

Module 1:

EPI target diseases



GLOBAL PROGRAMME FOR VACCINES AND IMMUNIZATION

EXPANDED PROGRAMME ON IMMUNIZATION



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About this module

Six of the diseases that kill or disable children have been a part of the immunization programmes of most countries for many years. They are:

- tuberculosis;
- diphtheria;
- poliomyelitis;
- measles;
- pertussis;
- tetanus.

EPI has recently added hepatitis B and yellow fever to the list of target diseases. It is recommended that hepatitis B vaccine be integrated into national immunization programmes and that immunization against yellow fever should be performed in all countries where this disease is endemic.

Some countries include vaccines against other other diseases, for instance mumps, rubella and streptococcal pneumonia, in their immunization programmes, or may do so in the future. The decision to do so depends on the public health importance of the diseases, the availability of a safe, effective and affordable vaccine supply, and other factors. If your programme covers any additional diseases you should ask your supervisor for information.

1. Tuberculosis (TB)

1.1 What is tuberculosis?

Tuberculosis is caused by a bacterium (*Mycobacterium tuberculosis*) that is carried by almost 2 billion people. The disease killed more than 3 million people in 1995. It usually attacks the lungs, but other parts of the body, including the bones, joints and brain can also be affected.

There is a difference between tuberculosis infection and disease. People with the infection only do not feel ill and have no symptoms. The infection may last for a lifetime and the infected person may never develop the disease. Persons with the infection but not the disease cannot spread the infection to others.

People of all ages can contract tuberculosis. It spreads rapidly, particularly where people are living in crowded conditions, have poor access to care, and are malnourished.

1.2 How is tuberculosis spread?

Tuberculosis is spread through the air. When a person with the disease coughs or sneezes the germs enter the air. A person inhaling air that contains TB germs may become infected. TB can spread rapidly where people are living in crowded conditions, have difficulty in obtaining medical care, and are poorly nourished. In some areas it is possible to become infected from cattle with the disease, for instance by consuming unpasteurized milk.

The incubation period is 4-12 weeks but the infection may persist for months or years before the disease develops. A person with the disease can infect others for several weeks after he or she begins treatment. The risk of developing TB is highest in children aged under 3 years and in very old people, although anyone may be affected. Persons with TB infection who have weakened immune systems, for instance people with HIV/AIDS, are more likely to develop the disease than are those with normal immune systems.

Concern about TB has been heightened recently because some strains of the causative organism have developed resistance to drugs.

1.3 What are the signs and symptoms?

The symptoms of TB include general weakness, weight loss, fever and night sweats. In TB of the lungs (pulmonary TB) the symptoms include persistent cough, the coughing up of blood, and chest pain. However, in young children the only sign of pulmonary tuberculosis may be stunted growth or failure to

thrive. Other signs and symptoms depend on the part of the body that is affected. For instance, in TB of the bones and joints there may be swelling, pain and crippling effects in the hips, knees or spine.

1.4 What are the complications?

TB weakens the body generally, increasing the likelihood that the affected person will contract other diseases or that existing diseases will become more severe.

1.5 How is tuberculosis treated?

People with TB must complete a course of curative therapy, which usually includes taking two or more anti-tuberculosis drugs for at least six months. Unfortunately, some people fail to take the medications as prescribed or to complete their course of therapy, or they may be given ineffective treatments. This may lead to multi-drug-resistant TB, which can be spread to other people.

1.6 How is tuberculosis prevented?

The best protection available for children against tuberculosis infection is immunization with BCG vaccine. In persons who have been thus immunized it is impossible to determine whether a positive tuberculin skin test reaction is caused by the immunization or by infection with the TB bacterium. However, such individuals can be further examined to determine whether they are infected.

2. Diphtheria

2.1 What is diphtheria?

Diphtheria is caused by a germ called *Corynebacterium diphtheriae*. Major epidemics have occurred in Eastern Europe and Central Asia since the late 1980s. It tends to be a disease of the colder months and of temperate climatic zones.

The germ produces a toxin that can harm or destroy human body tissues and organs. One type of the disease affects the pharynx and other parts of the throat. Another type, commoner in the tropics, causes ulcers on the skin.

Diphtheria affects people of all ages, but mostly non-immunized children under 15 years of age.

2.2 How is diphtheria spread?

The type of diphtheria that affects the throat is spread in droplets and secretions from the nose, throat and eyes when there is close contact between infected and uninfected people. The other type is spread through contact with skin ulcers. This form of the disease is often disseminated on clothing and other articles that have been contaminated with fluid from skin ulcers.

People infected with diphtheria usually become ill within two to four days, although the symptoms may not appear until six days have elapsed. Infected individuals can usually spread the disease to others for up to four weeks, although rarely this can happen for up to six months. During outbreaks and epidemics some children may carry the germ without showing any signs or symptoms but can still spread the disease to other people.

