ AIDS, and ways to prevent transmission? What ways can you think of to improve people's knowledge?

# 5.4 Treatment for HIV

Medicines for HIV have been improving and reaching more and more people. HIV infection is still a very serious disease, and the medicines do not work for every person. However, the situation has changed from that which shocked the world in the 1980s, when everyone known to be infected HIV died, and little could be done for them. People with HIV must watch their health and take their medicines carefully, but many people with HIV infection live to be old, and eventually die of something unrelated to AIDS.

HIV develops resistance easily because HIV reproduces very quickly. People with HIV must take their medicines very regularly to control the infection and prevent resistance. Doctors are trained to help people decide when to start treatment and help patients with any side effects. Once treatment begins, regular blood tests show how well the medicines are working.

Pregnant women who are HIV positive can get treatment that will greatly reduce the chance of their babies being infected with HIV. This can be taken even quite close to birth. It needs to be given by a doctor, so HIV-positive pregnant women should stay in close contact with their doctors.

# 5.5 HIV, stigma, and blame

When someone gets infected with a disease, normally others do not wonder where they got it. With HIV, this is often the first question people ask. This may be a habit from the early 1980s, when it was not clear what caused AIDS, or how HIV spread, but it is not polite or helpful to ask or talk about how someone got infected with HIV. You know the ways that it can happen – it was one of them, and even the person with HIV may not be able to say for sure which way they got infected.

Not only that, but some people even blame people with HIV for their situation. Blaming someone for an infection, or making them feel ashamed for having it does not benefit anyone.

Like someone with diabetes, cancer, stroke, heart disease, or any other serious and long-term disease, each person with HIV will react differently to the new situation. Some people want to go on living just like before the illness. Some have a new appreciation for every day of life. Some become depressed. Some have a new determination to finish some plan or project. Some have changing moods. Some turn



with new devotion to religion. Some want to do as much good in the FIGURE 24: Poster against AIDS stigma world as they can in the time they have.

Just as with any health problem, the best thing you can do for someone is to help keep their spirits up, help them take care of their health if they are having trouble doing it themselves, and be a friend as always.

UN Secretary-General Ban Ki Moon says about the stigma of HIV/AIDS:

"Stigma remains the single most important barrier to public action. It is the main reason why too many people are afraid to see a doctor to find out whether they have the disease, or to seek treatment if so. It helps make AIDS the silent killer, because people fear the social disgrace of speaking about it, or taking easily available precautions. Stigma is a chief reason why the AIDS epidemic continues to devastate societies around the world."

#### 5.6 Life with HIV

People who are taking HIV medicines are less likely to infect others with HIV, but infection is still possible. This means that they should still use condoms for all sexual relations, and also make sure that others are not exposed to their blood.

People with HIV can work and live like anyone else with a chronic disease. They must take extra care in some situations, but generally can continue their lives. People with HIV have won medals in the Olympics, run companies, made great art, been elected to public office, raised their families, and contributed to their families, communities, and the world in many other ways.

### Case Study: HIV/AIDS in Uganda

Uganda is a country in central Africa with a population of about 31 million people. The people in the country make up four main ethnic groups and over twenty tribes. Since the 1980s the country has suffered from civil wars which have damaged the country in many ways. FIGURE 25: Location of Uganda



Uganda is one of the countries hardest hit by HIV/AIDS. It is estimated that there are 1.6 million HIV positive people living in Uganda. Fortunately the government has a policy of openness on AIDS, and there is a lot of political support for controlling the disease.

There are many strategies to reduce the spread of HIV, encourage community involvement, and promote research.

Over ninety percent of Ugandans live in rural areas; the majority are farmers. There is a clear difference between the urban rich and the rural poor. Literacy levels are low in rural areas. Only about halfof the Ugandan people have access to basic health services.

The first HIV/AIDS cases in Uganda were recognised in 1982. There was a silence about the disease from 1982 until 1986. This silence may have contributed to the rapid spread of HIV/AIDS.

When President Museveni came to power in 1986, he acknowledged the existence of HIV/AIDS in the country. He immediately requested a conference and this led to the establishment of the National AIDS Control Program (NACP), supported by WHO's Global Program on AIDS. A huge HIV/AIDS prevention campaign soon followed. This campaign dealt almost exclusively with prevention of transmission and advised people to 'love carefully' and 'love faithfully'. It gave little regard to the fact that there were already people being diagnosed with HIV/AIDS.

The impact of this campaign increased fears among the population and resulted in discrimination and stigmatisation of people with HIV/AIDS. Families failed to care for their loved ones and many health care workers expressed prejudice in using resources to care for AIDS patients who were 'going to die anyway'.

Then, community groups began to be formed to fill the gap in services. In early 1987, Christopher Kaleeba, who had been diagnosed with AIDS, died at Mulago hospital. Before his death, he and his family had experienced stigma and rejection which had led them to seek support and to need to share their pain with other families with similar experiences. After Christopher's death, his mother, Noerine, helped to found a support group called The AIDS Support Organisation (TASO).

The group began to advocate for care and support, not only for AIDS patients, but also for persons and families living with HIV. They did this by example and practically demonstrating what could be done.

This triggered a powerful care and support movement under the slogan 'living positively and dying with dignity'. AIDS service organisations, covering activities ranging from awareness promotion, counselling and testing, legal advice, and care and support of infected and affected persons sprang up. Moral support and technical guidance was provided by the government through the NACP.

Today, over 80% of people in Uganda are aware of HIV, and there has been a change in sexual behaviour within the country. The political commitment of the Government of Uganda, combined with the efforts of the donor agencies, international and local NGOs, people living with HIV/AIDS, and religious organisations in the struggle against HIV/AIDS in the last decade have contributed to the following successes:

- The HIV/AIDS awareness level is above 80%.
- All health units use sterile and/or disposable syringes and needles.
- Traditional Birth Attendants use protective hand gloves for delivery.
- There is an increased demand for voluntary testing and testing facilities.
- More and more couples are being tested for HIV before marriage.
- A high demand for condoms is reported at testing centres.
- A decline in the number of new HIV infections among the people between the ages of 13 and 24.
- Formation of independent networks of people living with HIV/AIDS has led to increased self-esteem, a sense of belonging, shared confidentiality and breaking of the stigma associated with HIV/AIDS.
- Recent studies have shown a decline in the number of women newly infected with HIV/AIDS.
- ▶ 68% of survey respondents reported change in behaviour in the last five years in response to HIV/ AIDS. Changes included faithfulness, abstinence, and condom use.
- ▶ There has been a significant delay in the age at first sexual intercourse. A smaller proportion of the 15–19 years age group report sexual intercourse compared with 1989.

- 1. Why do you think there was a 'silence' about HIV/AIDS in Uganda from 1982 to 1986?
- 2. What were the problems with the government's NACP programme in the late 1980's?
- 3. How did TASO help to change attitudes to HIV/AIDS in Uganda?
- **4.** What do you think are the most important lessons to learn from the actions of TASO in Uganda about dealing with HIV/AIDS epidemics?
- 5. Choose one part of your community (e.g., people in a certain kind of job, people of a certain age, people with certain habits, people in a certain condition) and think about what message about HIV/AIDS would be most important to give them. Make materials to educate or support them.
- **6.** Create a fact sheet about HIV/AIDS, making a note of all the important information onyou learnt in this chapter.

#### If you might have been exposed to HIV

If you think you may have been exposed to HIV, whether by sexual activity (including rape), or a needle or any other way, consult a doctor as soon as you can. If you can take the right medicines for HIV soon after exposure, you may be able to prevent HIV infection. The medicines to take are different depending on the type of exposure, so a doctor must make the decision with full information from the person infected. The faster treatment is begun, the greater the chance of preventing infection.

# **Chapter 6: Nutrition**

# Objectives

You will be able to plan food for an entire day that contains proteins and the micronutrients often found to be deficient in Myanmar diets.

# Key Words

calorie	evaporate	macronutrient	protein
carbohydrate	fat	micronutrient	

One of the best and easiest things you can do for your health is to eat well. Eating well does not cost a lot, and is not hard. Good nutrition is essential to mental and physical health. However, many families spend up to three quarters of their money on food. So it is not surprising to learn that between 2000 and 2010, nearly one in five people in Myanmar was not eating enough of the right food for health.

How can families reduce the amount they spend on food but still eat enough healthy food? Healthy food is not hard to find, does not need to be imported, and is not expensive. You can improve your nutrition by choosing foods wisely. In general, food that is fresh and close to its natural form is better for you and costs less than packaged foods. To save money and eat healthy foods, buy fresh foods and cook them yourself.

# 6.1 What is Food?

Have you ever been tired because it had been too long since you last ate? Food is fuel for the body, it provides the materials for making and repairing the parts of the body, and provides the nutrients that keep us healthy.

When you buy food, you might measure it in viss, pounds, kilos, scoops, tins, packets, bags, or pieces. When you are comparing and analysing food, you need to convert the food you eat to a common measurement. For the energy in food, that is the calorie. A **calorie** is the unit of measure that we use to measure how much energy is in food. On average, people need about 2000 calories each day to have enough energy. People who walk far or do physical work need more; people who are smaller or less active need less. When you have not had enough calories in a day, you feel hungry.

There is more to food than energy. Food also has macronutrients and micronutrients. You may know the individual macronutrients: protein, carbohydrates, and fats. Micronutrients include minerals such as iron and calcium, and the vitamins.

### **Macronutrients**

Each food has a combination of carbohydrates, protein, and fat. The body uses **carbohydrates** for energy. Rice, noodles, and potatoes are mostly carbohydrates. Sugar and honey are almost pure carbohydrate. One gram of carbohydrate has about four calories of energy.

The body uses **protein** to make materials to repair and maintain itself. Foods that contain a lot of protein include peanuts, tofu, egg, meat, and fish. One gram of protein has about four calories of energy.



FIGURE 26: High-protein foods

The body uses **fat** for energy, to absorb and store micronutrients, and to work with the proteins to make the materials the body needs to repair and maintain its cells and tissues. Foods that contain a lot of fat include oil, any nut, seed, or bean you can make oil from, coconut, and meat fat. One gram of fat has about nine calories of energy.

### Micronutrients

Macronutrients are not all we get from food. Food has vitamins, minerals, and other micronutrients in it. Cells use micronutrients for growth and development. You only need a very small amount of each micronutrient, but if your diet does not give you enough micronutrients, you can become very ill.

Calories	2000-3000
Protein	35-55 g
Iron	10-13 mg
Calcium	1000-1200 mg
Vitamin A	1000 µg
Vitamin $B_1$ thiamine	1.2-1.5 mg
Vitamin B <sub>3</sub> niacin	16 mg
Vitamin C	50 mg

#### **Table 1: Daily requirements**

#### Box 9: Iodine

When you buy factory salt, iodine has already been added to it. However, in a damp climate, iodine will evaporate from salt if it is kept an open container. It is important to keep salt in a sealed container in order to keep the iodine in the salt. Glass jars with tight lids kept shut are best for keeping iodine in the salt.

You know when you need more food for energy because you feel hungry, but you do not always know when you are not eating enough micronutrients. However, if you do not eat enough micronutrients, you will feel tired because your body is not working as well as it could. The immune system needs micronutrients to work well, so people who do not get enough will be sick more often. The table shows guidelines for how much of each nutrient should be eaten in a day for good health.

Lack of micronutrients in the diet can cause blindness, anaemia, paralysis, beriberi, goitre and other diseases. Children who do not get enough micronutrients will not be as strong or intelligent as they could have been. Many people in Myanmar do not get enough protein, iodine, iron, Vitamin A, and B vitamins.

*lodine* is important for brain development and function. While everyone needs iodine in their daily diet, it is especially important for children and pregnant women. Children's brains are still developing as they grow, and they need to have enough iodine to have the best development.

If someone has a goitre, or an enlargement of the neck, it usually means they do not have enough iodine. Because it is hard to get enough iodine in food, iodine is added to salt in factories.

**Iron** is necessary for the cells, especially red blood cells. People who are deficient in iron tire quickly. This is because red blood cells need iron to carry oxygen to the rest of the body. When children do not get enough iron, they may find it hard to behave well, and not do well in school. Foods that are rich in iron include green leaves, tofu, beef, liver, lentils, and egg yolks.

Vitamin A strengthens our immune system, the system that fights disease. Children who do not get enough Vitamin A get sick more often. Vitamin A is also important for the eyes. If you do not have enough Vitamin A, you cannot see well in the dark. When small children do not get enough Vitamin A they may go blind. Foods that are rich in Vitamin A include dark leaves, yellow and orange fruit, and liver.

The **B** vitamins help digest food and deliver nutrients to cells. Digestion includes changing carbohydrates into energy. B vitamins are particularly important in the immune and nervous systems.

Some diseases caused by the lack of B vitamins are beriberi, pellagra, and anaemia. Foods rich in B vitamins include rice, peanuts, almost any kind of bean, sesame seeds, sunflower seeds, phi kyan bananas, guava, yoghurt, and liver. In rice, the whiter the rice, the less Vitamin B it has.

There are eight different B vitamins. Most are found in similar foods, except Vitamin B12, which is found only in foods which come from animals. Vitamin B12 is in milk, yoghurt, and eggs as well as fish and meats.

Using Appendix C, add two foods to each category of micronutrient-rich foods and add two foods to the list of protein-rich foods in the section above.

Recommended amounts for how much protein and micronutrients to eat every day are guidelines. They are averages used to estimate how much a person needs. Everybody is different, and some people need more or less than the guidelines show. How much people need depends on how active they are, how much they weigh, whether they are growing, and other factors. For example, the recommended amount of protein

for a healthy adult to eat per day is 0.8g of protein for every kilo of body weight. A woman who weighs 45kg (100 pounds) should eat about 36g of protein in a day. The amounts listed here will normally prevent diseases like anaemia (from lack of iron) and beriberi (from lack of Vitamin B1). There is no need to worry about eating too much of a vitamin or mineral in a diet with a variety of different foods. The amounts the body needs are balanced with the amounts found in food.

Food also has natural variations in the amount of nutrients. The exact amount of Vitamin C in a particular mango, for example, depends on the tree, the season, the weather, when it was picked, how long it was stored, and how it was served. The nutrients in an egg depend partly on the health and diet of the chicken that laid it. The amounts shown in the tables are averages for food in Myanmar.

Different micronutrients can be stored in the body for different periods of time. Vitamin A and iron can be stored in the body for years. B and C vitamins are not stored in the body and should be eaten every day. While it is possible to not eat for weeks without any permanent health effects, getting micro- and macronutrients every day is best for the health.

#### Box 10: Non-dairy creamer

What is that white powder found in coffee mix and some other packets? Most people just call it 'powdered milk', but it is very different from milk. It is mostly unhealthy fats and sugars with chemical flavourings. In English, it is called 'coffee whitener' or 'non-dairy creamer', and it is not nutritious.

It was created to use in coffee and tea when no milk was easily available. When it was just taken in small amounts from time to time in coffee or tea, it was not a problem. But in Southeast Asia, it is getting more and more popular to not only to drink a mix of whitener with sugar and coffee, but it is found in other packets, with misleading names like 'Nutritious Cereal' which people give to children and old people, thinking they are doing something good.

'Quaker Oats' in packets is also largely non-dairy creamer and sugar. These foods cannot replace cow's milk and should not be given to children. It is not healthy for anyone, and could be harmful for old people who are more at risk for diabetes and heart disease.

- 1. How much protein does someone who weighs 60kg need in a day?
- 2. Do children need to eat more or less total protein than adults? Why or why not?
- **3.** Do children need to eat more or less protein per kilo of body weight than adults? Why or why not?
- 4. Do pregnant women need to eat the same amount of protein as others?

# 6.2 Choosing Healthy Food

Eating a variety of foods is an important part of staying healthy. Healthy eating does not depend on one kind of food. Many combinations of foods are healthy, and the most important thing is to eat and drink many different kinds of food, so that you can get different nutrients from each. Choosing a variety of foods with protein and micronutrients improves the diet. If you are eating a variety of food with enough protein and micronutrients in a variety of food, you will also have enough carbohydrates and fat, as these are very common in everyday food.

Every day we choose what to eat. We can choose food that both fills our stomachs and keeps our body healthy, or else we can choose food that fills our stomachs but does not have many micronutrients. Most food that is close to its natural state has more of its natural micronutrients. The best food for your health usually does not come in a package, and you can buy it in the market. Food that is good for you is often less expensive than food that is not.

Here are some easy choices you can make for better nutrition:

- Whenever you have the chance to eat black sticky rice instead of white rice, choose the black rice. Black rice has more than twice the micronutrients of white rice.
- ▶ When you are going to eat a meal with a lot of iron in it a meal with beans, tofu, fish or meat and leaves do not eat tea-leaf salad, drink any kind of tea, coffee, cola, or chocolate within an hour of that meal. These prevent your body from using much of the iron that was in your meal.

- Always have some salad of leaves or fruit with your meal. Fresh fruit and vegetables that are high in Vitamin C (such as hot and sour foods) help your body to absorb iron.
- Do not eat snacks made of white flour every day. These include snacks like fried dough sticks, htat ta-ya (sugar palata) and bread. These have few micronutrients.
- Avoid sweet drinks, especially energy drinks. If you are at a cold-drinks shop with your friends, you can choose soy milk or lime juice with just a little sugar instead. One sweet drink has all the sugar you should eat in an entire day and all at once, which is not good for your body.
- Try to eat something with turmeric every day. Eat something with black pepper in the same meal. Turmeric is good for your immune system, and pepper helps your body use it.
  - 1. What is 'good' food? You can look at food from several perspectives. From a cultural perspective, the whiter the rice is, the better the quality. From a nutritional perspective, the darker the rice is, the better the quality. From a personal perspective, your favourite kind of rice is the best. Think about drinks and snacks from different perspectives.
  - **2.** Use Tables 2 and 3 at the end of this chapter and Appendix C to help you plan the food you will eat for one day. Make sure you include proteins and micronutrients and eat a variety of foods.

	Breakfast	Lunch	Snacks	Dinner	Total
Proteins					
Iron					
Vit A					
Vit B1					
Vit B3					

## 6.3 Nutrition and Weakness

Some people eat a lot because they feel weak, and know that we get our energy from food. However, there are four main causes of weakness:

Lack of energy because you have not eaten recently;

- 1. Poor nutrition for a long time, so your body cannot repair itself;
- 2. Lack of fitness, because of long illness or too little exercise;
- 3. Illness, which could be a particular disease, excessive stress, or dehydration.
  - **1.** Consider these five people: Which is the most likely cause of their weakness? What can they try to increase their strength?

A: Ni Ni likes certain foods and not others. Ni Ni will eat two plates of rice, or a bowl of noodles, but does not like beans or salads, and never eats fruit. Ni Ni will sometimes eat potatoes, cucumber, and radishes, but does not like anything with leaves. When other children are playing, Ni Ni often just sits and watches.

B: Maw is from a poor family. Maw's father is working in another town, and sends home money when he can. Maw's mother sells soap in the market when she can, but is often cannot because one of the four children is ill. Maw goes to school, but cannot play as much as many of her classmates, because she gets tired quickly.

C: Mun used to ride a bicycle everywhere in town, and go swimming in the river often. Mun also helps out planting the rice. Now it is time to harvest the rice, but Mun feels weak, and has to sit down after harvesting for only an hour.

D: Kham played a football game all afternoon yesterday. His team won, and they went visiting around the town instead of eating dinner. They drank a lot of tea, but did not have a meal. In the morning, he carried his sister to school on his bicycle, and did some shopping at the market. Now it is noon, and he feels tired.

E: Cho loves karaoke and TV. She sings very well, and she and her friends spend a lot of time practicing singing. She also is a good student, and spends many hours a day studying. She is also taking some courses in the school breaks. When she is with her friends and they run to catch a bus, she is out of breath very quickly and she feels her knees shaking.

2. Explore the data in Table 2, below. Find the food highest in each nutrient, and the food with the least amount of each nutrient.

#### Table 2: Nutrient Units Value per 100g of certain foods

g = gram, mg = milligram (0.001 gram),  $\mu$ g = microgram (0.000001 gram)

Food (100g)	Protein g	lron mg	Calcium mg		Vit A µg	Vit B <sub>1</sub> mg	Vit B <sub>3</sub> mg	Vit C mg
Daily requirement (typical)	45	12	100	0	1000	1.4	15	50
Dried shrimp	77	20	25	0	-	0.06		
Imitation meat	33	10.5	26	0	-	-	-	-
Chicken	19	1.5	1	2	-	0.5	3	12
Chickpeas	16.5	3.5	4	2	-	0.77	1.1	4
Chicken egg, raw	13	2.1	8	4	162	0.24	0.07	
Duck egg, raw	13	3.9	6	4	194	0.16	0.2	0
Chicken egg, hard boiled	12.5	1.2	5	0	150	0.07	0.06	0
Chicken egg, fried	12	4.3	22	7	236	0.14	0.08	
white tofu	13.5	3	13	6	1	0.06	-	-
Shan tofu	10.5	4.5	31	0	-	0.04	0.4	-
Peanuts	27	2.5	48		2	0.53	15.3	5
Lentils	19	1.4	126		0	0.26	2.6	0
Tomato	1.4	1.4	5		1155	0.06	1.6	23
Amaranth leaf	5.5	4	192		5601	0.05	1.2	
Indian pennywort	1.5	3	170		1086	0.15	1.2	
Roselle leaves	2	1.5	11		377	0.02	1.8	34
White rice, raw	7.7	1.1	11		-	0.16	1.3	
Brown rice, raw	7.5	1.8	33		-	0.43	4.3	
Black rice, raw	8.3	3.9	13		-	0.31	4.2	
Ripe tamarind	2.5	1.5	81		1.5	0.22	1.1	3

To compare foods in order to determine which has more nutrients, we need to compare the same amount of each food. When we look at the nutrients in food, we usually compare 100 grams. Of course people do not usually eat exactly 100 grams of each food. Looking at 100 grams at a time lets us compare the foods to see which ones are high in which nutrients.

The next step is to measure how much of each food a person will eat, and calculate the nutrients in their diet. The table below shows some typical amounts for some of these foods.

#### Table 3: Weight of common foods

Food	Approximate weight in grams
Chicken egg	40
Tin of uncooked rice	300
Tin of uncooked lentils	380
Tomato	70
Half a cup of tofu	125
One cup of bean sprouts	100
Chilli pepper	1
Bunch of leaves (e.g. amaranth, roselle)	100
One peanut	1

Use the tables above to help you answer the following questions.

- **1.** How many hard-boiled chicken eggs would you need to eat in order to get 25 g of protein?
- 2. How many peanuts do you have to eat in order to have 5 mg of iron?
- 3. What fraction of your daily iron requirement do you get from one bunch of amaranth leaves?
- 4. What fraction of your daily iron requirement do you get from one fried egg?
- 5. Put together typical meals from the foods on the list, and see what percentages of the daily requirements are in the day's food. If some are below 90 per cent, how could you change the meals to get near 100 per cent?
- 6. What is the cheapest way to get the most protein? And iron?
- **7.** How much white rice do you need to eat in order to get the number of mg of vitamin B1 found in 100g of black rice?

# **Chapter 7: Starting a family and** health

#### Starting a family 7.1

Some people like to stay single, but more people want to marry, and to have a family. There are many ways to think about who is a good person to marry. P. Monin was an important Burmese writer from the 1920s and 1930s. In his autobiography, he tells how he met a young woman. Before you read about his life, think about these questions:

- 1. What does it mean 'to marry'?
- 2. What are some reasons people get married?
- 3. Read the story together as a class. Summarise the story in your own words.
- 4. What did P Monin and Me Me each want from the marriage? Did they have love? Did they have intimacy? Have a debate about the question, 'Should P Monin and Me Me have stayed together?'

# The Marriage of P. Monin and Me Me

From the day of my arrival I became aware there was a young woman in a house opposite; she kept on coming out and looking at the house I was staying in. When I told my aunt, Daw Thant, about it and asked her who the young woman was, I learnt that she was called Me Me.

I did not know Me Me at all, but one day I happened to talk about her with my aunt. She told me that the girl was in love with me. I told her that I had no feeling for her at all. I had no wish for Me Me to love me.