The spread of the disease is favoured in overcrowded and poor living conditions.

2.3 What are the signs and symptoms?

When diphtheria affects the throat and tonsils, the early symptoms are sore throat, loss of appetite and slight fever. Within two to three days a bluish-white or grey membrane forms in the throat and tonsils. If there is bleeding the membrane may become greyish-green or black. It sticks to the soft palate of the throat, and bleeding may occur if attempts are made to remove it. The patient may recover at this point or may develop severe weakness and die within six to ten days. Patients with severe disease do not show high fever but may develop swelling of the neck and obstruction of the airway.

In the type of diphtheria affecting the skin, the lesions may be painful, reddened and swollen. Any chronic skin lesions may become infected with diphtheria.

2.4 What are the complications?

Abnormal heart beats may occur during the early phase of the illness or weeks later, and heart failure may result. There may be inflammation of the heart muscle and valves, leading after many years to chronic heart disease and heart failure. Death occurs in 5-10% of cases.

2.5 How is diphtheria treated?

Persons in whom diphtheria is suspected should be given diphtheria antitoxin and antibiotics such as erythromycin or penicillin, and should be isolated to avoid exposing others to the germs. Throat cultures should be obtained in order to secure correct diagnosis. Patients become non-infectious about two days after the commencement of antibiotic treatment.

2.6 How is diphtheria prevented?

The most effective way of preventing diphtheria is to maintain a high level of immunization in the community. A mother can pass protective antibodies to her baby but this protection lasts only about six months.

In most countries, diphtheria toxoid vaccine is given together with pertussis vaccine and tetanus toxoid. A combination of tetanus and diphtheria vaccine may be recommended as a booster to maintain protection every ten years.

Diphtheria is spread from person to person in airborne droplets and through close contact.

The disease can spread rapidly and result in large epidemics where immunization coverage is low.

It most often affects children under 15 years of age.

The most effective way to prevent diphtheria is to maintain a high level of immunization coverage in the community.

3. Poliomyelitis (polio)

3.1 What is polio?

Polio is caused by a virus. It is a crippling disease that can occur in adults but it is much commoner in children. WHO aims to eradicate polio by the year 2000.

3.2 How is polio spread?

The virus enters the body through the mouth when people eat food or drink water contaminated by faeces carrying it. Consequently, the disease is most likely to spread in areas of poor sanitation. The virus enters the bloodstream and may invade certain types of nerve cell, which it can damage or destroy.

It also occurs in throat secretions, and is sometimes spread in airborne droplets through close contact with persons carrying the infection who are sneezing or coughing, or through exposure to throat and nose secretions in other ways.

The disease is very easily spread. Nearly all children living in households where someone is infected themselves become infected. Persons are most likely to spread the virus seven to ten days before and seven to ten days after they first experience symptoms of the disease. Infected persons who do not have symptoms can also spread the disease.

Many people who contract polio do not become seriously ill but may spread the disease to others who may become ill.

About 1 child in every 100 infected by the polio virus develops paralysis.

3.3 What are the signs and symptoms?

People infected with the virus may not feel ill. Some may have influenza-like symptoms such as fever, loose stools, sore throat, stomach upset, headache or stomachache. Sometimes there may be pain or stiffness in the neck, back and legs.

The most serious form of the disease is paralytic polio. It begins with the milder forms but usually causes severe muscle pain as well as the other symptoms. Paralysis usually develops during the first week of illness. The use of one or both legs or arms may be lost, and breathing may be impossible without the help of a respirator. The degree of recovery varies from person to person.

In childhood polio there is initially a slight fever. Within three to five days the child develops a headache, stiff neck, and muscle pain, and the fever then increases. After a further period of one to three days the child becomes paralysed in the legs, arms, face or chest.

The incubation period ranges from 3 to 35 days. Laboratory testing of the stools or throat secretions is used to confirm cases of polio.

3.4 What are the complications?

About 1% of infected children become paralysed, and a larger percentage of these children have some permanent paralysis. Death may occur if the muscles used for breathing are paralysed and no respirator is available.

3.5 How is polio treated?

There is no treatment but the symptoms can be relieved somewhat. Sometimes the patient has to use a respirator in order for breathing to continue.

3.6 How is polio prevented?

Polio prevention involves immunization with oral polio vaccine (OPV). Antibodies from the mother provide protection to the infant for two to three months after birth. Infected people who recover can develop natural immunity that protects them against future infection.

OPV is recommended by EPI for the eradication of polio. It is cheap, easy to give, highly effective and safe. The EPI schedule comprises four doses, starting at birth and ending at 14 weeks of age.

Polio is caused by a virus and can lead to severe, possibly lifelong, paralysis.

The disease is easily spread from person to person and from hand to mouth, through eating food or drinking water that has been contaminated with faeces from an infected individual.