My aunt suggested, 'This young girl will most certainly not agree to elope with you. So if you really want to stop her, why don't you write her a letter saying: "Me Me, come away with me tonight. If you won't, then don't even so much as mention my name in the future"? She won't do it - and so it will all be over and done with.' I agreed to this, FIGURE 28: Traditional Burman wedding



I wonder if it was in my horoscope that I should get a wife on that day? At about six o'clock in the evening a weeping Me Me came and gave me a small parcel saying, 'You shouldn't have written a letter like that. You know me too well,' and then went off back to her home. I was so amazed that I just stood staring without a word. On unwrapping the parcel I saw it was full of gold, jewellery and money.

Me Me's parents were rich, and I had most unexpectedly done very well, like the Kayin chieftain who found himself made a king, but I was not happy. I did not love Me Me and had no wish to be married yet.

There was no longer any hope of correcting the huge mistake that I had made, and there was no sleep for me that night either. Sometime after mid-night I heard the sound of footsteps coming towards my room and, raising my head, I saw a brother of Daw Thant's. He pulled me up from where I lay on my bed and said, 'Hurry up! They are already there. Let's go.' Surprised at his words, I asked, 'Who has arrived? Where am I to go?'

'Why, to Set-daing Hill. Me Me's there already.' I felt a lot of pressure to go to meet Me Me. When I arrived, I found Me Me happy and expecting to get married. How could I say no in this situation? We were married at Set-daing Hill and we stayed up all night celebrating with our friends.

After the marriage, P. Monin did not live with his wife for very long. They did not have any children, and she died young.

and wrote a short letter.
# 7.2 Intimacy vs. Sex

**Sex** is the physical act of making love. But what is intimacy, and how is it related to sex? **Intimacy** is the level of commitment, positive feelings and thoughts, and physical closeness that a person experiences with a partner in an *interdependent* relationship. Intimacy is a way of describing the emotional and physical acts of love. In a romantic relationship, intimacy comes before sex. When both partners feel strongly for each other they may want to have sex.

There are many questions about whether to have sex, when, with whom, and why. The answers to these questions are different in different times, different cultures, and for different families and people. There are no universal standards for relationships, but there are legal and ethical answers to some of the questions about who, when, and why.

Each person should be able to decide whether to be intimate and with whom, but sometimes deciding is not easy. Most people do not want to marry before they are ready to have sex. A couple has to make the decision together, but many do not know how to begin talking about intimacy and sex. So then, how can they decide? Talking about important matters makes it easier to think clearly about them, so talking about intimacy is important. Perhaps they are not ready if:

- they cannot talk about sex.
- one of them does not feel sure that they want to have sex.
- one or both are afraid.
- one feels pressure to decide quickly.
- one or both of them feel like a child.
- one or both of them are ashamed.
- one or both of them cannot control their feelings and actions.
- they do not have condoms and lubricant.
- they do not feel they can speak openly with each other.
- one or both is thinking about their own benefit, not about the benefit of the other.
- they do not trust each other.
  - 1. What do you think? How can a person or couple decide when they are ready? What other elements would you add?
  - Copy the following three questions in your notebook, leaving room for the answers. Talk to 3 people in your community about how they would answer these questions. Record their ideas. After talking to three people, write down your own answers for each of the questions.
    - a. What can be proof of love?
    - b. What makes a person an adult?
    - c. What makes people love each other?

# 7.3 Planning Pregnancy

Many people want to have children, but there are times in life when having a baby is not good for parents or children. When the parents are still in school, for example, if one or both of them have to leave school to support the baby, is that good for the new family? Or would it be better for a child to have parents with more education? Each couple can decide not to have children until they are ready, but many people are not sure how. The result of this is that many couples have a child at a time when they are not best able to start a family. Many feel desperate, and try to end the pregnancy in ways that are dangerous and illegal. This chapter is about reliable ways to control pregnancy, and other issues that have to do with the results of sexual relationships.

There are many rumours and beliefs about methods to prevent pregnancy. There are also many couples who have had children when using these methods. The only way for a couple to be sure they do not become pregnant is to make sure that none of the man's sperm gets to a woman's egg.

As a couple, you can prevent pregnancy until you are ready to have a baby. Most people are happier in their relationships too, when they are not worried about pregnancy. When couples do not plan ahead, and get pregnant when it would be hard for them to raise a child, this can be such a difficult situation

that they decide to abort the foetus. In fact, more than one in ten sexually active women in Myanmar will have an abortion. Abortion can be sad for the couple, painful for the woman, and often dangerous, too. Sometimes the woman gets very ill, and some have health problems that will prevent them from having babies afterward.

### Condoms

From a health point of view, condoms are the best way to control pregnancy. This is because as well as preventing the man's sperm from reaching the woman's egg, they prevent most infections which can be spread through sex. Condoms for men are more common, but there are condoms for women too.

- 1. Name as many slang terms as you can for condom.
- 2. How many advantages can you think of to using condoms?

### **Pills and Depo**

Birth control pills work by preventing the release of eggs. They do this by influencing hormone production. Pills are taken by a woman every day at the same time for three weeks, and then stopped for a week so she can have her period. Some brands include iron pills to be taken during that week.

Some women have a lot of pain with their period, and some bleed a lot. Many women find that pills make them bleed less, and also prevent painful cramps. Some women use take pills just for this benefit. Depoprovera (Depo) works in a way similar to pills, but is injected every three months.

How many advantages can you think of to using pills for birth control?

How many advantages can you think of to using Depo for birth control?



FIGURE 29: Different types of birth control pills (The Pill)

### Rape and pregnancy

Among 100 women who are raped, a few will become pregnant if they do not take any action. There is a combination of pills that can be taken after sexual intercourse to prevent pregnancy. These are not good for regular birth control, because they are strong and have side effects, but they can be useful in an emergency. Ask a medical professional about them. They should be taken within two days to be most effective.

# 7.4 Understanding Pregnancy

### How do you know if you are pregnant?

The first sign of pregnancy for most women is that their period is late. Most women get their period every four weeks, but some women sometimes miss a period. It does not always mean you are pregnant if you skip a period, but if your period is more than two weeks late when it is usually regular, and you are sexually active, get advice about it.

In the early part of pregnancy, some women also feel dizzy, vomit, or just feel very strange. However, there are many reasons why these symptoms could appear. There are tests for pregnancy, which may be available from a pharmacy or from a health worker. The easiest tests measure changes in the urine which show when a woman is pregnant.

The earlier a woman knows she is pregnant, the better she can prepare, eat well, and avoid the things that might be harmful.



FIGURE 30: Pregnancy

Many medicines should not be taken during pregnancy, for example, including some traditional and some Western medicines. Pregnant women should try to avoid breathing in smoke, whether from cigarettes, cheroots, or fires. Health workers who have experience and education in reproductive health will be able to answer questions and give good advice.

### Pregnancy and health

Most women have babies without any health problems for them or for the baby. However, pregnancy is a time when some risks increase. Women need to eat especially well during pregnancy, especially getting enough iron, iodine, B vitamins and protein. Many women do not get enough iron before they are pregnant, and they need much more – 27mg per day – when they are pregnant and the foetus is growing and developing. Pregnant women need to eat an extra 30g of protein every day as well.

Some diseases, especially malaria and the flu, are more dangerous for women when they are pregnant. Also many traditional and Western medicines can harm the foetus.

Use your knowledge of nutrition to suggest food to add 30g of protein per day to the diet of a pregnant woman.

# 7.5 Sexually Transmitted Infections

For people, sex can be something very special, but for disease-causing micro-organisms, it is just another way to get from one person to another. 'Young bachelors' diseases' are common in young men and women alike, and some people do not take them seriously. In English, they are called sexually transmitted infections (STIs). Some people think that washing right after sex will prevent transmission of micro-organisms. But washing is not enough to prevent infection, and there can be serious results.

The most common STIs are easy to cure if treated quickly. If you have any kind of sore or rash on or near your sexual organs, or any pain, especially when urinating, go to a clinic or health worker as soon as possible. Burning and pain can be caused by several different infections. The pain may go away, but the micro-organism may still be in the body. Some sores are painless and go away without treatment, but this might be only the first stage of infection. Even when there are no symptoms, infections can pass to sexual partners.

**Syphilis** is an example of a disease that can seem to disappear when it is really still infecting a person. It usually starts with a painless sore near the sexual organs, which goes away after some weeks. In women, the sore can be inside of her, so she will not know she has it. The infection continues, and comes out later as a rash. All this time, the person with syphilis can infect sexual partners with the micro-organism. The rash also goes away, but the micro-organism continues reproducing in the body, and in many people begins to affect the nerves and organs. If a woman has a baby, the baby may be born with syphilis. Syphilis is a disease which killed many people before a good treatment was developed. Now it can be treated with the right medicines. Better, it can be prevented by using condoms.

Most people who get **HIV** are infected during sex. It is another infection that can be spread by people who think they are healthy, and who look and feel healthy. Guessing who has HIV will not keep you safe; condoms will.

**Herpes** is another disease that can be spread during sex. With herpes, sores or blisters appear on the skin near the sexual organs or near the mouth. Many diseases which are spread during sex can only be spread to the sexual organs, so using a condom is very effective at preventing them. But herpes can also infect the mouth, or the area around the genitals. The sores appear for about a week, then disappear again. This means that any contact between the mouth and sexual organs can spread herpes, and condoms do not always prevent its spread. There is no cure for herpes, and the treatments are not always effective, and are not available everywhere. A baby born to a woman with herpes can also get herpes, especially if she gets infected in the last months of pregnancy.

Herpes is not usually very dangerous to adults, but it can be painful and inconvenient. The best way to prevent it is still using condoms, but they are not as effective as for other diseases. Female condoms are more effective at preventing herpes transmission than male condoms. Usually people with herpes feel a

tingling or numb feeling in the area where they get the sores some days before they appear. People who have herpes should avoid unprotected sex from the first sign of this tingline, while they have the sores, for a week afterward to prevent transmission. There is still a small chance of spreading herpes when there are no sores, so partners have to know about and accept the risk.

There are other micro-organisms that can be spread during sex if one partner is infected. As with other diseases, it is important not to try to diagnose and treat these diseases without a test or professional advice, because the wrong treatment can make you think you are cured when in fact you still have the infection. Any time you see or feel something different in your sexual organs, go to a clinic or health worker, and take the whole treatment you get.

# 7.6 Social and Mental Perspectives

Sex is a good part of life and love. Most people go through life without getting any of these diseases, but there is a chance of getting them, and some are serious. The more partners you or your partner has, the greater the chance that they will have sex with someone who is infected. It is important to use condoms with every new partner, and also if you are not 100% sure that your partner does not have sex with anyone else.

Many people promise to be faithful, but in fact sometimes are not. If everyone had only one sex partner, most infections spread through sex would not exist. They would die out in one generation because they would not be passed



to more than one person. The fact that these FIGURE 32: Network diagram about STIs

diseases are common, and have been common for thousands of years, shows that people are not always as faithful as they intend to be, or as they say they are. Be romantic, but be realistic too. Smart people use condoms for a number of reasons.

Write answers these questions in your notebook:

- **1.** Do you think people should put limits to having sex? What kind of limits should they be? Social? Legal? Physical?
- 2. Do you think there are rights to have sex? What are those rights?
- 3. Should people over or under some age not be legally allowed to have sex? If so, what ages?
- 4. Should rights or limits relating to sex be the same for men and women?

### 7.7 Sex and Violence

Most people who marry want to have children and start a family, which is one reason to have sex. We all know that people have sex for other reasons too, especially just to be happy together. Partners who respect and love each other can show and feel their love and respect by their sexual behaviour. However, there are some times when sex is a problem. This section is about some of those problems.

In many cultures sex is a very private subject which people find hard to discuss openly and honestly, especially outside of the circle of their closest family and friends. While most cultures have rules about who can have sex with whom, these rules are frequently broken, usually in secrecy. There are people who exploit the privacy and sensitivity of the subject of sex to force sex on unwilling people, and we call this rape or sexual assault.

Many people who have been raped have long-lasting mental as well as physical pain, and it can affect their mental health, especially if they continue to feel threatened. This is because of the particular nature of a sexual assault. The intensely private nature of sex and its role in bonding between loving people makes an assault using sex particularly offensive to a victim's honour, and particularly damaging to society.

Rape can be a personal attack motivated by lust, but it can also be used to deliberately hurt someone, their family or their community. Rape can involve mental and emotional power as well as physical power. It is a violent crime, even in cases where there are no injuries left by it. In some cases, the person who is raped is ashamed to talk about it, especially if it was done by an acquaintance. Some victims are afraid to talk about it, especially if the rapist is still in the community, and has made threats. Some communities are ashamed by rape, especially if it is done by a wealthy or powerful person.

Sexual assault is a sensitive crime in every culture, and each culture deals with it differently. In some cultures, there is little compassion for the victim of the crime. The victim might be blamed, and made to feel ashamed. In some cultures, families 'solve' the problem by marrying the criminal and his victim, instead of punishing the rapist. In other cultures, the rapist is seen as lower than a thief or a murderer, and is rejected by family and former friends.

When a community fails to acknowledge a crime, that kind of crime becomes more difficult to prevent. People should not be forced to talk about what happened to them if it is too painful for them. But, where rape victims cannot speak for fear of being blamed or humiliated, they cannot get justice.

Another definition of rape is dependent on the age of the people having sex. The **age of consent** is the age at which a person is legally allowed to agree, or consent, to have sex. If anyone has sex with someone below the age of consent, it is rape, even if the young person said they wanted to have sex. The age of consent is chosen by a government process and is different in different countries. Some countries have changed the age of consent several times.

Country	Age
Indonesia	16f/19m
Laos	15
Singapore	14
South Korea	13
Thailand	15*
Vietnam	18

#### Table 4: Age of consent for sexual activity

#### Vietnam

\*If someone regrets giving consent later, legal action can be taken until age of 18.

- 1. Discuss in a group: What do you think about the age of consent? Do you think there should be one? Should it be the same for boys and girls? If you would set an age of consent, what would it be?
- 2. How does your community deal with rape? Is stigma involved? If so, who is stigmatised? Is the stigma associated with rape different from the stigma associated with other crimes? If so, why? If not, why not?
- 3. If you could decide how rape would be dealt with in your community by law and socially what would you do?
- 4. According to Article 12 of the Universal Declaration on Human Rights, everyone should have protection from attacks on their privacy and honour, and according to Article 16, nobody can be forced to marry against their will. How do these relate to rape?

# **Chapter 8: Mental Health**

## Objectives

- **1.** Analyse stressors and decide which stress response would be the best option, based on short- and long-term consequences.
- 2. Discuss addiction and why it is a health issue.

# Key Words

addiction	
cope	
hallucination	

rehabilitation, rehab sober stress stressor stress response trauma withdrawal

# 8.1 Introduction

Mental health allows you to have good relationships and a meaningful life. The World Health Organisation (WHO) defines mental health as a state of well-being in which individuals achieve their potential, can cope with the stresses of life, can work well, and are able to make a contribution to their communities. Like physical health, mental health changes throughout people's lives. Just as some people get physically ill, some people get mentally ill. And just as many physical illnesses may be treated and cured, many mental illnesses may be treated or cured.

When someone is physically ill, they go to a health professional to find out the cause, then take medicine or change their behaviour in order to become healthy again. When someone is mentally ill, they, too, need to go to a health care professional to find out the cause, then take medicine or change their behaviour in order to become healthy again. Health promotion and disease prevention are important for both mental health and physical health. The best ways to promote mental health are reducing stress, having strong relationships, and improving coping skills.

There are a few reasons why mental health gets less attention than physical health. One is that mental illness can be invisible – symptoms of mental illness are not always obvious to other people. Another is that many



FIGURE 34: World Mental Health Day is on the 10th of October every year and it raises awareness of mental health issues

people with a mental illness are ashamed of their condition, feeling that it is a personal weakness. Also, some people with very serious mental illnesses cannot communicate well, or may change suddenly, and may frighten people. The less communication there is about a disease, the more difficult it is to diagnose and treat it. Mental health is as important as physical health. Seeking help from health care professionals is important.

Mental illness is common. Estimates made by WHO in 2002 showed that 154 million people globally suffer from depression and 91 million people are affected by alcohol use disorders; 15 million people suffer from other drug use disorders. A recently published WHO report shows that 24 million people are affected by other mental illnesses that affect the way they work and socialise in the community.

- **1.** Write a five-sentence summary of the text above.
- **2.** Using the information above, compare and contrast physical and mental health and illness by filling in the table below

	Physical Disease	SAME	Mental Disease
Cause			
Prevention			
Treatment/Cure			
Symptoms			

## 8.2 Stress

**Stress** is the reaction in the body and mind that begins when a situation requires a person to react in order to feel in control and comfortable. A **stressor** is a situation that makes people feel stress. A **stress response** is the way in which a person reacts to stress. Immediate physical stress responses include shaking hands, beating heart, dry mouth, feeling weak. Mental stress responses include confusion,

anger, and not being able to think clearly. There are later stress responses, like not being able to sleep, headaches, diarrhoea. Conscious stress

#### Box 11: Stress response

The stress response in your body is both mental and physical. You can calm your mind by talking, meditating, planning, and other ways. You can calm your body by exercising or playing sports or doing physical work to use up extra energy.



FIGURE 35: A stress response.

responses come in as people take mental or physical steps to deal with the stress.

Most people try to avoid stress, as it is uncomfortable or even frightening. It is important to realise that stress responses can be good. They can make you more alert, more interested, or it can make you work harder and better. Sometimes, we have a choice of how we react to stressors. For example, students who have to take an exam feel stress. When their response is studying harder, the stress decreases. If they do not study, the stress increases. When the exam is over and the results are out, the stress of the exam is over. The person who studied and passed the exam has no more stress about it. The person who did not study may now have stress about the exam results.

An important aspect of preventing mental illness is ensuring that individuals know how manage stress. Stress cannot be avoided, but some harmful stress responses can. A person's mental health is directly related to how they react to stress. Some mental illnesses are caused directly by too much stress. Other mental illnesses can return or get worse because of too much stress.

- 1. Discuss in small groups: What stress responses have you seen in your community? Include both immediate and conscious responses, and useful and harmful responses.
- 2. Think about the following reasons for stress:
  - You have an argument.
  - Your family is short of money
  - You have a job interview.
  - You move far away from home.
  - You hear people fighting.
  - The price of rice doubles.
  - You lose something valuable, and think it may have been stolen.
  - You find out someone lied to you.
- **3.** Your teacher will give you one of these stressors on a card. Think about a potential stress response and a short or long term consequences. When it is your turn, act out this stress response and consequence and see if the rest of the class can work out what you are acting.

Stressor	Stress Response	Consequences (short and long term)
	1.	Short Term 1.
		2.
	2.	Long Term 1.
		2.

**4.** Before your next class, list three stressors that you experience, how you felt, and what was your stress response.

|--|

# 8.3 Common Mental Illnesses

### Depression

Depression is the most common mental illness. According to the WHO, about 154 million cases of depression are reported worldwide every year.

Depression is different from the sadness felt when something bad happens. Chronic depression is an illness, which may start with sadness because of an event, or may just happen for no external reason. Its symptoms include the following:

- an extremely sad mood during most of the day, particularly in the morning
- tiredness and lack of energy almost every day
- feelings of worthlessness, hopelessness or guilt almost every day
- difficulty concentrating and making decisions
- inability to sleep, or sleeping excessively, almost every day
- > little or no interest or pleasure in almost all activities nearly every day
- regular thoughts of death
- a sense of restlessness
- significant weight loss or gain (more than 5% of body weight in a month)

Depression may last a few weeks, or much longer. Depression can be treated with therapy and counselling

to help people understand the reasons for their depression and suggest ways that they can improve their mental health. In some cases, particularly with severe depression, doctors may recommend medicine called anti-depressants, to help them cope with depression. However, when patients stop taking the medicine their depression may return. It is hard for people who are depressed to eat well and exercise, but depression involves both body and mind. Eating healthy food and getting exercise, even if it is just walking, is important during depression, and help shorten the time of depression. Religious people may find relief from depression in talking with their community's religious leaders or increasing religious practice. Drinking alcohol is a common response, but it makes depression worse.

### Schizophrenia

Schizophrenia is a chronic, severe mental illness. It can happen any time, but it usually starts around the age of 20. People with schizophrenia may hear voices other people do not hear or they may believe that others are reading their minds, controlling their thoughts, or planning to harm them. These experiences are terrifying and can cause fearfulness, a strong wish to be alone, or extreme agitation.

People with schizophrenia may not make sense when they talk, may sit for hours without moving or talking much, or may seem perfectly fine until they talk about what they are really thinking. About half of people with schizophrenia only have one or a few episodes of illness, usually over the course of some years. The other half have more episides, causing difficulty holding a job or caring for themselves, though some can be helped by medicine.

There are various treatments for schizophrenia. These include medication, therapy, support groups, and hospitalisation.

After 10 years, of people diagnosed with schizophrenia:

- ▶ 25% completely recover
- ▶ 25% improve, and are relatively independent
- > 25% have not improved, and require extensive support
- ▶ 15% are unimproved, and cannot live at home
- ▶ 10% have died, most commonly by suicide

### Post-traumatic stress disorder (PTSD)

Post-traumatic stress disorder (PTSD) is an anxiety disorder that can develop when someone has experienced terrifying events in which serious physical harm occurred or was threatened. It is a severe and ongoing response to an extreme mental trauma. Possible sources of trauma include experiencing or witnessing childhood or adult physical, emotional or sexual abuse. Other possible events that could trigger PTSD include war, natural disasters, car or plane crashes, or any kind of attack.



FIGURE 36: Many soldiers suffer from PTSD.

Symptoms of PTSD can include recurring, frightening memories or nightmares of the event. Some people suffer hallucinations in which they see the events happening again. Sufferers will often experience intense stress when they encounter things, situations or places that remind them of the event, and will try to avoid them. PTSD develops differently from person to person. Symptoms may appear within days of the event, or they may take months or even years to develop. Symptoms can arise suddenly, gradually, or come and go over time; when they happen, theycan seriously affect people's lives. Treatments for PTSD include therapy, counselling and medicine. These treatments can help to control the response, which usually grows less over time when people develop responses.

## 8.4 Addiction and Dependence

Do you know what addiction means? Discuss what kinds of things can you be addicted to. How can addiction affect someone's mental health?

Addiction, dependence, and abuse are ways to talk about people and the drugs and alcohol they feel they strongly they have to take. To abuse drugs or alcohol is to use them in a way that is damaging to oneself or others, or in a way that they were not designed to be used. To be dependent on or addicted to something is

to feel you have to have it, to need more and more of it to get an effect, and to suffer physically or mentally if you cannot get it.

### Drugs

A drug is any chemical which has a certain kind of effect on the body or mind. It includes medicines, which are used to treat people for illness or to prevent illness, and those which people may take because they enjoy the effects on the mind.

The terms 'medical' and 'recreational' refer to how and why the drugs are taken, rather than the drug itself. For example, some drugs can be prescribed by a physician for some people, and others take the same drug to make themselves feel different, when they are not ill at all.

The legality of drugs is also very different. Different countries have different laws controlling drugs, for example, marijuana and alcohol are legal in some countries and illegal in others. Caffeine is not limited at all, and aspirin has few restrictions in any country. Diazepam (Valium) and cough syrup are drugs that have medical uses, and are used by some people legally, and used by others illegally. Methamphetamines, cocaine, and heroin have no medical uses, and are illegal in almost all countries.

- 1. In groups make a list of as many drugs, medical or recreational, as you can. Include slang names if you know them. Then, divide these drugs into the following three categories: medical drugs, abused medical drugs and recreational drugs
- **2.** Is there drug and/or alcohol addiction in your community? If so, what kinds of things are people addicted to? What problems does this addiction create?
- **3.** Why do you think governments try to control drug use? Why are some drugs only available with a prescription and other drugs illegal?

In general, governments try to control harmful and highly addictive drugs. Laws about drugs can change and are often different between countries. For social, political, and historical reasons, the judgment of the law and the judgment of science and of individuals is not always the same. For instance, caffeine does not cause much harm and is only mildly addictive and is legal in all countries. Heroin causes a lot of harm and is addictive. It is illegal in most countries. In some areas, opium is illegal for most people, but legal for people over a certain age. Marijuana, which is illegal in many countries, causes little harm and is not very addictive. However, tobacco, which is legal for adults to buy almost everywhere, has very harmful effects and is very addictive.

## **Drug addiction**

Drug addiction can be seen as a treatable or curable mental illness. However, it is very difficult for users of the most addictive drugs to stop using them by themselves. For many, their addiction controls their whole lives. Addicts will take drugs even when they know that they are harmful, and they will need more and more of the drug to get the same effect. Some end up taking too much, which is called an overdose, and they can die.

One of the reasons that governments try to punish the use of some drugs is because they are so addictive. Drug addiction harms society as well as the person who takes the drug. Drug use can lead to crime, antisocial behaviour and the inability of people to function well in society. Drug taking can create many health problems for the user as well. Most drugs are addictive in two ways:

- Mental addiction the drug user becomes addicted to the feelings caused by the drug.
- Physical addiction the drug user's body becomes addicted to the presence of the drug.

Different drugs have different levels of mental and physical addiction.

Here is a list of recreational drugs. Which do you think is the most addictive? Put them in order of addictiveness: caffeine, tobacco, yaba/horse medicine, heroin, alcohol, marijuana.

Many people manage to stop taking drugs. They may just stop on their own, or with the help of friends, with medical help, or because the drug is no longer available to them. When someone stops taking a drug they are addicted to, they go into withdrawal. This means that they have some mental and physical effects from no longer taking the drug. In the case of relatively weak drugs, such as caffeine and tobacco, this may

just be a headache, or feeling irritable. In the case of stronger drugs, such as heroin and alcohol, withdrawal symptoms can be very unpleasant, and even dangerous.

With heroin for instance, withdrawal symptoms can include anxiety, depression, muscle cramps, sleep difficulties, cold sweats, chills, severe muscle and bone aches, nausea and vomiting, diarrhoea and fever.

For some drugs, there are other drugs that addicts can take to make withdrawal easier or less dangerous. For example, methadone is a drug prescribed in some countries to help people stop taking heroin. There is a medicine that make people sick if they drink alcohol. There is gum and a skin patch that help people who are addicted to smoking. But for most drugs people just have to take less and less, or stop outright.

### 🕈 Тоbассо

The earliest evidence of people using tobacco is from South America about five thousand years ago. It became commonly used around the world in the 19th and 20th centuries.

Although it is used in many forms – smoked, chewed, snorted as a powder – the most popular use of tobacco today is in cigarettes. About 5.5 trillion cigarettes are produced in the world every year, and smoked by 1.1 billion people. Tobacco contains nicotine, which is considered by many experts to be the most addictive drug in the world.

Tobacco also contains chemicals which cause diseases, **FIGURE 39: A tobacco plant and cigarettes.** including cancer and heart disease. The WHO estimates that tobacco related products will be responsible for the deaths of one billion people in the 21st century. Statistics show that regular smokers live up to 10 years less than non-smokers.

Tobacco is illegal in only one country in the world: Bhutan.

Have you ever known anyone who has tried to give up smoking? How difficult was it and what withdrawal symptoms did they experience?

## ♦ Alcohol

There is evidence that humans were drinking alcohol over 12,000 years ago. The ancient Egyptians made beer and wine from about 6,000 years ago. They believed that a god, Osiris, invented beer and that it was a necessity of life. There

> is also evidence of the drinking of alcohol in the ancient civilisations of China, India, Babylon, Greece and South America.

It is estimated that 2 billion people in the world today drink alcohol. Drinking small amounts of alcohol can help reduce the risk of heart attacks, diabetes, high blood pressure and other health problems.

However, it is estimated that 76 million people in the world suffer from alcohol addiction, and that abuse of alcohol causes 1.8 million deaths per year.

Alcohol addiction is also called alcoholism. An alcoholic is a person who suffers from alcoholism. A small amount of alcohol, not enough to make you drunk, is not harmful for an adult. However, some people keep drinking until they get drunk. The more often they do this, the more likely they are to get addicted to alcohol.

Once someone is addicted to alcohol, it is difficult for them to stop drinking.

Harmful use of alcohol is the fifth leading cause of injury and early death in the world. However, alcoholism does not only harm the person who drinks too much, but also affects families and communities. People who are drunk often make bad decisions, do dangerous things, and many get into fights that would never happen if they were sober.

Alcoholism also affects mental health. Sufferers can be aggressive and depressed. Over a long period of



FIGURE 40: Wine in ancient





FIGURE 41: Drunk men

time, drinking too much alcohol can damage the brain. It can also cause diseases of the liver and heart.

Have a debate: A little bit of alcohol is good for the health, but a lot is bad for health and the community. Divide into groups. Each group comes up with at least two ways to deal with the issue. Each group must base their argument on what would really work in their society.

### Amphetamines

Amphetamines are a group of highly addictive drugs, including methamphetamines, which are also dangerous to use. Some amphetamines have a medical use, but those commonly sold as recreational drugs have few or no widely accepted medical uses. Taking amphetamines is damaging to the brain. Common illegal amphetamines include Ecstasy, Speed and Yaba.

#### Yaba $\diamond$



FIGURE 42: Yaba pills

Yaba means 'crazy medicine' in Thai. In Myanmar it is called 'horse medicine'. It usually contains a combination of methamphetamine and other drugs. The drug makes people feel very awake and full of energy. It can also cause hallucinations. Taking yaba can cause high blood pressure, damage the heart, liver and kidneys, overheat the body, and even cause death. Yaba can also have mental effects, causing violent behaviour, paranoia, anxiety, confusion, insomnia and suicidal thoughts.

It was invented by German scientists in the 1940s to help keep soldiers awake for days during World War Two. Today, hundreds of millions of yaba pills are produced in the Golden Triangle area. Yaba can be produced much more cheaply, quickly and easily than many other drugs. Yaba has become the biggest youth drug problem in Southeast Asia. In Thailand, the number of FIGURE 44: Smoking a Yaba pill young people dealing with yaba addiction has risen very rapidly.



# Opiates

Opium, codeine, morphine, and heroin are drugs made from the opium poppy. Opium is used as a traditional medicine, but is also addictive and



so is controlled by law in most countries. Codeine stops coughing, and can be found in some cough syrups and pain relievers. In most countries, these can be prescribed by a doctor – people cannot buy them in shops without a prescription. Morphine is used as a painkiller for severe pain. It is used medically for only a short period of time, because it is addictive. It is also abused as a recreational drug.



FIGURE 46: An opium poppy

Heroin is a recreational drug without a medical use, and is highly addictive. It is very difficult for people to stop taking heroin, because the effects of stopping after long addiction are very painful and disturbing.

To treat heroin addiction, some people take methadone. Methadone does not

**FIGURE 45: Injecting heroin** cause pleasant or unpleasant feelings, but it prevents withdrawal symptoms. People can gradually take less and less of it, until they are free of the addiction.

# Part A Review

Diseases caused by micro-organisms or the environment come from outside the body; diseases caused by genes are caused within inside the body. Sometimes these causes of disease influence each other. The environment can make it easier to get a disease caused by a micro-organism. For example, smoking (an environmental influence on the body) makes it easier to get pneumonia, TB, and other lung diseases which are caused by micro-organisms. Some people are born with genetic features that protect them from one disease, but contribute to a different health issue. Mental illness too can be caused by a combination of stress (an environmental influence) and genes. We cannot change our genes, but we may be able to change environmental influences.

Most diseases that affect people before they are very old can be prevented. Just keeping hands clean by washing several times a day with soap can prevent most flu, colds, diseases that cause diarrhoea, and even more serious diseases. Not every disease can be prevented. Some people get the flu from micro-organisms on their hands, but some breathe in the micro-organisms. When people are getting intestinal worms from their hands or from food, this is easier to prevent; but if they are getting the worm eggs from contact with earth or water, it is more difficult to prevent.

Health and long healthy life cannot be guaranteed, but there are many ways to reduce the risk of diseases. Some diseases are like accidents, for example some cancers just start inside the body by chance. But for many more diseases, including many cancers, it is possible to reduce the risk by avoiding smoke and eating a lot of fruit and vegetables. It is not hard to keep food and hands clean in your home. In reality, people are likely to eat at other people's houses, at markets, and in other places where there may be many micro-organisms in the food. Keeping clean at home reduces the risk of getting diseases that cause diarrhoea, but it does not reduce the risk to zero. It is also possible to reduce the number of mosquito bites and so reduce the risk of getting malaria, but it would be very difficult to reduce the number of mosquito bites to zero.

Keeping hands clean with soap, drinking clean water, eating food protected from micro-organisms, keeping flies out of toilets, sleeping under bed nets, and using condoms greatly reduce the risk of getting common diseases. However, exposure to disease-causing micro-organisms cannot be avoided completely. That is why eating food with protein and micronutrients is also important to keep the immune system strong. Coping with stress well is also good for both physical and mental health.

With a strong immune system and good health habits, most diseases can be prevented. It is important to know what diseases are serious, and get the correct treatment for them quickly. Malaria is especially dangerous if treated with the wrong medicine, or if treatment is late. It is also very important for people with TB to get treatment early and avoid infecting others. When people get full treatment for a disease, fewer and fewer people get infected. A few diseases have even disappeared from the world completely, thanks to widespread prevention and treatement.

A good immune system can deal with most micro-organisms, and a good coping system can deal with most stress. Some coping systems include family, religion, activities, friends, art, philosophy, love and music, and there are many more. Poor coping systems lead to decisions which do not improve the situation. People who cope with stress by abusing alcohol or other drugs usually cause themselves more problems. They may need the help of friends and family to give up drugs and find healthier ways to cope.

Some issues that many people face as they grow up are: Deciding when to get into a relationship, what a relationship will be like, and whether and when to start a family. Although these are some of the most important decisions in life, many young people are not thoroughly informed when they face these decisions. Making such decisions under pressure and without being able to talk about them can harm mental and physical health.

With knowledge and a few resources, couples can decide if and when to have children. When both partners in a relationship can discuss and make decisions about such important issues, both will be stronger and happier as well.

With the knowledge of the causes of diseases, the ways they are transmitted and the ways they can be treated, people can improve their health by making choices in what they eat and do, and developing a few good habits. A few items including soap and bed nets may also be necessary. With knowledge, people

also do not need to fear people with disease, as they did in the past when the causes and transmission of diseases was not well understood. In the past, people stigmatised others partly out of fear and ignorance. This was bad for the mental and social health of both those who stigmatise others, and those who are stigmatised. The health of the whole community is harmed by stigma, and strengthened by support.

### **Chapter 1 Review**

- 1. Explain the difference between a disease and a symptom.
- 2. Use malaria as an example to explain different ways to prevent disease.
- **3.** Ko Tay had a fever, headache, and diarrhoea. The doctor prescribed Ciprofloxacin (Cipro), an antibiotic, and recommended that Ko Tay take 2 tablets every day for seven days. After 3 days, Ko Tay started to feel better. He decided to stop taking his medicine. Several weeks later, Zaw Min Htut had symptoms similar to what Ko Tay had.
  - a. Was it a good idea for Ko Tay to stop taking the medicine after 3 days? Explain.
  - b. Should Zaw Min Htut take the medicine that Ko Tay had left over? Why or why not?
- 4. Split into groups and do the Diseases and Characteristics card activity Appendix B. Each group chooses a characteristic type by which it would like to classify the diseases, and places the 3 characteristic cards 'most', 'somewhat' and 'least' in order across the table. Now place the disease cards in front of the correct characteristic card. Do this several times for different diseases and characteristic types, and then discuss the results.
- **5.** Find five people in your community and read them the story of Ko Tay and Zaw Min Htut. Ask them the three questions you answered above, and use what you have learned to explain to them why Ko Tay and Zaw Min Htut should not share medicine.
- 6. To review the vocabulary learned in this chapter, make a crossword puzzle in your notebook of all the vocabulary words. Trace the puzzle onto another sheet of paper, giving only the outline of the boxes, not the answers to the clues. Trade your clues and outline of the crossword puzzle with a partner. When you are both finished, use your original version to check your partner's answers.

### **Chapter 2 Review**

- 1. There are many ways for diarrhoea-causing micro-organisms to infect a person. If an animal is infected with a micro-organism, describe at least three steps to infecting a person. How could transmission of the micro-organism be stopped at each step?
- 2. Why is diarrhoea is especially dangerous for young children?
- 3. If an adult weighs 50 kg and loses 1 kg of water, what percentage of her body weight does she lose?
- **4.** If a child weighs 10 kg and looses 1 kg of water, what percentage of her body weight does she lose?
- 5. How much water is one kg?

### **Chapter 3 Review**

- 1. There are four kinds of malaria. Can you get more than one kind of at the same time? Why or why not?
- 2. Can you cure malaria by using aspirin or paracetamol to lower the fever? Explain your answer.
- 3. Name three ways to avoid mosquito bites, and one other way to reduce the amount of malaria in an area.
- 4. Explain why it is important to get a blood test for malaria instead of treating yourself.

### **Chapter 4 Review**

- 1. TB appears in three different forms. What are they, and how are they different?
- **2.** The three defences against TB are good hygiene, quick treatment of people with active TB, and good nutrition. Explain how each of these prevents TB.
- **3.** Use TB as an example to explain how resistance to medicine develops.

### **Chapter 5 Review**

- 1. Is AIDS a disease? Explain why or why not.
- **2.** Is HIV different from other micro-organisms you have learnt about? In what ways is it different or the same?

**3.** What effect does stigma have on people who are infected with HIV, or who people think might be infected with HIV? How does this affect transmission of the virus?

### **Chapter 6 Review**

Keep a food diary for you and for one other person for three days. Write down the amount and type of all food eaten. It will be hard to know the exact amounts, so just estimate. When estimating weight, remember that one viss is 1.6 kilograms, so 10 ticals is a little more than 150 grams. One litre of water weighs one kilogram. Divide a litre of water into 10 equal parts, and you can see 100 gram of water. Whatever floats on top is lighter than water, whatever sinks is heavier.

- **1.** Use the food tables to estimate how much protein, iron, and vitamin B1 each of you ate.
- 2. Did either of you eat more than about 25g (five teaspoons) of sugar per day? How much more or less?
- **3.** Did you find that you wanted to eat differently while you were keeping a food diary? Did the other person? If so, how? Why do you think people eat differently or not when someone is keeping a record?

### **Chapter 7 Review**

- Interview two of the oldest men and two of oldest women in your community about how they got married. What did they hope for? Who made what decisions? What do they wish they had known before they married? How do they see things changing in the present? What do they think about the changes?
- 2. Analyse the issues that came up on the four interviews by gender. For example, in these relationships, did the boy and girl have equal ability to initiate contact? Did they have equal ability to decide whether to marry, or was there more pressure on one? Is gender still relevant in these issues today?

### **Chapter 8 Review**

- 1. In small groups, interview someone who has overcome an addiction, or someone who knows someone who has, about the experience. This could be someone who quit smoking, cut down on drinking, stopped chewing betel, cut down on coffee, even someone who has stopped gambling, stopped eating sweets, or given up some other habit which was hard to stop.
- **2.** Based on the interview, make a presentation to the class. The presentation can include the difficulties the person faced, how they overcame them, how many times they tried to stop before they succeeded, whether they got help and if so, from whom, whether they suffered from stigma at the time, whether they still feel they do, and what advice they would like to pass on to others. Do not name the person.
- **3.** Think of two situations that you have seen causing people stress. What stress response did you see? What response would you suggest should the situations happen again?
- **4.** Keep a stress diary for three days, including anything that caused you stress, and what response you made. Evaluate your responses, and suggest better ones if necessary.

# Further Reading for Part A

## **Chapter 1**

More information about the immune system:

- http://nobelprize.org/educational/medicine/immunity/immune-overview.html
- http://www.biologycorner.com/APbiology/pathology/immunology.html

## Chapter 2

- Latest advice on oral rehydration therapy
- www.rehydrate.org
- Household water treatment:
  - http://www.cawst.org/en/resources/pubs/education-materials/category/24-fact-sheets-simplified

General advice about water, sanitation, and diarrhoea:

• http://www.hesperian.info/assets/environmental/Water\_EN.pdf

History of cholera epidemics:

• http://www.britannica.com/EBchecked/topic/114078/cholera/253250/Seven-pandemics

### **Chapter 3**

History

- http://www.malariasite.com/malaria/history\_science.htm
- http://www.cdc.gov/malaria/about/history/index.html
- http://maps.thefullwiki.org/History\_of\_malaria

SE Asia

http://www.searo.who.int/EN/Section10/Section21.htm

Thailand

• http://eng.moph.go.th/SpecificHealth/malaria/malaria.htm

Shoklo malaria research unit:

• http://www.shoklo-unit.com/

Myanmar:

- www.rollbackmalaria.org/wmr2005/profiles/myanmar.pdf
- http://www.searo.who.int/EN/Section10/Section21/Section340\_4024.htm

### **Chapter 4**

General information on TB

- http://www.who.int/mediacentre/factsheets/fs104/en/h
- http://www.tbsurvivalproject.org/FAQ/faq.html
- TB in Myanmar
- http://www.who.int/tb/publications/global\_report/2005/annex1/en/index11.html

Singapore on TB

http://www.hpb.gov.sg/diseases/article.aspx?id=586

### **Chapter 5**

- http://him.civiblog.org/blog/Myanmar
- http://hivinsite.org/InSite?page=pb-00-00
- http://www.undp.org.zm/joomla/attachments/004\_dr07\_youth.pd
- http://health.ngoinmyanmar.org/2011/01/hiv-sexual-transmission-hiv.html

### **Chapter 6**

- www.who.int/nutrition/databases/en/
- www.who.int/nutrition/topics/evidence\_informed\_guidelines\_NHD/en/
- www.nal.usda.gov/fnic/foodcomp/search

## Chapter 7

- http://health.ngoinmyanmar.org/2010/09/puberty.html
- http://www.factsforlifeglobal.org/01/
- http://www.plannedparenthood.org/info-for-teens/our-bodies-33795.htm
- http://www.ashastd.org/

### **Chapter 8**

- http://simple.wikipedia.org/wiki/Mental\_illness
- http://www.psychologymatters.asia/article/40/state-of-mental-health-services-in-southeast-asia.html

# PART B: COMMUNITY HEALTH

# Objectives

Practise working for community engagement around health-related issues, using the data analysis techniques from Part 1.

# Chapter 9: Introduction to Community Health

# Key Words

accessawarenessfactorpolicyadvocacycommunityparticipationsocial status

Good health means mental, physical, and social well-being, so communities need much more than doctors, nurses, clinics and hospitals to be healthy. The environment, economic situations, and social situations in the community affect health. Everyone is healthier when the whole community has understanding of and access to health promotion and disease prevention.

Before looking at community health, it is important to define 'community'. Because community health is linked to where people physically live and work, a **community** is defined as a group of people who live and/ or work in the same area. This may mean that people of different ethnic backgrounds, different religions, and different social classes are all in the same community. Health has the same definition for everyone, and disease-causing micro-organisms act the same way in everyone's body, regardless of race, religion, or any other social factor.

Three key aspects of health promotion and maintenance in the community will be examined in this part: **access, community participation**, and **policy**. While each is important on its own, putting them together greatly improves community health. This part will discuss each of these categories in general, and the following chapters will give you more specific information about some major community health concerns in Myanmar.

**Access** refers to the supply and distribution of technologies and materials needed for health and safety. Examples of technologies and materials are vaccinations, clean water supply, disaster readiness plans, and latrines. Fair access for all members of all households in the community is important. In some communities, people do not think to give access to migrants, servants, illiterate people, alcoholics, prisoners, very poor people, or some other people. But when it comes to promoting community health and preventing disease, social status is not important.

**Community participation** is the involvement of the community in protecting their own health, and the health of their community. It includes people from the community doing the health promoting activities, such as telling neighbours and family about health, encouraging community members, and having good health habits. It can also include advocacy from the local to the national level.

Policy is public agreements about how health matters should be handled. For example, a village may make a policy that certain animals must be kept outside the village. A neighbourhood may have a policy that every home have a latrine. The neighbourhood may have ways to help build latrines for people who do not have them.

Discuss why It is important that all community members are aware of their **rights to access** and to **participate**.

# **Chapter 10: Healthy Communities**

# Objectives

- 1. Demonstrate understanding of the link between individual health and community health by brainstorming ways to educate community members about disease prevention, and ways to educate community leaders about disease prevention.
- 2. Be able to use health knowledge to raise awareness of health issues in your community.

# Key Words

advocate	disposal	latrine	sanitation
arsenic	heavy metals	outreach	ventilate
awareness	hygiene	pollution	voluntary
confidential	insecticide	practitioner	waste
contaminate	judgemental		

As you learnt in Chapter 2, and probably know from personal experience, diarrhoea is not only unpleasant, and can make life difficult, but it can be dangerous, especially for small children. You already know what to do when someone has diarrhoea, but how can you help prevent it? There are three main ways that communities can reduce diarrhoea-causing diseases.

The first is access to good toilets. The second is a supply of clean, safe drinking water. Finally, communities can encourage using soap and cleaning better.

The rest of this part looks at infectious diseases: those that are spread from one person or animal to another. Infectious diseases are dangerous for people of all ages, and most of the children and young people who die in Southeast Asia die of infectious diseases. When someone in a community gets an infectious disease, the whole community is at risk. In communities where diseases and their transmission is not well understood, there has been fear of people with diseases. Previous chapters covered malaria, TB, and HIV mainly as diseases affecting an individual and family. In this chapter, community, access, and policy will be more important.

# 10.1 Sanitation

**Sanitation** means managing all kinds of waste and the environment to decrease health risks. This can include:

- Safely disposing of human waste,
- Safely disposing of household waste,
- Reducing disease transmission in the environment, especially by supplying clean water.

**Hygiene** means promoting what that people can do for good health and cleanliness. It can include:

- Bathing and hand washing,
- Cleaning the home and compound, washing clothing and at a well bedding
- Promoting food safety

FIGURE 47: A woman pumps water at a well

Improving sanitation alone can reduce deaths from diarrhoea by 32%. Hygiene education and hand washing can reduce diarrhoea cases by as much as 45%.

Every community has ways to handle its waste. **Household waste**, such as plastic bags and empty packets, might be burned or buried. In cities, people pour water into the toilet to get rid of **human waste**, which is carried away by pipes. In areas with no pipes, latrines, or pit toilets, are a safe way to handle human waste. There will be more about latrines in the next section. **Animal waste** might be collected, or just washed away by the rain.

When a community starts to improve its sanitation, people will consider whether household waste disposal

is safely far away from houses, water, and fields. They will think about how to provide every household that wants one with a toilet, and where to place toilets. When deciding where people will keep animals in a community, they will also think about where the water goes after a heavy rain, so that water from fields used by many animals does not go near the community water source.

Name three types of waste that sanitation methods keep away from people.

### How disease spreads

Most diarrhoea is caused by micro-organisms which can live in human and animal waste. They get into your body when a tiny bit of that human or animal waste somehow gets into your body. Here is one way it could happen. A cow has an infection which can also cause diarrhoea in people. The cow is in a field, and there is a stream that flows by the field. A boy drinks water from the stream, and so he also drinks in the micro-organisms that caused diarrhoea in the cow. Now the micro-organisms reproduce inside him. A few days later, his stomach hurts. He goes into the trees, and has diarrhoea. A fly comes along and puts its feet in the diarrhoea. Some of the micro-organisms stick to its feet. Next the fly lands on some food and a few of the micro-organisms from its feet stay in the food. The micro-organisms reproduce in the food, and by the time his aunt eats it, there are enough micro-organisms to make her sick, too.

This is not the end of the story. Even when the boy goes to the toilet, he can get a little of the diarrhoea on his hands. Will he wash well with soap, or just rinse his hands with water? Washing well with soap will remove the micro-organisms. If he only rinses with water, his hands look clean, but even though he cannot see the micro-organisms, they are still on his hands. These micro-organisms can then get on anything he touches next, like a spoon, a plate, or food. They can make the next person who eats from these things sick.

- **1.** There are many points between the infected cow and the aunt where the chain of infection could have been stopped. Name three.
- 2. There are micro-organisms in each picture below but you cannot see them. Draw and label the micro-organisms in each picture. Write a caption for each of the following pictures. The first one has been done for you.
- **3.** Look at the pictures below. Label three places in the sequence where you could recommend procedures to prevent the transmission of the micro-organisms.

### **Community participation**

Individuals may work to prevent illness in their family, but it is much easier to avoid getting sick if the community works together to prevent disease. If one family washes their hands with soap after every time they use the toilet, there will be fewer micro-organisms in their house and the family members will not get sick as often. But if others in the shops and neighbourhood are not washing with soap, the clean family may still occasionally get micro-organisms from the community. If everyone in the community washes their hands with soap after every time they use the toilet, there will be fewer micro-organisms in the whole community. People are not perfect in their hygiene, so fewer microorganisms in the community is better for everyone.