The recommended method of prevention in children is to immunize with oral polio vaccine (OPV).

WHO aims to eradicate polio by the year 2000.

4. Measles

4.1 What is measles?

Measles kills more children than any other of the EPI target diseases. It is caused by a virus and is highly infectious, i.e., very easily spread. It is constantly present in some populations and often occurs in epidemic proportions. In conditions of crowding and poverty where large numbers of non-immunized people are in close contact the stage is set for measles epidemics. The disease is more severe in infants and adults than in children.

Measles is one of the main causes of death among young children. Over 1 million were killed by the disease in 1995.

Infants and adults are especially likely to have severe complications resulting from measles.

4.2 How is measles spread?

Measles is spread by contact with nose and throat secretions of infected people and in airborne droplets released when an infected person sneezes or coughs. Transmission by airborne droplets can occur even two hours after an infected person has left a room or other closed area.

An infected person can infect others a few days before and for several days after he or she develops symptoms. The disease spreads easily wherever infants and children gather together.

4.3 What are the signs and symptoms?

The incubation period ranges from 7 to 18 days. The first sign of infection is a high fever lasting one to seven days. During this period there may be a runny nose, cough, red and watery eyes, and small white spots inside the cheeks. After several days a slightly raised rash develops, spreading from the face and upper neck to the body and then to the hands and feet over a period of about three days. It lasts for five to six days and fades successively from the same areas. There may also be loss of appetite and loose stools, especially in infants.

4.4 What are the complications?

Complications occur particularly in children aged under 5 years and in adults aged over 20 years. Severe diarrhoea may be a problem, especially in infants,

possibly causing dehydration. In children there may be inflammation of the middle ear, respiratory tract infections and croup.

Pneumonia is the commonest cause of death associated with measles. This is usually because the measles virus weakens the immune system. The pneumonia may be caused by the measles virus itself or by other germs. Encephalitis, a dangerous swelling of the brain, may also develop.

Children aged under 12 months, if not immunized, are the most likely to acquire measles infection. Severe measles is particularly likely in poorly nourished children, especially those not receiving sufficient vitamin A, in children living in crowded conditions, and in those with immune systems that have been weakened by AIDS or other diseases. Measles is a major cause of blindness among children in Africa.

People who recover from measles are immune for the rest of their lives, and infants born to mothers who have had measles are usually immune for six to eight months.

4.5 What is the treatment for measles?

The treatment of children suffering complications of measles can save their lives. Vitamin A administration can help to avoid the complications of eye damage and blindness. All children with severe measles, and all children in developing countries with measles, should receive vitamin A supplementation as soon as they are seen at a health facility, and a second dose should be given the next day. General nutritional support and the treatment of dehydration with oral rehydration solution may be necessary. It is very important to encourage children with measles to eat and drink.

4.6 How is measles prevented?

The prevention of measles involves immunization with measles vaccine. Children should receive one dose before the age of 1 year. In some countries, measles vaccine is combined with vaccines against the mumps and rubella viruses. Two doses of measles vaccine are recommended in some instances, as in refugee camps where there is a high probability of exposure to the disease.

Children should be immunized against measles on admission to hospital because of the danger of infection. If they are aged 6-9 months the initial dose should be followed by a second as soon as possible after the age of 9 months. Children admitted to hospital with measles should be isolated for at least four days after the skin rash appears. Malnourished children with measles should be isolated for the duration of the illness.

Some 124 million children under 5 years of age suffer vitamin A deficiency. In areas known to be deficient in vitamin A it can be given at the same time as measles vaccine or any other recommended EPI vaccine.

Measles is a highly infectious viral disease that is spread from person to person through sneezing, coughing and close personal contact.

It is the main killer of children among the EPI target diseases.

All children should receive measles vaccine before the age of 1 year.

Severe complications of measles can be avoided if proper treatment is given.

5. Pertussis

5.1 What is pertussis?

Pertussis, or whooping cough, is a disease of the respiratory tract caused by a germ called *Bordetella pertussis* which lives in the mouth, nose and throat. Many children with pertussis have coughing spells lasting four to eight weeks. The disease is common in non-immunized children everywhere. It has become increasingly so in recent years and severe epidemics have occurred in countries where immunization coverage has declined. The disease is most dangerous in children aged under 1 year.

5.2 How is pertussis spread?

Pertussis spreads very easily from person to person in droplets produced by coughing or sneezing. Most persons exposed to the germs become infected. In many countries the disease occurs in regular epidemic cycles of three to five years. The most susceptible people are the youngest non-immunized children.

The disease is most readily transmitted as from seven days after a person has been exposed to the germs until three weeks after the start of coughing. The incubation period can be up to 21 days.

Young infants are the most likely to contract pertussis and the most likely to develop bacterial pneumonia, a life-threatening complication.