FIGURE 48: People get sick when there are disease-causing microorganisms in their water.

### Access

Some people might want to wash their hands with soap, and want to use a latrine, but do not have access. In some communities, people are too poor to buy soap. Some community members may not live in a place with a toilet. Some also may not have easy access to clean water. But it is good for the entire community's health if *everyone* has access to toilets, soap and clean water.

Often access is affected by social status. People with higher social status may be able to arrange for wells to be dug near their homes or shops, for example. But the health of all community members is interdependent. One of the best examples of this is in access to latrines. Latrines are not just for comfort and convenience. If some people do not have access to latrines, what can they do except go to the toilet in the river, the forest or the fields? The whole community will be affected.

How can the community ensure everyone has access to a latrine? Building latrines together is faster and less expensive. There may even be organisations like NGOs or the Red Cross that a community can ask for help or advice.

The community needs a design, PVC pipe, concrete, toilet pans, and a small screen. Toilet pans can be made out of wood and bamboo if no others



are available. The floor can **FIGURE 49: The 'VIP' latrine** also be made out of wood, if

concrete is not available, or is too expensive. The most important thing is the design. This picture shows a good design which does not allow flies to get out. It is called a 'VIP latrine', for 'ventilated, improved pit latrine'. '**Ventilated**' means that air flows through it. 'Improved' means that it traps any flies inside it. So, it does not smell bad, and flies cannot spread micro-organisms from the waste. Of course a well-designed latrine will also have a nearby place where people can wash their hands with soap after using it.

The community must make sure each household chooses a good site for the latrine, so the latrines do not affect any water supply. If experts come to give advice on latrine building, they can help advise on where to build each latrine. Latrines must be at least 30 metres (100 feet) away from any water which a community will use, like wells or streams. This is because water moves through the soil, and the micro-organisms in waste will move with it. As water moves farther through the soil toward a stream or river, the soil is like a filter, and after it has travelled about 30 metres underground, the micro-organisms are left behind in the soil.

Depending on the size of the community, it may be wise to build a few latrines for common use. Visitors and people without a household latrine can use these public latrines.

- 1. What are two ways that well-designed latrines stop the spread of micro-organisms in the community?
- 2. Why is it important for every member of the community to have access to a latrine?

#### Box 12: Snakebite!

One of the advantages of using a latrine is that you will never be bitten by a snake that you have given a nasty surprise to! But snakes move around freely and quietly, so it is hard to avoid them entirely. Not all venomous snakebites are dangerous to life, but many are.

The only cure for snakebite is an injection of anti-venom. This is different for different snakes. So, if someone is bitten by a snake, find out what kind of snake it was. If the snake is dead, bring it along. Do not chase it and risk another snakebite, and do not handle even a dead snake with bare hands. Without the snake, get the best description possible.

First keep the bitten person still. They should lie down with their head higher than the bite if possible. They need to stay still, not move around. The more they move, the faster the venom will spread. Squeezing or pressing the bite wound will also spread the venom faster. Leave it alone.

People are most often bitten on the leg or arm. Splint and bind the bite and surrounding area as you would a broken bone, or put it in a sling if that is possible. It should be firm, but not tight enough to stop blood flow entirely. Keep the bitten area lower than the rest of the body if possible. The person should not move the bitten part of their body. If the person has other problems, like trouble breathing, treat them as you learned in first aid demonstrations.

If the person is wearing a watch, ring, bracelet, or anything else around a limb that is near the bite, remove these. The area may swell and the item may be impossible to remove safely later.

Take the person to the nearest hospital or other place with anti-venom as quickly as you can. The person bitten should keep as calm as possible. If possible, someone should phone or go ahead to say that a person bitten by a snake is on the way.

There are many traditional and new treatments for snakebite. When tested by comparing results with antivenom, none of them has been as good as anti-venom. Some, including cutting or puncturing the bite wound, make it worse.

Most people treated with anti-venom will recover from snakebite. But for the best and quickest recovery, it should be given quickly.

This is general advice for snakebite. If you want to learn more about snakebite, ask the Red Cross, public health office, or other health experts for more education. There are other techniques which can be a little better if you are sure you know what kind of snakebite it is. You should learn these directly from a trained health educator who knows the latest research.

### Policy

To ensure sustainability of the sanitation system, it is necessary to have some community agreements in place before anything becomes a problem. A community and its leaders need to decide the answers to questions such as: Who will clean a community latrine? Who will be responsible for putting soap in public latrines? How will the community pay for the building materials and cleaning supplies? These questions and others should be answered *before* any building starts. Otherwise, conflict can occur in the community.

- **1.** Why do you think it is important for communities to make all decisions about maintenance and funding before opening a new latrine or water system?
- 2. What if a household does not want to build a latrine? What should the community do?

## 10.2 Water

The average adult needs to drink about one and a half litres per day to stay healthy. To stay healthy, it is important to drink only clean water. For health, clean water means more than just water that is clear and has a good taste. No one can taste a few micro-organisms in the water, but they can still make people sick. Clean water does not have *any* human or animal waste, heavy metals or fertiliser chemicals in it.

### Access

Everyone wants clean water, available close to or inside their home. In some communities, getting the water is the main issue, as the water source is far away. In others, there are water sources, but they are not clean enough to drink. In many places, each household gets their water at the same place and purifies it by boiling or some other method. But it is better for everyone if the community has a supply of water that is clean enough to drink. It is also much less expensive if the whole water supply can be treated or protected at once.

A water supply system for a community is quite a large project. Some good ways to get very clean water for a village, neighbourhood or town are:

### Box 13: Really clean hands

Water washes off only the dirt you can see on your hands – but not the tiny micro-organisms that you cannot see, that can make you and others sick.

Always wash your hands with soap when you leave the toilet, before you prepare food, after you prepare food, before you eat, before you give someone else food or drink, and after you touch or feed animals. It is also a good idea to wash your hands with soap as soon as you get to home, work or school.

People who wash their hands frequently get diarrhoea, colds, and flu less often than people who do not wash their hands.

Some communities are too poor or too remote to buy soap. There is no need to buy soap from the town if there is a local soap. In some places, people can make soap from acacia and bark; in others, there is a soap fruit. There are other local soaps as well. If none of those are convenient, ash also will serve for hand cleaning.

There is no need for antiseptic soaps for hand washing. The dirt and with it the micro-organisms are washed away with the soap, they are not killed on your hands. Wash with any kind of soap – the most ordinary kind will do, as long as you wash your hands.

- tube wells,
- collecting water from a clean spring in a place where it is protected from animals, leaves, fish, etc,
- filtering pond or river water centrally,
- hand-dug wells with concrete rings, treated with chlorine at least once per year.

Which way is the best depends on many local factors. Deciding where to put the water source and what kind of water source to have are complicated decisions which the community can make together. Before beginning, the community may want to ask a local expert, the health department, or an NGO for help in making the best decisions. Some things to think about include:

- the area around a well should be protected with a brick, stone, or concrete area, and the well should be covered,
- the water supply must be away from any latrines, waste collection sites, or other waste,
- if there is a tap, it is worth investing in a really good tap, because the cheap ones break quickly,
- if the community is digging a well, the well should be located in a place that can be accessed by the largest number of people. It should be located on public land, not on private property,
- people must be able to get water without contaminating the water supply.

Another local factor to consider is the quality of the water before it enters the community water system. To be sure that the water for the community is really clean enough to drink, it is important to test it after the system is completed, and to test the water in homes. If it is not surface water, it should be tested for heavy metals such as arsenic, as well as for micro-organisms. Heavy metals are found naturally in the earth. They cause harm slowly, over years. Testing is not easy for a community to organise by itself, but the community may be able to ask NGOs or the health department to test the water.

Think back to what you know about how diseases are spread. What is a cheap easy way that a family could treat their water to kill the micro-organisms that cause disease? Would this method be useful for removing heavy metals from the water? Why is this not a suitable method for the whole community?

### **Community participation**

Once a community water system is in place, it is necessary to maintain it. Some things community members do to help keep the water supply in their community clean include:

- Keep animals away from the water supply.
- Cover the well after getting water.
- Keep buckets, containers, and from touching the water where it is collected or stored. This means that there should be a good tap, a separate bucket that never touches the ground, or another way to get the water into pipes or household containers.



Keep containers used for carrying and FIGURE 50: The women in this photo are in danger storing water for a household separate from of contaminating their water supply with an micro-containers used for other purposes. Drinking

water containers should not be used for watering the garden, giving water to animals, cleaning, or storing other things.

• Containers should be cleaned with soap and water, rinsed, and if possible dried in sunlight in a place which is not dusty.

What would you recommend if you were in a community where people got water by dipping buckets into a shared source of water?

### Policy

What happens if the water system needs repair? Taps can break easily if not handled carefully. Who will replace broken taps? Who will maintain a pump? Who will make sure the water is tested, especially when the rainy season begins? All of these questions need to be answered in order to keep the community healthy. The community and its leaders should answer these questions and others *before* the system needs repair and *before* the water system is due to be tested again. By making arrangements before problems occur, the community can avoid conflict and keep working together to prevent disease.

# 10.3 Community mental health promotion

When some people in a community have poor mental health, it is difficult for the entire community. Mental illness can result in aggression and other mental health problems such as depression and addiction. In many communities there is no professional treatment available for people who have mental illnesses. Instead, many people with mental illness rely on family, friends, and religious institutions, and on their own strength. It is important for people struggling with mental illness that they remain part of their communities where that is possible.

Prevention of mental illness is not as direct as prevention of infectious disease, but there are steps communities can take.

The root causes of mental illness are not always clear. For some people, it may start with their experiences as children. People who experienced violence as infants and young children are much more likely as adults to have major mental illnesses than those who experienced a safe childhood. Children do not suffer from violence only at the time it happens, but some will later suffer from depression, anxiety disorders, and drug abuse or dependence because of the violence. What is particularly sad is that they are also more likely to be aggressive and use violence against others. It is very important that even if children grow up in a violent environment, they should not experience violence from their family. The trust and love of a family can protect children from future mental illness.

When we look at people and societies with more and less mental illness, we see some differences, and many of these differences are in policy. Communities with better mental health:

- support children, for example by skills building and child-friendly schools,
- give nutritional support where needed,
- have child and youth development centres, for children who do not go to school, or time out of school,
- have educated women with job and business opportunities,
- give social support to their older people,
- have safe and healthy housing,
- prevent violence and support victims of violence,
- have a strong community spirit.
  - **1.** How is mental health related to access? Who needs access to what? What is the result when some people do not have access?
  - 2. How does your community compare with the list of factors above? What does your community provide for children? What is still lacking? Collect examples of each of these issues in your community, noting whether it is positive, negative, and if there is any trend to becoming more or less child friendly.
  - 3. In groups, discuss some child-friendly policies that could work in your community.

## **10.4 Malaria and Community**

The key to preventing malaria is to stop people from being bitten by mosquitoes carrying malaria. This can be seen as having three parts: fewer mosquitoes, the mosquitoes not biting, and mosquitoes not having malaria. From an individual point of view, the easiest to affect is the mosquitoes biting. Sleeping under a bed net, using mosquito repellent, and burning mosquito coils are ways to prevent mosquitoes biting. Having bed nets with insecticide, and using an electric mosquito killer, also reduce the number of mosquitoes somewhat. To reduce the number of mosquitoes more, individuals can empty standing water in their area, and tightly cover any water containers, or keep fish in open water containers and pools.

The community can do more to reduce the number of mosquitoes. One family can only reduce the number of mosquitoes living right near their home, but mosquitoes can come from all over their neighbourhood. A community effort to drain and cover standing water will reduce mosquitoes much more.

Community participation does not stop with removing and covering standing water. Many people who get malaria think that their symptoms are caused by something else. They might believe they have a different disease, or that their fever and other symptoms are caused by something they ate, or something they did, such as bathing at the wrong time. Information they get from their family and friends who have learned about malaria is important. Family and friends increase access to information. With this information, someone with a fever can decide to get a blood test to find out if they have malaria, and to get the correct treatment if they do. While they have the malaria micro-organisms in their blood, mosquitoes that bite them can pass malaria on to other people. So, the sooner they get treated, the better for their community, as well as for them.

A community with malaria may get together to form policies to reduce malaria and increase access to treatment. The community can make decisions together, depending on the needs. Policy can deal with issues such as how to get bednets for the whole community, whether to use insecticide fog in the community, and not letting uncovered water stand long enough for mosquitoes to hatch.

- **1.** Malaria used to be a major problem in Europe and North America. These areas still have mosquitoes, but not malaria. How do you think malaria was stopped in these areas?
- 2. Can a community affect access to malaria testing? How?

# 10.5 TB and Community

Anyone can get infected with TB, but it is more dangerous for some kinds of people. TB is more dangerous for children, partly because they are more likely to get TB outside of the lungs, which is harder to diagnose. The side effects of TB medicines may be more harmful to children as well. TB is also more dangerous for people with weak immune systems, including people with cancer and HIV. The best way to prevent TB infection is to by involving the community. People need to be tested and treated as quickly as possible Where there is access to free treatment, people get treated earlier, and so spread micro-organisms to fewer people.

The World Health Organisation (WHO) and NGOs support access to free treatment for people with active TB. In countries without a national health insurance system, access to treatment for diseases is usually a private matter. But in the case of TB, private health care results in much more TB, so free TB

treatment is one way to promote rapid treatment. But even when treatment is FIGURE 52: DOTS poster, India free, it is not simple. Access to treatment is not enough. Treatment for TB takes

months, and it is hard for people to consistently take all the medicine at the right time for so long. However, if they do not, TB becomes resistant to the medicines.

To prevent resistance, WHO programmes use Directly Observed Therapy, Short Course (DOTS). In DOTS, an independent observer gives TB patients their medicine for the first two months, and watches them take it. The independent observer does not have to be a health worker. It could be a community leader, a volunteer, a teacher, Red Cross member, or anyone who is not close friends or family of the person taking the medicine. Patients are more likely to take all the medicines at the right time when someone is watching them.

The DOTS strategy is now working in 134 countries around the world, including all the countries of Southeast Asia. Community involvement is the key to the success of DOTS. The community must not stigmatise people with TB, or people will hide their illness or wait very long to get tested. Trusted community members help spread information about DOTS so that everyone in the community can understand and help to support people in their referral and treatment.

Think about DOTS from the community health perspective. What are the access, participation, and policy elements?

# **10.6 HIV and Community**

Most people who have HIV infection do not know they have it. Not knowing they are carrying HIV, some transmit it to others, and some wait very late to start treatment for their HIV. Reaching people who unknowingly have HIV is an important part of treatment and prevention for a community. Some organisations, like clinics, usually wait for people to come to them. But some reach out to the community, trying to contact people who might not otherwise come to them.

In the case study below, look at how community attitudes of acceptance of differences, non-judgmental attitude, and co-operation of people with different ideas resulted in a successful project. The staff at the clinic in this case study have a biological understanding of HIV/AIDS – they understand that it is caused by a micro-organism that slowly destroys the cells of the immune system. The traditional health practitioners had a very different view of the disease, according to their traditional understanding of health. Although the traditional practitioners cannot treat HIV effectively, people who go to traditional practitioners when they are sick do not know they have HIV, and they go to the traditional practitioners first. The clinic had effective HIV treatment, but could not reach many of the unknowingly HIV-positive people who needed it. Instead of rejecting the traditional practitioners and their ineffective treatments, the clinic tried to cooperate with them to find out who was HIV-positive and offer them treatment. The clinic staff recognised traditional practitioners as valuable members of their community.



### **Case Study: HOPE Cape Town Project**

In October 2005, The HIV Outreach Programme and Education (HOPE) project at Tygerberg Hospital in Cape Town, South Africa launched a pilot project to try include traditional health practitioners (THPs) in their HIV/ AIDS prevention and treatment programme. South Africa suffers from an HIV/AIDS epidemic. At the end of 2007, there were about 5.7 million people living with HIV, and about 1000 people dying of AIDS every day. The project had three main goals:

- to encourage THPs to cooperate with doctors and refer patients,
- to encourage THPs to support their HIV-positive patients in taking HIV/AIDS medicine,
- to request THPs' help in persuading more men to take HIV/AIDS tests.

Nine THPs were asked to work with five HOPE Community Health Workers in five poor townships near Cape Town. They received a 6-week training course in biological understanding of HIV/AIDS and its treatment, which included advice on combining HIV medicine and traditional remedies.

At first, the results were disappointing. Six of the THPs dropped out of the project. However, the remaining three THPs continued to co-operate with HOPE. They referred 80 people to HOPE clinics in the first 18 months of the project. As leaders in the community, the THPs became advocates for testing and treatment, and counsellors for sexual health, parenting and relationship issues. They encouraged frightened patients, accompanied them to the clinics for testing or treatment, and supported them in taking their HIV/AIDS medicines.

The THPs also provided help to children and young people. They gave advice and support to children caring for parents with HIV/AIDS, and supported and even adopted orphans whose parents had died of AIDS. They became an important source of condoms for young people in the community. Although young people could get free condoms at clinics, at the clinics they were often seen in a disapproving way by staff.

Young people appreciated the non-judgemental attitude of the THPs and were confident that information concerning their sexual relationships would remain confidential.

As it was the first time that this kind of cooperation between THPs and clinics had been tried in that community, the HOPE project faced several difficulties. However, the project was also successful in many ways, and showed the potential benefits of different forms of health care working together. The project continues to work closely with THPs to provide better HIV/AIDS prevention and treatment services to the people of Cape Town.

- 1. Read the case study and prepare five questions about the information for other groups.
- 2. How did lack of respect and stigma prevent access to effective HIV prevention?
- **3.** Are there traditional healers in your community? Do traditional healers and doctors cooperate in your community? What barriers might there be?

# 10.7 Immunity and Community

The immune system learns about a disease through being exposed through vaccination, or by getting a disease. Once the immune system has been exposed to a micro-organism, it can find and kill micro-organisms causing that disease so quickly that no infection develops. This is individual immunity, the immunity of one person. However, there is another kind of immunity that depends on a community. Each person is different and conditions for vaccination are not always perfect, either. One result is that not every vaccination will successfully give full immunity to every person who gets it. However, individual immunity is not the only kind. A community can also have immunity. Even if a few people are not immune to a disease, being surrounded by many people who are immune can protect them.

Each disease has a rate at which it spreads, which depends on how many new people on average catch the disease from a person infected. You calculated this in rate the TB chapter, where it is known that each person on average infects 10-15 people per year. When a lot of people get the disease at the same time, there is an epidemic.

Diseases can die out in a community, or continue to infect new people. If the number of new people infected in a community is small, the disease will disappear from that community. If it is large, there is an epidemic. Some infectious diseases can be transmitted to a lot of people easily, like cholera. Others do not spread as easily, like hepatitis C. Each has a different average number of new people infected by someone who has the disease.

Let's make an example of a disease we will call Y that lasts for 10 days, where the average infected person infects 10 new people per day. In a community of 1000 people, how many days will it take to infect all of them with Y, if everyone is exposed every day? On day 1: one person, who infects 10 = 11 people infected. Day 2, 11 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people each infect 10 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original 11 = 121. 121 people  $11 \times 10 = 110$ , plus the original  $11 \times 10 = 110$ , plus the original  $11 \times 10 = 110$ , plus the original  $11 \times 10 = 110$ , plus the original  $11 \times 10 = 110$ , plus the original  $11 \times 10 = 110$ , plus the original  $11 \times 10 = 100$ , plus the original  $11 \times 10 = 100$ , plus the original 1

Try this again if 90 percent of the community is immune to Y. That leaves 100 people of 1000 who are not immune to the Y. Day 1: one person, who infects 10, so 11 people. Day 2:  $11 \times 10 = 110$ , plus the earlier 11 = 121 people, So by day 2, everyone who can get infected is infected.

If someone brings Y into this community again, they are not likely to meet anyone who is not immune to Y. There may be a few people in the community who are not immune, but the people with Y are not likely to meet these people within the 10 days of the infection. The people who are not immune to Y are protected by all the people who are immune. This is easy to see when you use a grid where each box represents one person.

The grid on the next page has 30 x 30 squares. This represents a community of 900 people with each square representing one person. Now, choose one square anywhere on the grid. Suppose that there is a disease which infects one out of three contacts that are exposed to it. Each square away from the edges is surrounded by eight other squares. Start anywhere, and count through the squares surrounding your starting square (the infected person), marking every third square (infected contact). Each infected person can infect other people for one round only, so now count through the squares surrounding the newly infected people. Squares which have already been marked are immune. They do not count as contacts. Go through as many rounds as you need to, until no more people are getting infected. Count continuously, not starting over with each infected person. Each contact is exposed only once per round, but may be exposed again on the next round.

Look at your grid and answer questions:

- 1. Are all squares marked, or are there squares which were never marked?
- 2. Will it take all the students the same number of rounds to get to the point where no more people are getting infected?
- **3.** Was the number of new people getting infected the same each round all through the exercise, or did it change?
- 4. How would it be different if two out of every three people were infected?
- 5. How would it be different if one of out every six people were infected?
- **6.** How would it be different if you start with five infected people, and one in every 12 people is infected?
- **7.** How would it be different if the five were all next to each other, or spread throughout the community?
- 8. How would it be different if people could continue to infect others for three rounds?

												Ì			

# **Chapter 11: Child Health**

## Objectives

- **1.** Explain why children are more at risk of health problems than adults.
- 2. Apply knowledge and data from Part 1 to children's health.

immunisation

# Key Words

eradicate

intestinal

potential

## **11.1 Introduction**

Children are the future of society. The way children are cared for today, by their parents and by their community, will determine the future of the community and of the society.

"Much of the next millennium can be seen in how we care for our children today. Tomorrow's world may be influenced by science and technology, but more than anything, it is already taking shape in the bodies and minds of our children."

#### - Kofi Annan, former Secretary-General of the United Nations

### Why is focusing on child health important?

The world community has recognised that children need special care and protection for several reasons. First, children are physically weaker than adults. Poor living conditions, such as a lack of healthy food, pollution, and poor sanitation, harm children more than adults. Because children's bodies are still forming, deficiency or illness may affect their health and potential for their whole life. Second, young children are dependent on adults to take care of them. Even when children are old enough to say what they need, they often must ask adults for help. They get money, food, medicine or whatever they need from adults. They are not socially or physically strong. For these reasons, children's mental, physical, and social health must be addressed by adults in the community.



FIGURE 53: Families have the primary responsibility for raising children

- **1.** Name two deficiencies or diseases and their long-term effects on children as they are different from adults.
- 2. Children need access to many of the same things adults do in order to stay healthy. Look back at Part 1, and make a list of things you think children might need access to.

### Access

This chapter will focus on three things that all children need access to: enough healthy food, good medical care, and safe spaces. To be physically healthy, all children need to have enough healthy food and good health care. Because their bodies are smaller than adults, an poor diet or an untreated disease has more effect on children than on adults. To be mentally and socially healthy, all children need safe spaces to play and learn. In these spaces, they learn to interact with other children their age as well as learn school subjects and community culture. It is a community responsibility to make sure that all children have access to the things they need, including healthy food, good medical care, and safe spaces.

### **Community participation and policy**

The Convention on the Rights of the Child is the most widely accepted human rights document in the world. It has been accepted by all but two countries in the world. Governments have committed themselves to protecting and ensuring all children's rights. "All children" is an important part. It does not matter what their ethnicity is, who their parents are, or where they live, all children have the same basic rights. Some governments are farther ahead in achieving this goal than other governments. For a government to achieve the goal of ensuring all children benefit from their rights, each community must work to ensure that all of the children in their area have access to enough healthy food, good medical care, and safe places to learn and play. Government or community leaders can make policies to improve the health of children, but in the end it is the community that takes action to protect and encourage children.

### 11.2 Healthy Food

Children are more at risk of not getting enough healthy food because their bodies are smaller, which means a lack of nutrients in the diet will have more of an effect on children than on adults. Children are growing, so need proportionately more food than adults who are just maintaining their bodies. Also, children are dependent on adults to provide and cook food for them. Children must accept whatever food they are given, even if it is not healthy. They depend on adults to make wise decisions for them. This means that adults who take care of the children must know what foods are healthy, must have the resources to get and prepare these foods, and must be willing to give the FIGURE 54: Children receive food in a refugee food to the children.



camp

Almost all children get infections during their first years, and some get very ill. About one child in ten in Myanmar dies before the age of five. In many cases, the difference between the children who get sick and recover and the children who die is poor nutrition. Many children do not get enough protein and micronutrients, and the deficiency weakens their immune system. Malnutrition contributes to about half of childhood deaths. A disease that a well-nourished child could survive can be too much for a child who has not been eating well.

Breastfeeding is generally recommended for a baby's first 12 months. From birth to six months, health experts recommend only breast milk – no solid foods or liquids, not even water. After six months, a baby's body is ready to for solid food, but some breast milk is still recommended until the baby is one year old. Babies who are not breastfed for at least six months are more likely to get sick. Breastfeeding also has health benefits for the mothers.

Nutritional requirements by sex and age (WHO)									
Child, age	Protein g	Iron mg	Calcium mg	Vitamin C mg					
Infant, 0-6 months	13	6	400	30					
Infant, 6 months – 1	14	10	600	35					
Child 1 – 3	16	10	800	40					
Child 4 – 6	28	10	800	45					
Child 7 – 10	28	10	800	45					
Boy 11 – 14	45	12	1200	50					
Girl 11 – 14	46	15	1200	50					
Boy 15 – 18	59	12	1200	60					
Girl 15 – 18	44	15	1200	60					

#### Table 5: Children's nutritional requirements

When babies start eating other food, it must be high in micronutrients. A recent survey found that 80 per

cent of children under the age of two in Myanmar did not have enough iron. This was partly because of worms (see Box 14) and partly because of low iron in the diet of mothers and children.

- 1. Why are children more at risk than adults of not getting the amount of healthy food they need?
- **2.** Look back at Table 2 and Appendix C. For each micro-nutrient listed, name a food that you commonly see children in your community eating. Are there any micronutrients that children in your community do not usually eat?
- **3.** Look back at the data collected for the Part 1 'healthy habits' project. Were there any days when you did not get the full amount of all the micronutrients? If so, why was that? What do you think the effect of an incomplete diet has on children? How can you use this data to help design an education campaign for adults to teach them the importance of eating healthy food for themselves and for their children?
- 4. Talk to three mothers, including your own if possible, about the kind and amount food they feed or fed their children before the age of two. What kinds of foods do they avoid? Estimate using similar food from Tables 2 and 5 whether the children get enough nutrients from the food. Propose kinds and amounts of food that will give children adequate nutrition, and be acceptable to mothers. How do these relate to the food kinds and amounts given to the children?

#### Box 14: Intestinal worms

Some of the few parasites that are large enough to see are intestinal worms. There are a number of different worms that live inside people and animals, like roundworms, threadworms and pinworms. They are not related to earthworms. Each is somewhat different, but generally, we eat the eggs of a parasitic worm, which then hatch in our intestines and start eating our food, interfering with our digestion, and making our intestines bleed. Some eggs can be breathed in, some can go through the skin from water or from the ground (which is why walking barefoot is not a good idea), but the most common way of getting infected is from one's own fingers, from food, or from water which is not clean.

Worm infection is very common, especially in children. Fortunately, there is a good, cheap medicine which is effective. Studies in schools show that attendance at school improves after children are de-wormed, and children grow taller, remain healthier, and get better marks after worm treatment. However, they often get worms again, so usually treatment is given twice per year.

Think of three ways to lower the risk of worm infection.

### 11.3 Good Medical Care

Good medical care includes both preventing disease and treating disease. There are two parts to this: reducing the number of micro-organisms entering the body, and giving the body what it needs to kill the micro-organisms if they do enter the body. Keeping micro-organisms from entering the body requires good sanitation, including washing hands with soap, a clean toilet, and using clean water for drinking and cooking.

Most of the children who die under the age of one die in their first month, many of them from blood infections that resulted from unsafe delivery. Many of them had started with a disadvantage because the mother also had disadvantages, for example, half of pregnant women in Myanmar are anaemic (deficient in iron). Quick medical care can help babies overcome many deficiencies.

The immune system is strengthened by good nutrition. Some diseases can be prevented by immunisations, too.

Immunisations teach the immune system to attack disease-causing micro-organisms quickly. This can prevent illness or make the disease milder. People need to have most immunisations before the microorganism enters the body so the immune system is ready to protect the body from attack. This is why it is important for small children to get immunised before they are exposed to disease micro-organisms which may infect them. Adults get immunisations as they need them, but they are particularly important for children. The immune system of small children has not finished developing, and so some diseases can affect children very strongly if they have not been immunised. There are different immunisations for different diseases, and not every disease has an immunisation. Some immunisations protect for a whole lifetime; others need to be given again every few years to maintain immunity.

- 1. Does good medical care for children include care at birth? Does it include care for pregnant women? Make an argument for or against. What about care for breastfeeding mothers? For new fathers? For mothers who are not breastfeeding? Where is the boundary between good medical care for children and for others?
- 2. What immunisations have you had? How do you know?

### Box 15: Eradication - Making diseases disappear

Think about illnesses with different causes. Some are caused by infection, some develop in the body, some are caused by a lack of something, or too much of something. If you are trying to make a disease disappear, never to appear again, which kinds of diseases could that be possible with?

When a disease is entirely removed from the whole world, we say it has been eradicated. To eradicate a disease takes a world-wide effort, and decades of concentrated work. They key to successful eradication has been immunisation. When many people are immune to a disease it will not be able to infect them, and it will die out. Once there is no one in the world who has the disease, immunisation for that disease can stop.

The first to be eradicated was smallpox. Smallpox killed about one of every five people who caught it. Smallpox epidemics were feared, and many survivors were scarred or blind. There was no effective treatment once infection was established, but smallpox could be prevented by vaccination. A long and careful vaccination campaign prevented people from getting the disease. The last person to catch smallpox outside of a laboratory was in Somalia in 1977.

The second disease that was eradicated was a disease of cattle called rinderpest. The last known case was in 2001.

Polio is another disease that has caused great suffering and death. Polio has been greatly reduced by vaccination, and may soon be eradicated. About 350,000 caught polio in 1988, and these people were in most of the countries of the world. Twenty years later in 2008, polio was found in only four countries, and only 1,652 people were infected. Consistent vaccination can eradicate polio as well.

There have been efforts to eradicate malaria, as malaria causes so much harm. But as many wild animals can also be infected by the malaria parasite, it may be impossible to eradicate.

There have been efforts to eradicate leprosy, but because in rare cases people can get active leprosy up to 30 years after they were exposed, it will be difficult to be sure it has entirely disappeared. Also, one kind of wild animal, the armadillo, can carry leprosy, so people could get re-infected from animals.

# **11.4 Safe and Healthy Home**

Many aspects of child care are typically done very well in Myanmar. There are many loving families, the community watches out for children, and children get a variety of experiences and are allowed to discover their world by exploring. However, one weakness is in the houses many children live in. Many children are near open fires, which are a double danger. There is a danger of burns, either from the fire or from hot liquid spills. There is also a danger to the lungs of children who breathe in smoke.

Think about how children live in your community. What are the main dangers they encounter? What are solutions to reduce danger? Try to include issues that must be dealt with in the individual home, issues that may involve community participation, and issues that involve policy.

## 11.5 Safe Space

A safe space is any space in the community where children can play together and learn together without the threat of outside harm. The safe space should be surrounded by a fence or wall to protect children from outside harm, including recruitment into gangs or militaries. The safe space is a place for children to get away from any violence in their homes or community. It should be supervised by a trusted adult, to keep the children safe and help them learn how to play and learn together. There should be no stigma in the safe space. All children should be treated equally. For older children, school is a safe space during the week. During the weekends, after school, and all day for younger children, communities need to provide a safe place for children to spend time.

- 1. How does a safe space for children relate to mental health in the community?
- 2. Think about your own community. Does it have a safe space for children?
  - If so, are there rules about who can use it and how it can be used? Are these rules written down so everyone can see them? If your community has a safe space for children, then ask people in your community what they think the rules of use are. Include who can use it, how can it be used (and not be used), when can it be used, where are the boundaries of the safe space. Also include why community members think the space is important for your community.
  - If your community does not have a safe space, write a paragraph about why you think it is important. Make up the rules for use of the safe space, including who can use it, how can it be used (and not be used), when can it be used, where the boundaries of the safe space are. If you decide to share this with your community, be willing to change some of your rules after you listen to their discussions.

# **Chapter 12: Accidents and Disasters**

### Objectives

- 1. Determine what kinds of disaster can happen in their community.
- 2. Know what to do in case of disaster.
- 3. Apply knowledge from Parts 1 and 2 to a disaster setting.

# Key Words

first aid	harass	transparent
disaster	shelter	

### Box 16: Save a life - Float

Falling in the water is very frightening if you do not know how to swim. Drowning is the most common cause of accidental death in Myanmar. And yet, almost all people who fall into the water can survive, even if they cannot swim. That is because even without being able to swim, almost everyone can float for many hours if they stay calm.

If people who fall in the water have no injury, if they know how, they should be able to float until they can climb out of the water, or until someone can save them. Most people who drown, drown because they become too frightened, breathe out the air in their lungs, and sink below the surface. But almost everyone will float if their lungs are full of air.

When people who cannot swim fall into the water, most of them want to stay upright, and keep their head out of the water. But although people float if their lungs are full of air, they float low in the water. A person floating upright will have just the top of their head out of the water, not the face. But if you lie on your back with your arms and legs out, it is your nose that will be out of the water. In still water, this is a good way to float. But if there are waves, they will get in your nose and mouth.

So the best way to float in most situations is face down, like in the picture. Raise your head whenever you need to take a breath. Take breaths more often than usual, even if you do not need to yet, because sometimes when you are trying to get a breath, a wave might be coming. Keep your lungs full of air. The most important thing is to try to stay calm so you will float.

[Needs illustration: person floating upright, with water level near the crown of head; person floating face down, with arms and legs relaxed and face in water; person floating in nearly same position, but with head up taking a breath]

## 12.1 First Aid

Part of living in a healthy community is having people available who know what to do in an emergency. Access to first aid improves the more people have first aid training. In fact, it is best provided by the community itself, through community members learning how to respond in emergencies. People who have been trained in first aid know what to do to try to save people who have drowned, been struck by lightning, choked on food, been bitten by snakes, or been burned or injured in various other ways. If people have been injured, they have a better chance to survive with fewer consequences if someone can provide first aid to help them until they can get full medical care.

First aid trainng available from local Red Cross Society branches, and potentially from other organisations. Take some time to review from time to time what you know about first aid and remind yourself of what to do in an emergency.

Knowledge is the most important element of first aid. However, it is also useful to have certain supplies, including bandages and basic medicines. Those supplies can be kept clean and dry in a box or strong waterproof bag – a first aid kit. In many countries, every workplace is required to keep a first aid kit on hand; in some countries each car is required to carry one.

- 1. In pairs, recall everything you know about first aid, and make a list of items you would like to have in a first aid kit. Be able to discuss why you included certain items and not others.
- **2.** Which elements of first aid relate to access, which relate to community participation, and which relate to policy?
- 3. Where is the most convenient place for you to get first aid training? If you don't know, find out.
- **4.** If there is an accident and someone is badly injured in your community, who is the best place to call, or where is the best place to go? If you aren't sure, find out.

### 12.2 Health in Disasters

A disaster is when something unusual harms or kills a lot of people. So even though the number of people who die in road accidents every day will total more than those who die in train crashes in a year, we call a train crash a disaster because it happens rarely, and affects a lot of people at once. Some disasters happen only once every fifty or one hundred years, so people may think of them more as a story from the past, instead of a danger that could happen again. But if a disaster has happened once, even a long time ago, it can happen again.

There are different ways to categorise disasters, for example, man-made or natural, slow or sudden, affecting mainly separate individuals or affecting whole communities, preventable or not preventable, predictable or unpredictable.

- 1. Name seven kinds of disaster. What categories can you put them in?
- **2.** How many ways can you think of to classify disasters? Do all disasters fit exactly in one category or an other?
- **3.** Can disasters be prevented? Pick two, and explain.
- 4. What kind of assistance will affected people need after these two kinds of disaster?

One of the ways you can categorise disasters is:

- disasters that can happen in my community
- disasters that cannot happen in my community

Some disasters can happen to anyone, in any community, but the disasters most likely to happen in each community are different. There are whole areas of the world with no earthquakes. Tornadoes happen only in certain weather zones. Wildfires are frequent in some areas and not others.

Some disasters can be prevented. However, few can be prevented by individual action. Most need a community to prevent them. This could be a community of people living together, a working or business community, or a political community. Some, including earthquakes and tornadoes, cannot be prevented, but preparation can make the consequences less severe.

Some preparation is practical, like storing extra drinking water, or having a way to purify water. Some preparation is mental, like learning first aid, and having a plan for what to do and how to contact people to warn them or meet after a disaster.

- 1. Does your community have a plan for disasters? What kinds of disasters are covered? What should each individual do to prepare? What should each household do? What should the community do?
- **2.** Apply your knowledge from previous chapters to a disaster situation. Consider sanitation, clean water, prevention of infection, prevention of resistance, protection of child health, and support for mental health.
### **12.3** Clean Water and Sanitation in Disasters

What parts of what you learned about water and sanitation are most important in a disaster? In many disasters that affect a whole community, clean water and sanitation are needed within hours, and community members should start working on these issues immediately.

The cleanest water in an emergency may be rainwater. Rainwater as it falls is usually very clean, but it can easily become contaminated during collection, storage and distribution.



Use your knowledge of micro-organism control to design safe rainwater collection and storage. Explain at what points contamination might happen, and how to prevent it.

If there is no rain, there may be a choice of sources for water. Generally, uncontaminated well water (wells that have not had any external water or objects enter them) is cleaner than running water (from a stream or river), and that is cleaner than standing water (from an open reservoir, outdoor storage tank or pond). Start with the cleanest water, and try to purify it further if necessary. Before purification, the water must be clear. If there are containers and time for it to settle in, wait some hours until the water is clear, and pour it off carefully. Alternatively, a filter can be made out of layers of clean cloth as explained in Chapter 2.

### Box 17: The Dead

After a major disaster such as earthquake or flooding, there may be many bodies of dead people. Survivors naturally have two concerns about them: a fear of disease, and the need to identify the dead.

One of these concerns is misplaced. Contrary to fears, dead bodies are not important in the spread of disease after a disaster. Disease micro-organisms in the bodies die soon after the person does. There are a few exceptions: immediately after death, Hepatitis C or HIV in blood may be able to infect someone if there is blood-to-blood contact. The TB micro-organism in lungs may also survive for a time after death, and may come out with air that comes from lungs when a body is moved. Therefore faces of bodies should be covered before they are moved, and blood contact, as always, should be avoided.

In general, it is the survivors, not the dead, who will spread diseases after a disaster, if there is no clean water, good sanitation, immunisation, and infection control. After a disaster, saving the survivors must be a priority. Time, effort, and money spent on burying or burning the dead is not available to the survivors. Sprinkling lime on or around bodies is not recommended. Lime can blind or injure the survivors handling it, and it does not prevent infection.

Identifying the dead is also important. Not knowing whether someone is alive or dead is much more difficult for people who loved them than knowing for certain. If bodies are buried together or burned, it may be impossible to identify them later. The best way to deal with the bodies will depend on local circumstances. Normally bodies are collected in one place away from the survivors. For bodies which cannot immediately be identified, notes should be kept, including clothing and items they had with them that may help with identification.

Diarrhoeal diseases can spread quickly after community disasters which destroy infrastructure, especially if sanitation and disposal of human and animal waste is not quickly arranged. If toilets are not usable, it may be possible to use plastic bags, arranged on a frame or bucket. Dispose of them where they will not contaminate water. If there is dry land and many people, the quickest way to deal with sanitation is to mark off an area that people can use for their waste. It is important that it be away from any water, and that rainwater from the field will not carry waste anywhere that people will come in contact with it. As soon as possible, trenches should be dug so that waste can be covered up more easily and effectively. Pieces of wood can be placed across the trench, so people can use them like a latrine. Start with the wood placed at one end of the trench. Earth dug out from the trench can be used to cover the waste, to prevent flies landing on it and contaminating food with micro-organisms.

It may be hard to keep clean after an emergency. Where there is no soap available, ash can be used to clean hands. Sunlight also kills many micro-organisms. Mats, clothing, blankets, and dishes can be set out in the sun to reduce the number of micro-organisms on them.

- 1. Review the three main sources of water contamination that you learned in Chapter 9.
- 2. How can these be prevented from contaminating the water in the disasters that may happen in your community? What materials would you need? Explain the potential problems and solutions in your plan.

### **12.4 Gender in Disasters**

Disasters are so varied that it is impossible to predict all the gender issues for each disaster. When people stay in camps after some disasters, there can be a danger of sexual harassment and rape. Planning of temporary housing needs to include safety from harassment. In some camp situations, women have been attacked while getting water, gathering wood, or going to latrines at night. Where there is corruption in aid distribution, some of the corruption may take the form of harassing young people or demanding sex. The aid distribution process should be public and transparent. Human traffickers have been known to exploit the opportunity to sell young women into marriage, sex work, or labour exploitation, and young men into the military, sex work, and labour exploitation. Thinking about the special issues for each gender from the beginning of disaster response can prevent further harm.

### 12.5 Conclusion

There are many kinds of disasters and many kinds of communities, so the steps taken to prepare for and respond to disaster will be quite different. However, the basic concerns for health protection are the same as in normal times. This chapter looked more closely at clean water and good sanitation in a community disaster. Mental health, child health, treatment for diseases, and food safety also are issues that you can think about in a post-disaster situation, and find special concerns and ways of helping. The more community members have thought about and discussed the possible dangers to the community, the less injury and loss of life there will be if a disaster does happen.

### Case Study: Tsunami Disaster

On December 26, 2004, the Indian Ocean earthquake off the coast of Sumatra caused a tsunami that killed over 200,000 people. It was recorded as the deadliest tsunami in known history. Five to ten tsunamis happen in an average year, and usually only one of them causes much damage. Only once every 10 years on average does a tsunami cause major damage in more than one country. About 85 per cent of tsunamis are in the Pacific Ocean, because it is the largest ocean, and because it has a lot of earthquakes. However, they can happen in any ocean. Because the last major tsunami in the Indian Ocean had been more than 100 years earlier, people living near the Indian Ocean coast were not prepared for a tsunami to happen. Below is a story about a family's experience in Sri Lanka.

### "Miss Marikkar" tells about the tsunami

It is the morning of Dec 26, 2004, 9am. I could hear the sound of voices, which sounded like fighting. Quickly I realised that people were screaming in fear. I looked out of my window and saw the ocean crawling towards my family's home. The ocean was like fingers taking the land. Nothing was stopping it. It was scary. Houses were filling with water, people were running, screaming, trying to get away.

My brother and I grabbed our father who is old and unable to walk. We carried him up the way a bit to my auntie's house and try to put him on the roof. There were over 30 of us there. We saw the neighbour's house collapse. We knew that the wave would come again. We decided to climb down off the roof, and run towards the jungle. After we crossed a bridge we saw the next wave destroy the bridge. A third wave would come, but we did not turn and look, we just ran to safety into the jungle.

When we return to our village, all was destroyed. The sea has taken everything but a few bricks. Our family was relocated to the refugee camp where we are living in a tent. It will take years to restore what the ocean has swept away.

### "Mr. Marikkar" tells about the tsunami

As I was sitting in my chair, I heard screams of terror and absolute fright. All of a sudden, my two children came running into the house. I could tell by the looks on their faces that something horrible was happening. They picked me up, because I am unable to walk.

As we stepped out of our house, I could see a flood of people fleeing for their lives. My son and daughter began running, with me in their arms, towards my sister's house. As they were trying to put me on the roof for safety I hit my head. My head was spinning and blood was spilling down my face. My son picked me up and began to run to the doctor. As we were running, I could see the water devouring everything it touched. Houses were crumbling; trees were snapping in two, the once-calm sea was now swallowing people alive. I feared we would be next.

We could not get to the doctor. It was impossible to move. People were everywhere, running as fast as they could for higher ground. We had no choice but to stop, we could not go any further. We found safe shelter in one of few buildings left standing in this area after the tsunami.

A couple of days later, we found out that everyone who was near the doctor's office had been killed by the waves. If we had not stopped, we would have been amongst the thousands of people that the tsunami took that day.

### "Arafath Marikkar" tells about the tsunami

I was working in the garden when I heard people shouting and screaming. I looked up to see that the sea, which is usually across the road from our house, was coming toward our house, and it was full of trees, doors, furniture, everything. I ran inside to save my father, who cannot walk. We carried him to my aunt's house, which is a little higher than ours. But there were so many people trying to climb on the roof so quickly, that we could not carry him safely and his head was cut, and bleeding.

I left my sister there, and tried to carry my father to the doctor's clinic with the help of a friend, but we could not make it. We went to a brick building on a hill and waited there for the water to go back down. I used my shirt to stop the bleeding on my father's head. We had no bandages, no antiseptic, no painkillers, nothing. My shirt was not very clean, so I was worried.

We heard there were more waves, and wondered about my sister. Was she safe? By night, my father's cut was treated by a medic, but it took us two days to find my sister. Now we are in a tent in a camp, lucky to be alive.

- 1. Could the tsunami have been prevented?
- 2. What damage did the Marikkar family see?
- 3. What damage could have been prevented or reduced? How?
- **4.** The Marikkar family lost their home in the tsunami, but the people survived. None of them had seen a tsunami before, so they were not prepared. However, there are also tropical storms in their area that destroy some houses, flood some areas, and knock down some trees about once every ten years. How would you recommend that they prepare for disasters?
- **5.** Imagine that there are 3000 people of all ages in a camp for tsunami survivors, and you are in contact with local business and religious groups that want to help. What are your priorities for the health of the survivors?
- **6.** The tsunami in Sri Lanka caused great damage in a narrow coastal area, but just beyond that area, the society and infrastructure were untouched. How is this different from an earthquake or war? How would these differences affect the likely problems and solutions?

### Extra reading: Three years later: Corruption and slow response

25 Dec. 2007 08:43:03

Edited from an article by Mel Gunasekera

Some 31,000 people died and one million were left homeless after the 2004 tsunami. Sri Lanka said it got 3.2 billion dollars in foreign aid pledges to rebuild the coastlines. But out of the promised money only 1.2 billion dollars was actually received, the government says.

percent of the original amount pledged – was spent down to the real victims," said Nanayakkara. by the end of November, according to Transparency While 8,865 people still remain in temporary International, an international watchdog on corruption.

It has been almost impossible to find out what more houses than needed. happened to the cash, said Rukshana Nanayakkara, While there is an excess of houses built in the island's International.

A government audit in the first year of reconstruction

found that less than 13 percent of the aid had been spent. There has been no formal examination of accounts in the two years since.

More than 350 tsunami survivors have complained to Transparency International this year. Accusations have been made against local and international aid agencies.

"There has been no proper accounts kept on the From that, only 634 million dollars – less than 20 money and we believe only a fraction of aid trickled

> shelters, official figures show that 119,092 houses had been built. In theory, that number is 20,000

Sri Lanka's deputy executive director of Transparency Sinhalese-majority south, people in the conflict-hit north and east, where more by minority Tamils and Muslims live, tsunami survivors remain in makeshift shelters.

### Extra reading: A stronger house from the same local materials

After the tsunami, an architect wondered if there was a better way to build a house with the same materials. He found that most Sri Lankans in the area built their houses out of cement blocks. The houses were a rectangle, like a box with doors and windows.

The architect and his team tested different ways to use the same materials. They found if the that same number of cement blocks were used to make four S-shaped pillars at the corners of the house, instead of flat walls, the house was stronger. When water pushed against a flat wall, it pushed the wall down. But when



coast line

water flow

ground allows water to flow under the house,

and reduces the pressure on the walls as well, making the house safer. However, most Sri Lankans were not comfortable with houses off the ground, so the team changed the design.

destroy the house.

The new design of house could resist five times the pressure of the box-design house. The house would not be strong enough for people to stay in it during a tsunami, but more people could come back to a house that would need only slight repairs. Also, if there were people on the roof, this house would be much less likely to collapse



# Part B Review

Communities are groups of people who spend time together in the same place. It is important for each person to have knowledge to protect personal and family health, but some issues are best dealt with by the community. Some health issues, like stigma, are social issues in themselves. Others, like vaccination, sanitation in public areas, access to health information and health care, and safe spaces for children are also matters that must involve the whole community.

Communities can take steps to create access to resources needed for better health, participation to use the knowledge and strength of community members. With knowledge of health issues and solutions, community members can agree on health policies for their own community, and can attempt to influence health policy at higher levels of administration as well.

Diseases happen to individual people, but epidemics happen to a community. There is much a community can do to prevent an epidemic, or to deal with one that is happening. The community can organise to improve sanitation and hygiene, which can prevent some kinds of epidemics. The community can help people with TB and HIV and other infections to get access to health care.

Everyone in a community is important, but children have a special place, because if children are not mentally, physically, and socially healthy, the community will not be healthy in the future. Children's health needs more care than adult's health, because a serious problem while they are growing might affect them for their whole lives. A loving family which protects a child from violence is important for the child's future mental and social health, and is the first protection for a child's physical health as well. Communities can provide access to safe spaces, health care, and education for children, and defend their rights. When communities treat all children equally, the next generation will be closer to equality.

Accidents, emergencies, and disasters can happen any time, anywhere. Many of the accidents in fact could have been prevented. Many road accidents can be prevented by better driving habits. Many drowning accidents can be prevented by teaching people to float instead of panic in the water, and by making water edges safer so people do not fall in. Disasters can be harder or impossible to prevent, even when a community can see them coming. In many cases, all the community can do is be prepared, and try to help as many people as possible after a disaster.

The knowledge of micro-organism infection, prevention, sanitation, and stress can be applied to a great variety of community projects which affect health. In some health matters, the community working together is more effective than individual households working separately, but the basics of health remain the same.

### **Chapter 9 Review**

1. Find five health--related projects that have taken place in your community. They might be for the whole community, or only part. Choose two of these projects and interview people who know about the projects. How much was the community involved? Were the campaigns successful? Why or why not? How could they have been improved, either in process or outcome?

### **Chapter 10 Review**

- 1. What infectious diseases are most common in your community now? What were the most common disease a generation ago? Are they different? Why or why not?
- **2.** Many communities get rid of their household, human, and animal waste by throwing them into a river or stream. Explain the advantages and disadvantages of this system. Is this an issue that should be dealt with by community participation, or by policy? Explain.
- **3.** Find out from clinic, hospital, Red Cross, or other source what accidents are most common. How could these accidents be prevented, or how could the effect of the accidents be lessened?
- **4.** As a class, brainstorm different ways to deal with the most common kinds of accidents or emergencies in your community. Then split into small groups, and work on a plan to deal with them in different ways.

### **Chapter 11 Review**

**1.** Make a mind map of all the issues that relate to children's health. Use the concepts and vocabulary from the mind map to explain how children's social and physical health are interrelated.

### **Chapter 12 Review**

1. What disasters have you experienced or read about? Use the disaster you know most about to explain how gender affected the post-disaster needs, the disaster response and health during or after the disaster. Describe the effects on access, community participation, and policy.

# Further Reading for Part B

### Chapter 10

Water supply

• http://www.lboro.ac.uk/well/resources/technical-briefs/49-choosing-an-appropriate-technology.pdf Hygiene

• http://rehydrate.org/hygiene/index.html

Latrine design

- http://www.appropedia.org/Ventilated\_Improved\_Pit\_Latrine\_(Practical\_Action\_Technical\_Brief)
- http://www.korsangkhmer.org/

### **Chapter 11**

Statistics for Myanmar

http://www.searo.who.int/LinkFiles/SDE\_trends-mmr.pdf

Statistics for Thailand

- http://www.searo.who.int/LinkFiles/SDE\_trends-tha.pdf
- http://www.factsforlifeglobal.org/04/
- http://www.factsforlifeglobal.org/09/

### **Chapter 12**

- http://www.factsforlifeglobal.org/14/messages.html
- http://www.hapinternational.org/pool/files/disaster-preparedness-program-case-study-save-the-childrenin-myanmar.pdf
- http://web.mit.edu/newsoffice/2005/saferhouse.html

# PART C: GLOBAL HEALTH

# **Chapter 13: Measuring Health in** Society

### **Objectives**

By the end of this chapter, learners will:

- 1. Understand basic data analysis
- 2. Be able to understand trends in health at a regional and national level

### Key Words

analyse	evaluate	indicate, indicator	prevalence
comparison	expectancy	mortality	rate
enrolment	fertility	per capita	ratio

### 13.1 Health indicators, Data and Statistics

When we want to look at the health of a large number of people generally, we look at **indicators**. To indicate means to show something, so health indicators are things that we can measure to help us understand the health situation. Usually the information is in the form of statistics, combining information from many people to tell us about a particular society, country, type of person, or other group.

What data would you collect to understand the present and future health of a community, country, or region?

Health-related indicators measure more than the number of people with a certain disease, the number of doctors, nurses, hospitals, how long people live, and other statistics directly related to health and health care. The length of education, average family size, and income, and equality are also important in health. Each combination of indicators provides a way to analyse part of the situation. Taken together, indicators can help us understand the life of people in a particular place or time, or people in a particular category. This allows researchers, government officials, civil society organizations and others to evaluate the basic situation. Only then can they make good policies and programmes.

Indicators are usually analysed as ratios, percentages, and rates, not as absolute numbers. (See the box on the right.) Absolute numbers tell you how many of something there is, e.g., in 2005, there were 19,922 nurses working in Myanmar, and in 2002 there were 84,683 nurses working in Thailand. But the population of Thailand is higher than Myanmar, so more nurses are expected. Knowing the number of nurses compared to the population is more interesting for analysis. • A **ratio** shows the relationship between two amounts, e.g., if there are 104 boys born for every 100 girls, the ratio of boys to girls is 104:100. The type of item on each side is different.

• A *percentage* shows the amount per hundred, so the type of item in the percentage is a part of the whole, e.g. 51% of babies are boys (104 boys out of a total of 204 babies).

A rate is the amount of something over time. The time can be a year, a lifetime or any other length of time. The time must be part of the definition of the rate, e.g. the total fertility rate is 2.0. The average number of children per woman in her life is 2.0. . . . . . . . . . . . . . . . .

Giving the data as ratios tells you that. The ratio of nurses to population in Thailand was 1:739, or one nurse working for every 739 people in the country in that year. In Myanmar, it was 1:2781. The Thai ratio in 2002 was higher than the Myanmar ratio in 2005.

Using ratios, percentages, and rates allows comparisons of the situation in different times, places, and populations. With ratios, percentages, and rates, quality of life can be compared, for example, between areas of a country, between men and women, between ethnic groups, between the wealthiest and the poorest, and between the present and the past. We can use them to see where a situation is good, so we can learn from it. We can use them to see where the situation is poor, and greater efforts are needed to improve lives. We can use them to evaluate policies and activities, to see if they have been effective.

### **13.2 Some Health-Related Indicators**

Below is a list of some indicators relevant to health. They are just a few examples out of many possible indicators. Why are they important for health? While reading about them, think about:

- Why they are important indicators of health.
- What other data you would need about a group to understand the health situation well.

**Infant and under-five mortality rates** – The number of children born alive, who die before their first birthday (infant mortality) or fifth birthday (often written <5 mortality). This rate is usually shown per 1,000 live births. The under-five mortality rate is the total deaths before the age of five, including infant deaths.

**Total fertility rate** – The average number of children born to each woman in a lifetime, measured in children per woman. Where child mortality is low, a rate of 2.2 children per women will result in an unchanging population.

**Population annual growth rate** – The percentage increase in a population in one year. A few countries have a negative growth rate. With an annual growth rate of 1 per cent, a population will double in about 70 years. With 2 per cent growth, it will double in 35 years.

**Life expectancy at birth** – The average life expectancy in a country. This number represents the average age at death for all the recorded deaths. In almost all countries, life expectancy is improving.

**Underweight** – Underweight is unusually low weight for a person's height. In children, underweight is a measure of short-term undernutrition. Underweight at birth and in in the first year of life usually means that the mother's health or nutrition was poor.

**Stunting** – Stunting is a measure that compares actual height and weight against expected height and weight. Stunting shows long-term undernutrition. When people do not eat enough, they do not grow as tall as expected, and are also thinner, in proportion.

**Maternal mortality ratio** – The number of women who die either during a pregnancy or within seven weeks of a birth. This is usually given per 100,000 births, and shows the risk for each birth. The total risk for a woman's life depends on how many children she has.

**Access to health care** – Percentage of the population living within a reasonable distance of a health facility that provides adequate service. The reasonable distance may be different from one country to another, and is usually measured in time it takes to reach health care service, rather than distance.

**Access to safe water and adequate sanitation** – Percentage of households with a direct or nearby connection to an improved water supply and to improved washing, waste, and toilet facilities. Clean water is important for health, especially for young children. Good sanitation is the most effective way to reduce diarrhoea in children.

**Adult literacy** – Percentage of persons aged 15 and over who can read and write. Literacy is measured differently in different countries, and so cannot be compared exactly. Male and female literacy is often recorded separately. Women's literacy has a greater influence on family health than male literacy.

**Primary and secondary school enrolment** – Percentage of all children who attend school. Separate numbers are often given for boys and girls. Education is important for people's ability to use new information about how to protect family health. The education of the mother has a great positive effect on the health of a family's children.

**GNP per capita** – Gross national product is the entire amount of money earned by citizens, divided by the number of citizens. It is an approximate measure of the amount of money in the economy. It does not show average earnings.

**Adult HIV prevalence** – Percentage of adult population who are carrying HIV. These are people who are most likely to infect others with HIV. Child HIV prevalence is important for planning health services. However, children are not likely to infect others with HIV, so for predicting HIV transmission, adult HIV is a better indicator.

Discuss other indicators you think should be measured to understand the health of a population. Explain to class what your group thinks should be measured and why.

Below are real data from countries around the world, including most of the indicators and others as well. Finally there are more detailed indicators from Myanmar.

### Population growth

Table 6: Annual population growth rate, per cent: 1975 - 2005

France	0.5	Armenia	0.2
United Kingdom	0.2	Sri Lanka	1.1
Singapore	2.2	Indonesia	1.7
Brunei	2.8	Gabon	2.6
Czech Republic	0.1	India	2.0
Argentina	1.3	Cambodia	2.3
Cuba	0.6	Myanmar	1.6
Thailand	1.3	Timor-Leste	1.5
China	1.2	Niger	3.3

1. In which country is the population increasing most quickly?

2. In which country is population growth slowest?

### Population under 15 years of age

Table 7: Per cent of population under age 15 in 2005

		<u> </u>		
France	18	(21) <b>A</b>	rmenia	21
United Kingdom	18	(21) Si	ri Lanka	24
Singapore	20	(21) In	ndonesia	28
Brunei	30	(22) <b>G</b>	abon	36
Czech Republic	15	(21) In	ndia	33
Argentina	26	Ca	ambodia	38
Cuba	19	N	/lyanmar	27
Thailand	22	Ti	imor-Leste	45
China	22	Ν	liger	48

- 1. In which country is nearly half the population children?
- 2. Which country has the smallest percentage of children?
- 3. When you compare this table with the population growth table, what do you notice?
- **4.** Look at table 4 to see life expectancy, and calculate the percentage of life 15 years represents. (Write this number for the different countries in the table of life expectancy from 1970-75. The first five have been done for you. Fifteen years is 21 per cent of 72 years.)
- 5. Why is the percentage of the population under 15 different from this number?
- 6. What would it mean if they were the same?
- **7.** For which countries is the percentage of life span and this percentage of population most similar? Why?
- **8.** Bonus question: What would you expect from China? Why is China different from other countries?

### **Under-five mortality**

### Table 8: <5 mortality per 1000 births, 1970 and 2005

Country	1970	2005	Country	1970	2005
France	24	5	Armenia		29
United Kingdom	23	6	Sri Lanka	100	14
Singapore	27	3	Indonesia	172	36
Brunei	78	9	Gabon		91
Czech Republic	24	4	India	202	74
Argentina	71	18	Cambodia		94
Cuba	43	7	Myanmar	179	105
Thailand	102	21	Timor-Leste		61
China	120	27	Niger	330	185

### Under-five mortality – economic comparison

### Table 9: <5 mortality per 1000 live births - poorest and wealthiest 20 per cent of population</td>

Country	poorest 20 %	wealthiest 20 %
Armenia	52	23 44%
Indonesia	109	29
Gabon	93	55
India	141	45
Cambodia	127	43
Niger	206	157

1. Which seven countries had the highest <5 mortality rate in 1970? Circle them. Do they also have the highest rates in 2005?

- 2. What reasons can you think of for differences in rates between countries?
- 3. All rates are lower in 2005; can you think of reasons for this?
- 4. Bonus question: Why are no statistics available for some countries in 1970?
- 5. How different are the under-five mortality rates for the poorest and wealthiest families? Write the percentage of difference in the 'wealthiest' column. Round to the nearest whole percentage. The first one has been done for you: In Armenia mortality rate of the wealthiest 20 per cent of the population is 44 per cent of the mortality rate of the poorest 20 per cent. In which countries does wealth give the greatest health advantage in under-five mortality?
- **6.** Compare these rates to the under-five mortality rate for each country as a whole in 2007. Are the proportions the same? Can you think of reasons for what you see?
- **7.** Discussion: The lowest infant mortality rate in the world is 2/1000 live births. This is the rate in Iceland. Researchers think it may not be possible to lower the rate any more than that. Can you think of why? Is it possible for every baby born to survive?

To calculate life expectancy, the ages of all deaths are For example, look at a simple population: If out of 100 people, 50 died at age 80, and 50 died at age 20, the average life expectancy would be 50:

x 80 = 4000, 50 x 20 = 1000 Add the results together: 4000 + 1000 = 5000 Then divide for the average: 5000/100 = 50 years average life expectancy What if it were 30 at age 80, 40 at age 50, and 30 at age 20? x 80 = 2400 x 50 = 2000

x 20 = 600 Add the results: 2400 + 2000 + 600 = 5000 Divide by the 100 people: 5000/100 = 50 years average life expectancy Now calculate in the same way for this population:

If 20 died at age 80, 10 at age 70, 10 at age 60, 10 at age 50, 10 at age 40, 10 at age 30, 10 at age 20, and 20 at age 5, what would the result be?

### Life Expectancy

Table 10. Elle expectancy at birth for those born in 1970 75				
Country	Years	Country	Years	
France	72	Armenia	71	
United Kingdom	72	Sri Lanka	65	
Singapore	70	Indonesia	49	
Brunei	68	Gabon	49	
Czech Republic	70	India	51	
Argentina	67	Cambodia	40	
Cuba	71	Myanmar	53	
Thailand	60	Timor-Leste	40	
China	63	Niger	41	

### Table 10: Life expectancy at birth for those born in 1970-75

### Table 11: Life expectancy at birth for those born in 2005, female and male

Country	Total	female	male	Country	Total	female	male
France	80	84	77	Armenia	71	75	68
United Kingdom	79	81	77	Sri Lanka	72	76	68
Singapore	79	81	78	Indonesia	70	72	68
Brunei	77	79	75	Gabon	56	57	56
Czech Republic	76	79	73	India	63	65	62
Argentina	75	79	71	Cambodia	57	61	55
Cuba	78	80	76	Myanmar	61	64	58
Thailand	70	75	65	Timor-Leste	60	61	59
China	72	74	71	Niger	56	55	57

1. Has life expectancy improved everywhere?

2. Where did it change the most and the least (in number of years)?

3. Can you think of reasons why life expectancy might change or not?

4. What reasons can you think of to explain different life expectancy in different countries?

5. Calculate life expectancy, and show the steps. Round to the nearest year.

a. 800 people live to be 70, and 200 die at age 2.

**b.** 950 live to be 70, and only 50 children die at the age of 2.

6. What can you say about the life expectancy of men and women?

### Assistance with birth

Not all difficult births can be predicted, so one way to reduce maternal mortality is to have births attended by a skilled health worker. A higher percentage of births attended by skilled health personnel should result in lower maternal mortality. Here are maternal health data for six of the countries we have been looking at.

per cent of population, maternal mortality ratio (MMR), and lifetime risk of maternal death
Table 12: Percentage of births attended by skilled health personnel: total, poorest and richest 20

Country	Poorest 20 %	Wealthiest 20%	Total	MMR	Lifetime risk
Armenia	93	100	98	29	1:1900
Indonesia	44	96	73	240	1:190
Gabon	67	97	87	260	1:110
India	19	89	57	230	1:140
Cambodia	21	90	44	290	1:110
Niger	21	71	33	820	1:16

- 1. Which countries have a general level of attended births that is closer to the level of the wealthy than the poor? What does it mean?
- **2.** The MMR is the number of deaths of mothers per 100,000 pregnancies. How does this relate to the lifetime risk per woman? How can the lifetime risk be the same in countries where the MMR is different?

Answer the questions about the table below on following page:

- **1.** Compare Myanmar data and data of other countries. What do you notice? How do these statistics compare with your obervations in your community?
- **2.** The most widely used indicators are those collected by governments about their population. Note some advantages and disadvantages to governments collecting statistics which could affect their accuracy.

### **Optional activity:**

The objectives of the Myanmar Ministry of Heath are:

- To enable every citizen to attain full life expectancy and enjoy longevity of life.
- To ensure that every citizen is free from diseases.

The objectives of the Thai Ministry of Public Health's Tenth Health Development Plan are to establish a sufficiency health system for social wellness by creating health culture, a medical and health service system satisfactory to clients, happy healthcare providers, and an immunisation system for minimizing the impact of illness and health threats.

- 1. Is it possible to achieve these objectives? Why or why not?
- **2.** In a small group, imagine you are responsible for health in an area you are familiar with. What would you set as your objectives?

IndicatorAmountYearPopulation48,000,0002001Life expectancy at birth (years)51197058199061200064200920012001Under-five mortality (per 1000 births)2521960179137013701370134198010019901102000712009Infant mortality (per 1000 births)69196012219709419809419801990152009542009Infants with low birthweight (%)152009Infants with low birthweight (%)152009Infants with low birthweight (% in Myanmar)342003Children <5 who are underweight (% in Myanmar)322003Children <5 who are stunted (% in Myanmar)552003Children <5 who are stunted (% in Myanmar)552003Children <5 with anaemia (% Myanmar in Thailand)692003Children <5 with anaemia (% Myanmar)552008Rural7520082008Rural752008Rural682000Population with access to adequate sanitation (%)862000Male6820002008Rural6920082008Rural6920082008Rural6920082008Rural6920082008Rural69200	Table 13: Health-related indicators for Myanmar		
Population48,000,0002001Life expectancy at birth (years)5119705119701970642009Under-five mortality (per 1000 births)2521960134198013019901341980130199013019901102000110200911020091112009196019601221970197019801980198019911990198019927820001993152009Infants with low birthweight (%)152009Infants with low birthweight (%) in Myanmar)152009Infants excl. breastfed for 6 months (% in Myanmar)322003Children <5 who are underweight (% in Myanmar)552003Children <5 who are underweight (% in Myanmar)552003Children <5 with anaemia (% Myanmar)552003Children <5 with anaemia (% Myanmar)552003Children <5 with anaemia (% Myanmar)552003Myanmar in Thailand)722008Rural692008Population with access to adequate sanitation (%)792008Rural7920082008Rural682000Male682000Male692000Male692000Male692000Anae692000Male<	Indicator	Amount	Year
Life expectancy at birth (years) 51 1970 58 1990 64 2009 Under-five mortality (per 1000 births) 252 1960 179 179 1970 134 1980 130 1990 110 2000 71 2009 116ant mortality (per 1000 births) 169 1900 110 2000 116ant mortality (per 1000 births) 169 1920 10 10 10 10 10 10 10 10 10 10 10 10 10	Population	48,000,000	2001
5819906120000rder-five mortality (per 1000 births)25219601791970134198013019901301990131020007120091691691960196012219709419801901522009196019119201970197019219701920197019316919601920193192019201970194198019119901941980192019801952009196020031961520091960196152009197152009197152009197152003(% Myanmar in Thailand)62003Children <5 who are underweight (% in Myanmar)322003(% Myanmar in Thailand)62003Children <5 with anaemia (% Myanmar)552008(% Myanmar in Thailand)732008Wural692008Nural692008Nural692008Nural682008Nural682008Nural682008Nural682008Nural682008Nural682008Nural682000Nural682000<	Life expectancy at birth (years)	51	1970
612000642009Under-five mortality (per 1000 births)2521960179134198013019901001102000712009Infant mortality (per 1000 births)16919601221970941980199019219701941910200919901990192197094198019319907820001942009199015200919520095420091952009152009196152009101963420032003Children <5 who are underweight (% in Myanmar)322003Children <5 who are stunted (% in Myanmar)62003Children <5 who are stunted (% in Myanmar)722008(% Myanmar in Thailand)722008(% Myanmar in Thailand)722008Population with access to improved water source (%)12008Population with access to adequate sanitation (%)792008Primary school attendance (%)120082008Primary school attendance (%)120092008Primary school attendance (%)120002008Primary school attendance (%)120002008Primary school attendance (%)120092008Primary school attendance (%)120092008 <t< th=""><th></th><th>58</th><th>1990</th></t<>		58	1990
Inder-five mortality (per 1000 births)642009Under-five mortality (per 1000 births)179197013413801301990130199011020007120091102009Infant mortality (per 1000 births)16919601221970941980911990782000782009542009Infants with low birthweight (%)152009Infants excl. breastfed for 6 months (% in Myanmar)322003Children <5 who are underweight (% in Myanmar)322003Children <5 who are stunted (% in Myanmar)412009(% Myanmar in Thailand)62003Children <5 who are stunted (% in Myanmar)552003Children <5 with anaemia (% Myanmar)722008Wyanmar in Thailand)692003Children <5 with anaemia (% Myanmar)722008Population with access to improved water source (%)Urban752008Population with access to adequate sanitation (%)7920082008Population with access to adequate sanitation (%)7920082008Primary school attendance (%)Urban682000Male68200020002000Adult literacy (%)Total852000Adult literacy (%)Total852000Adult literacy (%)Total852000		61	2000
Under-five mortality (per 1000 births)252196017919701341980134198013019901102000712009Infant mortality (per 1000 births)16919601221970941980911990782000782009782009Infants with low birthweight (%)152009Infants excl. breastfed for 6 months (% in Myanmar)152009(% Myanmar in Thailand)342003Children <5 who are stunted (% in Myanmar)412009(% Myanmar in Thailand)62003Children <5 who are stunted (% in Myanmar)412009(% Myanmar in Thailand)722003Children <5 with anaemia (% Myanmar)52008Rural6920082008Rural692008Rural692008Population with access to improved water source (%)Urban86Rural792008Rural792008Primary school attendance (%)Urban682000Primary school attendance (%)Urban682000Aduit literacy (%)Urban682000Aduit literacy (%)1520091000Hole6920002000Aduit literacy (%)100010001000Hole8520001000Hole8520001000Hole </th <th></th> <th>64</th> <th>2009</th>		64	2009
1791970134198013019901102000712009Infant mortality (per 1000 births)16919601221970941980911990782000169152009Infants with low birthweight (%)152009Infants excl. breastfed for 6 months (% in Myanmar)342003Children <5 who are underweight (% in Myanmar)322003(% Myanmar in Thailand)342003Children <5 who are stunted (% in Myanmar)552009(% Myanmar in Thailand)462003Children <5 with anaemia (% Myanmar)552003(% Myanmar in Thailand)722003(% Myanmar in Thailand)722003(% Myanmar in Thailand)722003(% Myanmar in Thailand)732008(% Myanmar in Thailand)722003(% Myanmar in Thailand)722003(% Myanmar in Thailand)722008(% Myanmar in Thailand)722008(% Myanmar in Thailand)732008(% Myanmar in Thailand)722008(% Myanmar in Thailand)722008(% Myanmar in Thailand)732008(% Myanmar in Thailand)722008(% Myanmar in Thailand)722008(% Myanmar in Thailand)722008(% Myanmar in Thailand)722008(% Myanmar in Thai	Under-five mortality (per 1000 births)	252	1960
13419801301990110200071200916919601221970941980911990782009Infants with low birthweight (%)15200954152009(% Myanmar in Thailand)342003(% Myanmar in Thailand)62003Children <5 who are underweight (% in Myanmar)322003(% Myanmar in Thailand)62003Children <5 who are stunted (% in Myanmar)5520032003Children <5 who are stunted (% in Myanmar)5520032003Children <5 who are stunted (% Myanmar in Thailand)7220032003Population with access to improved water source (%)UrbanTotal712008Rural692008Population with access to adequate sanitation (%)2008Primary school attendance (%)UrbanTotal682000Male682000Male682000Adult literacy (%)UrbanFotal682000Adult literacy (%)2000Hole692000		179	1970
13019901102000712009Infant mortality (per 1000 births)16919601221970941980911990782009Infants with low birthweight (%)152009Infants excl. breastfed for 6 months (% in Myanmar)152009(% Myanmar in Thailand)342003Children <5 who are underweight (% in Myanmar)322003(% Myanmar in Thailand)62003Children <5 who are stunted (% in Myanmar)552003(% Myanmar in Thailand)402003Children <5 who are stunted (% in Myanmar)552003(% Myanmar in Thailand)692003Population with access to adequate sanitation (%)712008Urban752008Rural692008Population with access to adequate sanitation (%)2008Primary school attendance (%)792008Primary school attendance (%)792008Aural682000Male682000Male682000Aural692000Aural682000Aural682000Aural682000Aural682000Aural682000Aural682000Aural682000Aural682000Aural682000Aural682000 <th></th> <th>134</th> <th>1980</th>		134	1980
Infant mortality (per 1000 births)1102000Infant mortality (per 1000 births)1691960169944198094198091911990782000782009542009Infants with low birthweight (%)152009Infants excl. breastfed for 6 months (% in Myanmar)342003Children <5 who are underweight (% in Myanmar)322003(% Myanmar in Thailand)342003Children <5 who are stunted (% in Myanmar)552003(% Myanmar in Thailand)462003Children <5 who are stunted (% in Myanmar)552003(% Myanmar in Thailand)462003Children <5 who are stunted (% in Myanmar)552003(% Myanmar in Thailand)712008Wandamar in Thailand)752008Rural692008Population with access to adequate sanitation (%)2008Population with access to adequate sanitation (%)2008Primary school attendance (%)792008Primary school attendance (%)502000Adult literacy (%)552000Adult literacy (%)562000Male682000Adult literacy (%)502000Male682000Male682000Adult literacy (%)502000		130	1990
Infant mortality (per 1000 births)712009Infant mortality (per 1000 births)16919601221970941980911990782000542009542009Infants with low birthweight (%)152009Infants excl. breastfed for 6 months (% in Myanmar)342003(% Myanmar in Thailand)62003Children <5 who are underweight (% in Myanmar)322003(% Myanmar in Thailand)62003Children <5 who are stunted (% in Myanmar)412009(% Myanmar in Thailand)722003Children <5 with anaemia (% Myanmar)722003(% Myanmar in Thailand)722003Population with access to improved water source (%)Urban75Total712008Rural792008Population with access to adequate sanitation (%)2003Portmary school attendance (%)Urban68QuotoAdal2003Primary school attendance (%)Urban69Adult literacy (%)Urban69Adult literacy (%)Urban85Adult literacy (%)2000		110	2000
Infant mortality (per 1000 births)         169         1960           122         1970           94         1980           91         1990           78         2000           54         2009           Infants with low birthweight (%)         15         2009           (% Myanmar in Thailand)         34         2003           Children <5 who are underweight (% in Myanmar)         32         2003           (% Myanmar in Thailand)         6         2003           Children <5 who are stunted (% in Myanmar)         55         2003           (% Myanmar in Thailand)         72         2003           Children <5 with anaemia (% Myanmar)         55         2003           Children <5 with anaemia (% Myanmar)         55         2003           (% Myanmar in Thailand)         72         2003           Population with access to improved water source (%)         Urban         75         2008           Population with access to adequate sanitation (%)         Urban         86         2008           Population with access to adequate sanitation (%)         Urban         86         2008           Rural         79         2008         2008           Primary school attendance (%)		71	2009
122       1970         94       1980         91       1990         78       2000         78       2009         Infants with low birthweight (%)       15       2009         Infants excl. breastfed for 6 months (% in Myanmar)       34       2003         Children <5 who are underweight (% in Myanmar)       32       2003         (% Myanmar in Thailand)       6       2003         Children <5 who are stunted (% in Myanmar)       6       2003         Children <5 who are stunted (% in Myanmar)       65       2003         Children <5 who are stunted (% in Myanmar)       65       2003         Children <5 who are stunted (% in Myanmar)       55       2003         Children <5 with anaemia (% Myanmar)       55       2003         Children <5 with anaemia (% Myanmar)       72       2003         Population with access to improved water source (%)       Urban       75       2008         Rural       69       2008       2008       2008         Population with access to adequate sanitation (%)       Urban       86       2008         Rural       79       2008       2008       2008         Male       68       2000       2008       2000 <th>Infant mortality (per 1000 births)</th> <th>169</th> <th>1960</th>	Infant mortality (per 1000 births)	169	1960
94       1980         91       1990         78       2000         78       2009         11fants with low birthweight (%)       15       2009         Infants excl. breastfed for 6 months (% in Myanmar)       15       2003         (% Myanmar in Thailand)       34       2003         Children <5 who are underweight (% in Myanmar)       32       2003         (% Myanmar in Thailand)       6       2003         Children <5 who are stunted (% in Myanmar)       41       2009         (% Myanmar in Thailand)       46       2003         Children <5 with anaemia (% Myanmar)       55       2003         (% Myanmar in Thailand)       72       2008         (% Myanmar in Thailand)       72       2008         (% Myanmar in Thailand)       69       2008         Population with access to improved water source (%)       Urban       75       2008         Rural       69       2008       2008       2008         Population with access to adequate sanitation (%)       2008       2008       2008         Rural       79       2008       2008       2008       2008       2000       2008       2000       2008       2000       2008		122	1970
91       1990         78       2000         54       2009         Infants with low birthweight (%)       15       2009         Infants excl. breastfed for 6 months (% in Myanmar)       15       2009         (% Myanmar in Thailand)       34       2003         Children <5 who are underweight (% in Myanmar)       32       2003         (% Myanmar in Thailand)       6       2003         Children <5 who are stunted (% in Myanmar)       41       2009         (% Myanmar in Thailand)       46       2003         Children <5 who are stunted (% in Myanmar)       55       2003         (% Myanmar in Thailand)       72       2003         Children <5 with anaemia (% Myanmar)       55       2003         (% Myanmar in Thailand)       72       2003         Children <5 with anaemia (% Myanmar)       73       2008         Waran       75       2008         Rural       69       2008         Population with access to adequate sanitation (%)       2008         Urban       81       2008         Rural       79       2008         Qui ban       68       2000         Male       68       2000		94	1980
78         2000           54         2009           Infants with low birthweight (%)         15         2009           Infants excl. breastfed for 6 months (% in Myanmar)         15         2003           (% Myanmar in Thailand)         34         2003           Children <5 who are underweight (% in Myanmar)         32         2003           (% Myanmar in Thailand)         6         2003           Children <5 who are stunted (% in Myanmar)         41         2009           (% Myanmar in Thailand)         46         2003           Children <5 with anaemia (% Myanmar)         55         2003           (% Myanmar in Thailand)         72         2003           Population with access to improved water source (%)         Urban         75         2008           Rural         69         2008         2008           Population with access to adequate sanitation (%)         Urban         79         2008           Rural         79         2008         2000         2000           Primary school attendance (%)         Urban         68         2000         2000           Male         68         2000         2000         2000         2000         2000         2000         2000         2000<		91	1990
Infants with low birthweight (%)         15         2009           Infants excl. breastfed for 6 months (% in Myanmar)         15         2009           (% Myanmar in Thailand)         34         2003           Children <5 who are underweight (% in Myanmar)         32         2003           (% Myanmar in Thailand)         6         2003           (% Myanmar)         11         2009           (% Myanmar)         11         2003           Children <5 with anaemia (% Myanmar)         12         2003           (% Myanmar in Thailand)         72         2003           Population with access to improved water source (%)         Urban         75         2008           Rural         69         2008         2008           Population with access to adequate sanitation (%)         2008         2008           Rural         79         2008         2008           Primary school attendance (%)         2000         2000         2000		78	2000
Infants with low birthweight (%)         15         2009           Infants excl. breastfed for 6 months (% in Myanmar)         15         2009           (% Myanmar in Thailand)         34         2003           Children <5 who are underweight (% in Myanmar)         32         2003           (% Myanmar in Thailand)         6         2003           Children <5 who are stunted (% in Myanmar)         41         2009           (% Myanmar in Thailand)         46         2003           Children <5 with anaemia (% Myanmar)         55         2003           Children <5 with anaemia (% Myanmar in Thailand)         72         2003           Children <5 with anaemia (% Myanmar in Thailand)         72         2003           Children <5 with anaemia (% Myanmar)         55         2003           (% Myanmar in Thailand)         72         2008           Population with access to improved water source (%)         Urban         71         2008           Rural         69         2008         2008           Population with access to adequate sanitation (%)         Urban         86         2008           Rural         79         2008         2000         2000           Male         68         2000         69         2000         2		54	2009
Infants excl. breastfed for 6 months (% in Myanmar)         15         2009           (% Myanmar in Thailand)         34         2003           Children <5 who are underweight (% in Myanmar)         32         2003           (% Myanmar in Thailand)         6         2003           Children <5 who are stunted (% in Myanmar)         41         2009           (% Myanmar in Thailand)         46         2003           Children <5 with anaemia (% Myanmar)         55         2003           Children <5 with anaemia (% Myanmar)         55         2003           (% Myanmar in Thailand)         72         2008           Population with access to improved water source (%)         Urban         71         2008           Rural         69         2008         2008           Population with access to adequate sanitation (%)         Urban         86         2008           Rural         79         2008         2008           Primary school attendance (%)         Urban         68         2000           Male         68         2000         2000           Adult literacy (%)         Urban         69         2000	Infants with low birthweight (%)	15	2009
(% Myanmar in Thailand)         34         2003           Children <5 who are underweight (% in Myanmar)         32         2003           (% Myanmar in Thailand)         6         2003           Children <5 who are stunted (% in Myanmar)         41         2009           (% Myanmar in Thailand)         46         2003           Children <5 with anaemia (% Myanmar)         55         2003           Children <5 with anaemia (% Myanmar)         55         2003           Children <5 with anaemia (% Myanmar)         72         2003           Population with access to improved water source (%)         Urban         71         2008           Population with access to adequate sanitation (%)         Urban         75         2008           Population with access to adequate sanitation (%)         Urban         86         2008           Rural         79         2008         2008           Primary school attendance (%)         Urban         68         2000           Male         68         2000         2000           Adult literacy (%)         Urban         85         2000	Infants excl. breastfed for 6 months (% in Myanmar)	15	2009
Children <5 who are underweight (% in Myanmar)       32       2003         (% Myanmar in Thailand)       6       2003         Children <5 who are stunted (% in Myanmar)       41       2009         (% Myanmar in Thailand)       46       2003         Children <5 with anaemia (% Myanmar)       55       2003         Children <5 with anaemia (% Myanmar)       55       2003         (% Myanmar in Thailand)       72       2003         Population with access to improved water source (%)       Total       71       2008         Urban       75       2008       2008         Population with access to adequate sanitation (%)       Total       81       2008         Pural       86       2008       2008         Primary school attendance (%)       Total       68       2000         Male       68       2000       2000         Male       68       2000       2000         Male       69       2000       2000         Male       68       2000       2000         Male       68       2000       2000         Male       68       2000       2000         Male       69       2000       2000	(% Myanmar in Thailand)	34	2003
(% Myanmar in Thailand)       6       2003         Children <5 who are stunted (% in Myanmar)       41       2009         (% Myanmar in Thailand)       46       2003         Children <5 with anaemia (% Myanmar)       55       2003         (% Myanmar in Thailand)       72       2003         Population with access to improved water source (%)       71       2008         Urban       75       2008         Rural       69       2008         Population with access to adequate sanitation (%)       71       2008         Urban       75       2008       2008         Population with access to adequate sanitation (%)       79       2008         Primary school attendance (%)       81       2008         Primary school attendance (%)       79       2008         Male       68       2000         Male       68       2000         Male       69       2000         Male       68       2000         Male       68       2000         Male       68       2000         Male       69       2000	Children <5 who are underweight (% in Myanmar)	32	2003
Children <s (%="" are="" in="" myanmar)<="" stunted="" td="" who="">       41       2009         (% Myanmar in Thailand)       46       2003         Children <s (%="" anaemia="" myanmar)<="" td="" with="">       55       2003         (% Myanmar in Thailand)       72       2003         Population with access to improved water source (%)       71       2008         Urban       75       2008         Rural       69       2008         Population with access to adequate sanitation (%)       7       7         Total       81       2008         Rural       79       2008         Primary school attendance (%)       7       2008         Frimary school attendance (%)       7       2000         Adult literacy (%)       70       2000</s></s>	(% Nyanmar in Thailand)	6	2003
(% Myanmar in Hailand)         46         2003           Children <5 with anaemia (% Myanmar)         55         2003           (% Myanmar in Thailand)         72         2003           Population with access to improved water source (%)         71         2008           Urban         75         2008           Rural         69         2008           Population with access to adequate sanitation (%)         75         2008           Purpulation with access to adequate sanitation (%)         79         2008           Primary school attendance (%)         79         2008           Primary school attendance (%)         79         2000           Adult literacy (%)         70         2000	Children <5 who are stunted (% in Myanmar)	41	2009
Children <5 with anaemia (% Myanmar)	(% Myanmar in Thailand)	46	2003
(% Myanmar in Thailand)         72         2003           Population with access to improved water source (%)         71         2008           Urban         75         2008           Rural         69         2008           Population with access to adequate sanitation (%)         75         2008           Population with access to adequate sanitation (%)         79         2008           Population with access to adequate sanitation (%)         79         2008           Primary school attendance (%)         79         2008           Primary school attendance (%)         79         2000           Male         68         2000           Adult literacy (%)         70         2000	Children <5 with anaemia (% Myanmar)	55	2003
Total         71         2008           Urban         75         2008           Rural         69         2008           Population with access to adequate sanitation (%)         75         2008           Urban         81         2008           Urban         86         2008           Urban         86         2008           Primary school attendance (%)         79         2008           Primary school attendance (%)         79         2008           Adult literacy (%)         85         2000	(% Myanmar in Thailand)	72	2003
Iotal         71         2008           Urban         75         2008           Rural         69         2008           Population with access to adequate sanitation (%)         2008           Iteration         81         2008           Urban         86         2008           Rural         79         2008           Primary school attendance (%)         1000         2000           Male         68         2000           Female         69         2000           Adult literacy (%)         2000         2000	Population with access to improved water source (%)		
Orban         75         2008           Rural         69         2008           Population with access to adequate sanitation (%)         2008           Total         81         2008           Urban         86         2008           Rural         79         2008           Primary school attendance (%)         2008           Total         68         2000           Male         68         2000           Adult literacy (%)         2000	IOtal	71	2008
Rural692008Population with access to adequate sanitation (%)812008Total812008Urban862008Rural792008Primary school attendance (%)792000Male682000Female692000Adult literacy (%)702000	Urban	75	2008
Total         81         2008           Urban         86         2008           Rural         79         2008           Primary school attendance (%)         5         2000           Male         68         2000           Female         69         2000           Adult literacy (%)         5         2000	Rural	69	2008
Iotal         81         2008           Urban         86         2008           Rural         79         2008           Primary school attendance (%)         2000           Male         68         2000           Female         69         2000           Adult literacy (%)         70         2000	Total	• •	
Note         Note <th< th=""><th>Iurban</th><th>81</th><th>2008</th></th<>	Iurban	81	2008
Nutal792008Primary school attendance (%)70682000Male682000Female692000Adult literacy (%)2000	Bural	86	2008
Total       68       2000         Male       68       2000         Female       69       2000         Adult literacy (%)       85       2000	Ruran	79	2008
Male     68     2000       Male     68     2000       Female     69     2000       Adult literacy (%)     5     2000		<u> </u>	2000
Kale         68         2000           Female         69         2000           Adult literacy (%)         2000           Male         85         2000	Male	68	2000
Adult literacy (%) Total 85 2000	Fomale	68	2000
Total 85 2000	Adult literacy (%)	69	2000
85 2000	Total	0	2000
	Male	80 80	2000
Female 94 2000	Female	07 01	2000
Births attended by skilled health personnel	Births attended by skilled health personnel	ŏ⊥ 27	2000
Maternal mortality ratio (per 100.000)	Maternal mortality ratio (per 100.000)	37	2010
Lifetime risk of maternal death 1:180 2000	Lifetime risk of maternal death	1:180	2000

# Chapter 14: International Health Agencies

### Objectives

- **1.** Have a better understanding of the kinds of large organisations working in health in your communities and what their mandates are.
- 2. Know about the history of organisations that are making health policy.
- 3. Express your own goals for your community.

### Key Words

aspect	neglect	party
initiative	norm	

Many aspects of health are in the hands of the family and individual, including eating well, not smoking, getting exercise, and supporting friends, family, and neighbours. Others, like sanitation, clean water, vaccination, and health care are best done with the assistance of larger organisations like communities, administrations, health systems, or non-profit organisation. Many of the organisations that do excellent work in health are small organisations created by the communities they work in. There are free hospitals and clinics, volunteer medics, health visitors and many other local health organisations that you might find in your own neighbourhood. There are people who build a dig a well and let the whole community use it as their water supply. Some community members take the initiative to learn about a health issue and educate others around them about it. But there are also many large organisations dedicated to improving health by doing research, influencing policy, and funding projects. In this chapter, we will look at some of these large organisations, and what they do.

### 14.1 The United Nations

The United Nations Organisation was created after World War II to prevent wars, and to promote human rights and justice. It is an inter-governmental organisation, so it has representatives assigned by governments from every recognised country in the world, as well as observers. The United Nations system has dozens of agencies and programmes, some of which are concerned with health.

### Vorld Health Organization (WHO)

The WHO is the United Nations' specialised agency for health. It was established in 1948. The WHO's objective is the for all peoples to have the highest possible level of health. Health is defined in WHO as a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity. The WHO gives health policy recommendations based on research, develops norms and standards for health and treatment, coordinates efforts to control epidemics, and supports research and action on diseases that are important for public health. The WHO usually works with government health departments to collect and analyse data, develop policies, and support health activities.

### United Nations Children's Fund (UNICEF)

UNICEF is concerned with health issues that are most important for children, including providing vaccinations and vitamin A, improving sanitation and clean water supply, and ensuring access to treatment for childhood diseases. UNICEF also contributes to relief for children in emergencies, and promotes child nutrition through both education and assistance. Like most UN agencies, it works mainly with governments and very large organisations, but provides funding for some smaller organisations.

### United Nations Development Programme (UNDP)

The UNDP deals with health as part of its general work to help people build better lives. It coordinates, collects and publishes many indicators, including ones important for understanding the health situation. The UNDP has a special programme on HIV/AIDS which, because it affects young, working people so strongly, is also a development issue. The UNDP also promotes and coordinates reporting on the Millenium Development Goals (see Further Reading).

### The International Labour Organization (ILO)

The ILO is concerned with health as it relates to work. This includes safety from accidents, exposure to harmful chemicals and environments, and diseases caused by working conditions. The education of employers as well as workers is an important part of the ILO's health strategy. They work with government to create and enforce regulations about the health of workers. The ILO works with employers and business associations to promote healthy working conditions in their businesses. The ILO works directly with workers groups and workers as well.

### ♦ Food and Agriculture Organisation (FAO)

The FAO is involved in nutrition and food security, both important in the foundations of health. They work with many levels of food production and distribution, from farmers to governments. The FAO supports research about nutrition, agriculture and food. They share this knowledge and help put policies and practices based on it into practice. They also provide food supplies in some emergencies, and help farmers recover after disasters.

### 14.2 International Organisations

International organisations are organisations created to deal with certain international problems. Although they were not created by governments, some of them have a role defined in international law. Some of them are concerned with health.

### Slobal Fund to fight AIDS, Tuberculosis and Malaria (Global Fund)

HIV/AIDS, malaria, and tuberculosis are diseases which cause many deaths. The Global Fund was created to raise extra money just to deal with these three major diseases. Many of the other organisations which deal with health also deal with these three diseases as part of their work. However, there was a movement to give these three special attention because HIV, TB and malaria are all preventable infectious diseases which are very widespread. When the Global Fund started in 2002, the HIV epidemic was expanding, and contributing to the spread of TB. Medications for HIV were not widely available. The people who started the Global Fund thought that more money spent quickly could make a difference in the epidemics. They wanted to change policy to concentrate more on these diseases.

### International Red Cross and Red Crescent Movement

This is a humanitarian network which protects people from disaster and conflict where it can, and assists those affected to reduce the number of deaths, injuries, and the overall harm. The International Federation of Red Cross and Red Crescent Societies (IFRC) is part of the movement.

The IFRC is an organisation that links national Red Cross and Red Crescent Societies. These societies are active in almost every country in the world. The Red Cross and Red Crescent societies help communities prepare for any disaster that could affect them. The local societies have large networks of volunteers who are knowledgeable and ready to help in emergencies. They might operate ambulances in conflict areas, rescue people in floods and fires, and teach first aid to the public. The IFRC helps the national societies become stronger, and helps with international assistance when there is a disaster.

The International Committee of the Red Cross (ICRC) works as a neutral party in conflict areas. They help to protect civilians from the effects of armed conflict. This help may include relief for people who have to leave their homes because of conflict, and support for people who are injured in conflict. It also includes negotiating with authorities for better treatment and conditions for people affected by conflict. The ICRC also promotes respect for international law, which limits acts of war.

### International Organization for Migration (IOM)

This organisation started as an agency to help resettle refugees after World War II, but has expanded into dealing with humane and orderly migration, and protecting the dignity of migrants. This can involve health, especially health education. The IOM also helps host communities deal with public health needs that may come a large migrant population.

### 14.3 International Non-Governmental Organisations

There are many thousands of international non-governmental organisations (NGOs), and many of them work in the field of health. They do a great variety of health-related work. Some provide health care by opening clinics or hospitals, training medics, health assistants, or other health professionals. Some provide health education, vaccinations, help with clean water and good sanitation, or provide mosquito nets. Some develop and give new treatments for diseases. There are many, many NGOs of every different size. Most of the small ones are closely connected to the community they started in. Most of the larger ones work directly with communities, rather than going through governments.

Many of the international NGOs working in health started with a small group of people responding to a particular problem. They organised among people they knew, took action, and gradually grew. Each has encountered many problems in its growth. Although they were started with good intentions, they have all made mistakes, used theories that turned out to be wrong, and had internal disagreements. Like any organisation, health NGOs need to constantly learn and adapt. Here are very short histories of a few international health organisations that you may have encountered.

### Médecins sans Frontières (MSF)

'Médecins sans Frontières' means 'doctors without borders'. It is an NGO created by health professionals and journalists in 1971. They were concerned that the suffering of refugees from the civil war in Nigeria was worsened by the policy of international respect for the official Nigerian borders.

The organisation has grown very large since that time, but remains concerned with the right to health in conflict situations. MSF now provides health care and medical training in about 70 areas of conflict at any time. MSF also brings attention to the injustices and problems of the people they are helping where it will bring pressure for improvement. They also try to raise awareness before a humanitarian disaster happens, when it may still be prevented.

### ♦ Oxfam

Oxfam began as a response to a famine in Greece in 1942. During World War II, Greece was occupied by the enemies of the Allies. The Allies prevented anything from reaching Greece. This caused a famine, as there was not enough food inside the country. People in Oxford formed a committee called the Oxford Committee for Famine Relief to both try to convince their government to allow food to go to Greece, and to collect food to send.

Now the organisation that grew out of that committee is very large. Oxfam works in about 100 countries in the world. Their main focus is no longer only on famine relief, but preventing the causes of famine and other disasters. They provide food and medical care in emergencies, but even more provide water, sanitation, income opportunities and education to communities affected by conflict or other disasters.

### International Rescue Committee (IRC)

The International Rescue Committee was founded in the United States in 1933 to assist Europeans living under repressive governments. Their work expanded to assist refugees both in Europe, and in the countries where they resettled. Although they initially focussed on rescuing élite families, during World War II their work expanded to helping a wider range of people in need. After the war, their humanitarian work expanded further still. Health is one of their concerns, along with prevention of violence and other issues of concern to refugees.

### ♦ CARE

CARE started at the end of World War II with the idea of some Americans to bring together individuals and organisations to send food to Europe, where there was a poor food supply after the war. It has since expanded into a very large organisation working in disaster relief, health, and development in many countries of the world.

- **1.** According to the WHO, "achieving health for all people is important for the world to have peace and security." Do you agree with this statement? Why or why not?
- 2. Form small groups, and discuss your own community. Which three diseases would you give special attention to? Why?
- **3.** How many NGOs can you name that work in health? How many have you seen? Have they done anything for your community? What would you like them to do? Is there a way for you to have a voice in what they do?
- **4.** What differences do you see between intergovernmental organisations, international organisations, and NGOs?
- **5.** Find out more about a health NGO in your community. It might be a branch of a large NGO, or a small community organisation, or even just a single person who has created an organisation to accomplish some health-related goal.
- 6. If you were going to start an NGO, what issues would you address? Do they relate to health? Explain who you would join with, how you would make decisions, what you would do, and what problems could make your projects more difficult.

### **Optional reading: Millennium Development Goals**

Development around the world means that there have been improvements in many areas relating to health. However, for millions of people, particularly the poor, the situation has not improved much, if at all. In 2000, the United Nations held a Millennium Summit to make decisions on what to do about this situation. At this summit, the Millennium Declaration was accepted by the UN General Assembly. It identified eight goals that should be reached by 2015, using 1990 as a starting point:

### ♦ Goal 1 - Eradicate extreme poverty and hunger

To halve, by the year 2015, the proportion of the world's people whose income is less than one US dollar a day and the proportion of people who suffer from hunger and, by the same date, to halve the proportion of people who are unable to reach or to afford safe drinking water.

The first of the MDGs addresses issues that affect many people directly. People who do not have enough food, or who have trouble getting safe drinking water, have to deal with these issues every day. Greater income is one solution to these problems. But access to nutritious food and safe water might also need a separate solution.

### ♦ Goal 2 - Achieve universal primary education

To ensure that, by the same date, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling and that girls and boys will have equal access to all levels of education.

Primary education is the basis for literacy and numeracy, which is the foundation for further development. People with more education can make better decisions in their own lives, and can more easily learn about any subject which interests them. They can better contribute to the future of their country by well-informed voting. Health of the whole family is also improved by education, as people can collect and refer to health information easily.

### ♦ Goal 3 - Promote gender equality and empower women

To promote gender equality and the empowerment of women as effective ways to combat poverty, hunger and disease and to stimulate development that is truly sustainable.

Gender plays a key role in health for men and women in all societies. Consider the following situations:

- A teenage boy dies in an accident because of trying to live up to peers' expectations that young men should be 'bold' risk-takers.
- A woman cannot receive needed health services because cultural norms prevent her from travelling alone to a clinic.
- A married woman contracts HIV because cultural norms encourage her husband to be promiscuous while preventing her from insisting on condom use.
- A country's lung cancer mortality rate is much higher for men than for women because smoking is considered attractive in men, while it is considered as unfeminine in women.
- A woman cannot escape domestic violence because cultural norms prevent her from reporting the abuse, or divorcing her husband.
- Cultural norms place less value on girl children so that they are denied equal access to nutrition and education.

Across continents and cultures, established gender norms mean that women often have less power and fewer resources than men. Not surprisingly, this often gives men an advantage – in the economic, political, and educational arenas, but also with regard to health and health care. Many health professionals believe that gender inequalities have led to a systematic neglect of women's health.

### ♦ Goal 4 - Reduce child mortality

### Reduce under-five mortality by two-thirds of the 1990 rate by 2015.

Many of the other MDGs will work together to reduce under-five mortality. Poor families with inadequate nutrition have higher child mortality. Safe drinking water reduces diarrhoea, which is one of the three main causes of child mortality. Women with at least primary education have greater survival among their children. Countries are motivated by this MDG to seek out causes of child mortality that are not yet addressed in other MDGs.

### ♦ Goal 5 - Improve maternal health

### Reduce maternal mortality by three quarters of the 1990 rate by 2015.

Maternal mortality is the end effect of poor maternal health that can affect small children and their mothers, and through them the whole family. To reduce maternal mortality can take policy changes (such as legalising abortions), some infrastructure improvements (such as greater access to trained birth assistants), and greater knowledge (such as knowing what foods are more nutritious). Reducing maternal mortality will end up improving health for all.

### & Goal 6 - Combat HIV/AIDS, malaria and other diseases

Halt, and begin to reverse, the spread of HIV/AIDS, malaria and other major diseases by 2015.

Major diseases are the diseases that cause the most sickness and death. The other MDGs are to reduce the underlying causes of disease, or the results of disease. This one addresses diseases directly. There is a special interest in epidemic diseases, as they can expand rapidly if neglected.

### ♦ Goal 7 - Ensure environmental sustainability

Environment means both the natural environment and the physical environment where people are living. Exploitation of natural resources such as forests, land, water and fisheries have caused changes in our natural world. Many of these changes harm the people with the least power, who depend on natural resources for their livelihood.

While many poor people live a simple life using little energy, high energy consumption by rich countries creates dangerous changes in the Earth's climate. Climate change is expected to affect the poorest regions of the world most. Changes in the global climate have already affected rainfall patterns and are causing more frequent weather disasters like cyclones and tornadoes.

### & Goal 8 - Develop a global partnership for development

Create a global partnership for development, with targets for aid, trade, and debt relief.

Unfair and inadequate trade, aid and debt rules are creating and worsening global poverty. The poorest 49 countries make up 10% of the world's population but account for only 0.4% of world trade. Rich countries spend \$100 billion a year to protect their markets, often from goods from developing countries. Many developing countries owe huge amounts of money to rich countries, and must pay interest on this debt. Many of these debts are for loans that were partly wasted on corruption. Although the powerful profited from the loans, it is the whole country which has to pay the loan back. This money could be used to provide health services and meet the other MDGs. An estimated seven million children die each year from disease and malnutrition as a result of this debt crisis.

# Part C Review

As a member of a community, a nation, a country, and the world, everyone has a say in health policy. But to make good choices, it is important to understand big issues in health. The major health issues in a country may be different from those in a particular community. It is also interesting to know what the major issues in the whole world are, and think about whether these affect your community, or if they might in the future.

Sometimes it takes very large organisations to start dealing effectively with a problem. For example, when diseases are prevented or treated before they are transmitted to others, those diseases can disappear, at least from an area. Polio and leprosy are two serious diseases that were common a generation ago, but are rare now, because of a great effort to identify and treat every case. There are also very large international efforts to reverse the epidemics of malaria, TB, and HIV/AIDS.

However, those large organisations cannot do the work directly themselves. They can encourage research, apply the research to problems, influence policy, and fund projects. But in the end, the work of disease prevention, treatment, and health promotion is done in communities, by individuals. And those individuals do not need to wait for the large organisations. Anyone can start doing something for better health. Better health starts with good habits, knowledge, and community spirit. In fact, it starts with you.

### Chapter 13

### **Chapter 14**

If you were going to start an NGO, what issues would you address? Do they relate to health? Explain who you would join with, how you would make decisions, what you would do, and what problems could make your projects more difficult.

# Further Reading for Part C

### Chapter 13

Indicators by country:

- http://data.worldbank.org/country
- http://www.who.int/gho/countries/en/
- http://hdr.undp.org/en/statistics/data/
- Health data for Thailand:
- http://eng.moph.go.th/TechResearch/hsri/hsri\_web.htm
- http://www.who.int/countries/tha/en/index.html
- www.moph.go.th/ops/thp/images/stories/Report\_pics/Thai\_Report/Year\_Reports/2548\_50/Eng/A\_3\_ENG.

Health data for Myanmar:

- http://www.whomyanmar.org/EN/Section6\_168.htm
- http://www.moh.gov.mm/file/Health%20Statistics.pdf
- Indicators for Myanmar:
- http://www.tradingeconomics.com/myanmar/indicators
- http://www.unicef.org/infobycountry/myanmar\_statistics.html

Global issues:

http://www.hesperian.org/publications\_download\_ghw2.php

### Chapter 14

International organisations with health interests:

- www.un.org/issues/m-health.html
- http://www.redcross.int/en/default.asp
- http://www.myanmarredcross.org.mm/
- http://www.redcross.or.th/
- http://www.msf.org/msf/about-msf/about-msf\_home.cfm
- http://www.oxfam.org/en/about/what
- http://www.care.org/careswork/whatwedo/index.asp

# CONCLUSION

This book is only a basic introduction to health. There is much more to learn for those who are interested. With greater familiarity with the basic concepts of different kinds of health, different kinds of diseases, and different responses of individuals and society to disease, it will be easier to learn more. Health is a subject that nearly everybody has an interest in.

Many people like to discuss health topics. When you hear new information about health, you can think about it from different perspectives. You know about the ways the body works. You know about the basis of many diseases. You know about mental and social sides of health and disease, as well as physical and individual sides. You can think about new information from all these perspectives, and decide whether new information is complete and correct, or how to find out more about it.

Turn back to the beginning of the book and look at your answers for the questions about the meaning of health. Have you changed your idea of what health is? What are the most important things you have learned about health? Did anything in this book surprise you? Have you changed any of your habits since you started learning with this book? What have you done for health in your family and community?

In small groups, think about the health of your community. What are the main issues, and can they be affected? If you were a group of community leaders, what health objectives would you have for your community? What are the steps to those objectives?

### Appendix A



### Appendix B

Ringworm:	Tetanus:
<ul> <li>Spreads from person to person somewhat easily</li> <li>Lasts 3-5 days; is not sharp or intense</li> <li>Is caused by a fungus</li> <li>Found on the skin</li> <li>Has visible symptoms</li> <li>Is annoying but will not cause death</li> <li>Effective treatments are available in most places</li> <li>Anyone can get ringworm, regardless of their age</li> </ul>	<ul> <li>Caused by a bacteria</li> <li>Does not spread from person to person easily</li> <li>Found in the muscles and nerves</li> <li>Is sharp and intense; does not last very long</li> <li>Has visible symptoms</li> <li>Can cause death or paralysis if left untreated</li> <li>Effective treatments are available in most places</li> <li>Most people who die from tetanus are over 25 years old</li> </ul>
	Acne:
<ul> <li>Malaria:</li> <li>Does not spread from person to person</li> <li>Can last for many years</li> <li>Found in the liver and the blood</li> <li>Has visible symptoms</li> <li>Can cause death</li> <li>Caused by a parasite</li> <li>Effective treatments are sometimes available</li> <li>Anyone can get malaria, regardless of their age</li> </ul>	<ul> <li>Does not spread from one person to another easily</li> <li>Found on the skin</li> <li>Can last up months or years</li> <li>Is annoying but will not cause death</li> <li>Most people who have acne are young people</li> <li>Somewhat effective treatments are available in most places</li> <li>Has visible symptoms</li> <li>Caused by a bacteria</li> </ul>
Stroke:	Warts:
<ul> <li>Does not spread from person to person</li> <li>Is sharp and intense; does not last very long</li> <li>Found in the brain</li> <li>Can cause death</li> <li>Caused by environmental factors</li> <li>Most people who have a stroke are older than 25</li> <li>Only somewhat effective treatments are available in most places</li> <li>Has visible symptoms</li> </ul>	<ul> <li>Caused by a virus</li> <li>Can spread from person to person somewhat easily</li> <li>Can last many months or years</li> <li>Are annoying but not fatal</li> <li>Has visible symptoms</li> <li>Effective treatments are available in most places</li> <li>Anyone, regardless of age, can get a wart</li> <li>Found on the skin</li> </ul>
Depression:	Schizophrenia:
<ul> <li>Does not spread from person to person</li> <li>Has no visible symptoms</li> <li>Found in the mind</li> <li>Caused by a variety of environmental factors</li> <li>Does not usually cause death, but can be debilitating</li> <li>Can last months or years</li> <li>Most people who have depression are over 25</li> <li>Less effective treatments are sometimes available</li> </ul>	<ul> <li>Does not spread from person to person</li> <li>May have visible symptoms sometimes</li> <li>Found in the mind</li> <li>Caused by environmental factors</li> <li>Can last months or years</li> <li>Does not usually cause death, but can be debilitating</li> <li>Most people who get schizophrenia are over 25</li> <li>Less effective treatments are sometimes available</li> </ul>

<ul> <li>Tuberculosis (TB):</li> <li>Spreads very easily from person to person</li> <li>Has visible symptoms</li> <li>Found in the lungs</li> <li>Caused by bacteria</li> <li>Can cause death</li> <li>Effective treatments are available most places</li> <li>Treatment lasts several months</li> <li>Anyone can get TB, regardless of their age</li> </ul>	<ul> <li>Diabetes:</li> <li>Caused by environmental factors</li> <li>Has recognisable symptoms</li> <li>Found in the pancreas</li> <li>Can cause death over time</li> <li>Lasts for years</li> <li>Somewhat effective treatments help to manage the disease</li> <li>Anyone can get diabetes, regardless of their age</li> <li>Does not spread from person to person</li> </ul>
<ul> <li>Scabies:</li> <li>Caused by a parasite</li> <li>Anyone can get scabies, regardless of age</li> <li>Has recognisable symptoms</li> <li>Can spread from person to person easily</li> <li>Effective treatments are available in most places</li> <li>Is annoying</li> <li>Found on the skin</li> <li>Lasts 1-2 weeks</li> </ul>	<ul> <li>Cholera:</li> <li>Is sharp and intense for a few days</li> <li>Can be fatal</li> <li>Caused by bacteria</li> <li>Anyone can get cholera, regardless of their age</li> <li>Found in the stomach</li> <li>May not have any symptoms</li> <li>Can spread from person to person</li> <li>Effective treatments available in most places</li> </ul>
<ul> <li>Heartburn: <ul> <li>Is annoying but not fatal</li> <li>Anyone can get heartburn regardless of their age</li> <li>Caused by internal factors and environmental factors</li> <li>Cannot be spread from one person to another</li> <li>Effective treatment for symptoms available</li> <li>Has recognisable symptoms</li> <li>Found in the throat (esophagus)</li> <li>Sharp and intense and lasts for a few hours</li> </ul> </li> <li>Characteristic Card Type 1:</li> </ul>	<ul> <li>Pneumonia:</li> <li>Can range from mild to fatal</li> <li>Caused by micro-organisms</li> <li>Spreads somewhat easily between people</li> <li>Usually effects older people, but can effect anyone at any time</li> <li>Has recognisable symptoms</li> <li>Found in the lungs</li> <li>Lasts</li> <li>Effective treatments are available in most places.</li> </ul>
Acute	Somewhat Acute
Characteristic Card Type 1: Usually affects old people	Characteristic Card Type 2: Chronic

Characteristic Card Type 2:	Characteristic Card Type 2:
Usually affects young people	Usually affects people of any age
Characteristic Card Type 3:	Characteristic Card Type 3:
Infectious	Somewhat infectious
Characteristic Card Type 3:	Characteristic Card Type 4:
Non-infectious	Affects a patient mentally
Characteristic Card Type 4:	Characteristic Card Type 4:
Affects a patient somewhat mentally and somewhat physically	Affects a patient physically
Characteristic Card Type 5:	Characteristic card Type 5:
Caused by environment only	Caused by the environment and micro-organisms
Characteristic Card Type 5:	Characteristic Card Type 6:
Caused by micro-organisms only	Has symptoms that are easy to identify

Characteristic Card Type 6:	Characteristic Card Type 6:
Has symptoms that are not very easy to identify	Does not have identifiable symptoms
Characteristic Card Type 7:	Characteristic Card Type 7:
Serious - potentially fatal	Somewhat serious
Characteristic Card Type 7:	Characteristic card Type 8:
Mild – annoying but not fatal	Effective treatments usually available everywhere
Characteristic Card Type 8:	Characteristic Card Type 8:
Effective treatments sometimes available in some places	Effective treatments not available

J
dìx
ben
Ap

Table 1: Nutritional values for fruit

Fruit	Calorie	Protei	Fat	Car	Fibr	Calciu	Iro	Vit A	$\mathbf{B}_1$	$\mathbf{B}_2$	$\mathbf{B}_3$	С
Guava	33	1.2	0.4	15		17	0.8		0.5	0.0		18
Bael fruit	133	2	0.3	35	85	9.0	1.3		1.1	. ∞		c
Mango green	60	0.6	0.4	16		10	0.2	low	0.0	0.0	0.6	62
Mango ripe	62	0.6	0.3	16		10	0.3	mediu	0.0	0.0	0.6	36
Papaya green	26	μ	0.1	9		38	0.3	ı	0.0	0.0	0.3	40
Papaya ripe	45	0.5	0.1	12		24	0.7	low	0.0	0.0	0.4	73
Banana rakhine	124	0.9	0.1	30.5		19	0.5	low	0.0	0.0	1.6	10
Banana hpi	108	0.8	0.0	27		20	0.3	low	0.8	0.4		70
Banana dried	35		0			54	27.5			0.1	0.2	

Table 2: Nutritional values for carbohydrates

Carbohydrates	Calorie	Protei	Fat	Car	Fibr	Calciu	Iron	Α	$\mathbf{B}_1$	$\mathbf{B}_2$	B <sub>3</sub> C
White rice	352	7	0.5	80		14	1		0.09	0.06	1.7
Sticky rice	359	8.5	1.5	75.5		16	H	ı	0.16	0.06	2.4
Rice meedon 38	356	8.5	1	78		21	2		0.24	0.04	2.3

Black rice	380	7	3	81		11	8					
Millet	355	10	2.5	73	2	20	S	low	0.6	0.1	Τ	
Noodles	338	9.6	1.4	74		57	2.1	1	0.1	0.07	17.	0
Mamee dry	437	12.5	16	61		112	8		0.67	0.05	t	0
Potato	84	2	0.1	19		6	0.8	11	0.01	0.04	1.6	1
Potato boiled												c
Pein root	114	2.1	0.3	26		120	0.8		0.14	0.04		
Sweet potato	130	1.1	0.3	62		144	1.9	mediu	•	c		
Bread	282	6	1	57		18			0.11	0.05	0.9	
Naan bread	283	10.5	0.9	60		234	1.5		0.2	0.05	3.6	
Maize	349	6	4	72		14	ŝ	low	0.29	0.11	2.1	

# Table 3: Nutritional values for protein sources

Protein	Moistur	Calories	Protein	Fat	Carb	Fibre	Calcium	Iron	V	$\mathbf{B}_1$	$\mathbf{B}_2$	В
Fish large, lean		75	16.5	0.5			20	0.7		0.15	0.1	3.2
Fish intestines		128	11.5	8.5	-		170	13	low	0.15	0.26	1(
Shrimp, prawn		95	19	7	0.9		134		low	0.08	0.12	2.3
Large prawn		94	18	1.5	Η		58		low	0.01	0.08	
Jellyfish		68	18	2			34	0.2	low	0.1	0.04	2.2
Pork meat	65	219	17.5	16.5	0		10	2.5	I	0.8	0.16	4.7

Pork 3-layer		457	12	45	0	7	2		0.1	0.16	5.0
Beef			17			13	2.9		0.1	0.16	5
Chicken	78	66	19	2.5		12	1.5	low	0.1	0.12	6.1
Chicken liver		144	18	6.5	2	10	9.5	high	0.36	1.9	1(
Goat liver		159 1	.8.5	7	4	6	6.5	high	0.42	3.6	18.9
Beef liver		128	19	ю	5	7	8.5	high	0.32	1.7	12.8
Chicken egg		170	13	13	0.9	84	2 n	nediu	0.24	0.15	0.
Egg yolk		332	15	30	0.03	37 m		low	0.24	0.47	<u>1</u> ,
Egg white		54 1	1.5	0.1	2	7	0.5 -		0.01	0.32	1.
Imitation meat	29	275	33	3	29	261 1	0.5 -				
Jackfruit seeds		151	4.5	0.4	32.5	35	μ	low	0.18	0.05	0.0
Fried Shan tofu		258	21	20	4.5	284 1	0.5 -		0.17	0.08	0.
Broad yellow		352 2	.4.5	0.8	61	178	3.5	low	0.17	0.12	1.8
Yoghurt		60	33	4 3		149	0.2 lo	M	0.5	0.16	0.
Red lentils	10.5	340	23	1 6	5	105	7 lo	W	0.53	0.26	2.5
Sa daw pe	15	336 1	.9.3	1.3	62	99 5	.04	-	.713	0.199	
Split pea		368 1	.8.5	4	64	126	1.5	low	0.27	0.26	1.1
Butter beans		335	16	2	66	210	8.5 -		0.46	0.33	0.2
Tofu		113 1	3.5	6.5	3	136	3	•	0.06	0.03	
Pon ye gyi			13	2		41	6.4		0.05		

Peanuts			9.5	548	23.5	45.5	22		IJ	88				0.13	16.{
Roasted peanuts				557	27	48	15		4	8 2.5	low	0	.53	0.17	15.3
Sunflower seeds				490	16.5	33	38.5		6	2	'			0.07	2.2
Indian almonds				354	16.5	27	11.5		30	0 22					
Table 4: Nutrition	al values for common ve	getables													
Vegetable		Moistur	Calorie	Protei	Fa	Car	Fibr	Calciu	Iron	Vit A	$\mathbf{B}_1$	$\mathbf{B}_2$	$\mathbf{B}_3$	С	
Radish leaves			33	3.5	0.6	5.5		220	4	mediu	0.1	0.28	4.1	81	
Indian			34	1.5	0.6	7		170	ŝ	mediu	0.1	0.14	1.2	4	
Bamboo shoot			35	2.5	0.2	9		30	0.4		0.1	0.07	0.0	4	
Pea leaves			47	υ	0.5	8.5		134	9	mediu	0.2			29	
Green chilli			116	6.5	1.5	25		86	3.5	mediu	0.3	0.51	2.5	96	
Green beans			92	8	0.5	15		26	2	low	0.3	0.17	2.1	26	
Bean sprouts			28	2.5	ш	Ŋ	0.5	10	0.6	'	0.2	0.2	0.5	30	
Lettuce			19	1.5	ш	33	0.5	35	1	low	0.1	0.1	0.4	15	
Cat's tongue			48	10	0	11		S	1.13		0.1	0.14	0		
Gazun leaves			42	3	0.7	8		86	4.5	mediu	0.1	0.26	0.9	21	
Peas			104	7	ш	19	2.5	40	2	low	0.3	0.15	1.5	25	
Pumpkin shoots	PRuMVXn/>		21	3	0.4	3		37	5	low	0.0	0.13	0.9	11	
			•		]						• :		1		

low

17

74

26

0.7

~

139

**Beans boiled** 

Kauk yo nwe		5.5			274	8.5	high	0.0	0.07	20	56
Amaranth leaf	45	5.5	0.5	9	192	4	high	0.0	0.2	1.2	22
Cabbage	22	1.5	0.3	4.5	55	0.8	low	0.0	0.06	0.3	46
Carrot	37	-	0.3	8	36		high	0.0	0.05	0.7	8
Papaya leaves	75	9	20	13	335	25	high	0.0	0.08	2.1	26
Roselle leaves	44	2	0.3	11	136	1.5	high	0.0	0.05	1.8	34
Tamarind leaves	101	5.5	H	20	9	2.5	high	0.0	0.03	1.5	9
Su pote ywet	06	11.3	0	11	44	42	high				17
Gailan	28	3.5			7	4.5 }	nigh			60	

# Table 5: Nutrional values for common snack foods

Snack		Moistur	Calorie	Protei	Fat	Car	Fibr	Calciu	Iro	Vit	$\mathbf{B}_1$	$\mathbf{B}_2$	$\mathbf{B}_3$	J
poppyseed		45	231	33	2	49	12	1	1.1		ш		38	
falafel		43	297	13	19. _	17.5	54	1.5	1.1	•	0.2	27	24	
makin			318	IJ	21.	36	41	4	1.1	•	1.4	-		
Nutritious Cereal	Nutritious Cereal		209	4	2.5	42		142						8
coconut milk			393	11				462	2	ī	0.1	0.04	2.8	r
soy milk boiled			26	1.5	0.1	ю		61	H					
tea leaf salad				16				105	9		0.0	0.05		
ginger salad			362	12	29	25		60	9.5		0.1	0.07	0.4	6
			•		I		I							
peanut brittle				17	25			72	3.7		0.1			
sesame brittle			486	12.5	31	49		382	3.7		0.1	0.02		
noodle salad			122	3.5	4	18.5		33	μ	ī	0.3	0.07	4.5	