There were some 40 million whooping cough infections in 1955.

5.3 What are the signs and symptoms?

There are usually three stages in the illness. Initially a child appears to have a common cold, with runny nose, watery eyes, sneezing, fever and a mild cough. The cough gradually worsens and the second stage involves numerous bursts of rapid coughing. At the end of these bursts the child takes in air with a high-pitched whoop. The child may turn blue because of a lack of oxygen during a long burst of coughing. Vomiting and exhaustion often follow the coughing attacks, which are particularly frequent at night. This stage usually lasts one to six weeks but may go on for up to ten weeks. The attacks become milder with the passage of time.

In the third stage, when recovery takes place, the coughing gradually becomes less intense and stops in two to three weeks. There is not usually a high fever during the illness.

5.4 What are the complications?

Complications are most probable in young infants. The commonest and the cause of most deaths is bacterial pneumonia. Convulsions and seizures may occur, these complications arising because of the reduced oxygen supply to the brain during coughing attacks or because of the toxins released by the pertussis germs. Less serious complications include loss of appetite, inflammation of the middle ear, and dehydration.

5.5 What is the treatment for pertussis?

Treatment with an antibiotic, usually erythromycin, may make the illness less severe. The use of antibiotics also reduces the ability of the patient to infect others because the medicaments kill germs in the nose and throat. Plenty of fluids should be given to prevent dehydration. Sometimes people in the same household as a patient are given antibiotics to reduce the probability of infection.

5.6 How is pertussis prevented?

Prevention involves immunization with pertussis vaccine, which is usually given in combination with diphtheria and tetanus vaccines. Newborns and infants are not protected against pertussis by maternal antibodies. A person infected with pertussis usually acquires lifelong immunity.

Pertussis is a bacterial infection spread from person to person by sneezing and coughing.

The disease is extremely contagious, especially where people live in crowded conditions and nutrition is poor.

Infants and very young children are the people most likely to be infected, to have serious complications, and to die from the disease.

The most effective way to prevent pertussis is to immunize all children aged under 1 year.

6. Tetanus

6.1 What is tetanus?

In tetanus or lockjaw the affected person's muscles all contract, making the body stiff. The disease is particularly common and serious in newborn babies, when it is called neonatal tetanus.

Tetanus is caused by the germ *Clostridium tetani*, which grows in dead tissue, for instance in a wound or in a baby's umbilical cord. The germ is common in the environment, often occurring in soil containing manure. The bacteria form spores that can survive in the environment for years. The toxin they produce poisons the nerves that control the muscles, and this causes stiffness.

People of all ages can catch tetanus. Neonatal tetanus kills between 500 000 and 1 million babies every year. Almost all babies who catch the disease die. It is particularly common in rural areas and tropical lowlands.

6.2 How is tetanus spread?

Tetanus is not transmitted from person to person. A person may become infected if soil or dung enters a wound or cut. This may happen, for example, if a wound is made with a dirty tool. Tetanus germs are likely to grow in deep puncture wounds caused by dirty nails, needles, barbed wire, thorns, wood splinters and animal bites.

A newborn baby may become infected if the knife, razor or other instrument used to cut the umbilical cord is dirty. Infection may also occur if cow dung or ash is used to dress the cord, or if soil enters the baby's navel. If the hands of the person delivering are not clean the baby may become infected. Infants and children may also contract tetanus when dirty instruments are used for circumcision, scarification and skin-piercing, and when dirt, charcoal or other unclean substances are rubbed into a wound.

Neonatal tetanus remains a serious problem in countries with poor immunization coverage and unclean practices associated with childbirth.

If untreated, tetanus is a very serious disease at any age. Almost every person contracting tetanus dies.

6.3 What are the signs and symptoms?

In newborn babies the symptoms usually appear 4-14 days after birth. The incubation period is usually between three and ten days but may be as long as three weeks. The shorter the incubation period, the higher is the the risk of death.

Muscular stiffness in the jaw is a common first sign. This is followed by stiffness of the neck, difficulty in swallowing, stiffness of the stomach muscles, muscle spasms, sweating and fever.

Newborn babies with tetanus appear normal at birth but stop sucking three to ten days later. At 5-13 days they are still not breast-feeding, the whole body becomes stiff, severe muscle contractions and convulsions occur, and death follows in most cases.

6.4 What are the complications?

Fractures of the spine or other bones may occur as a result of muscle spasms and convulsions. Abnormal heartbeat, coma, pneumonia and other infections may also occur. Death is particularly likely in very young and old age groups.

6.5 What is the treatment for tetanus?

Wounds should be thoroughly cleaned and dead tissue should be removed. For persons with wounds that are neither clean nor minor and who are not fully protected against tetanus, tetanus immune globulin should be given.

Antibiotics may also be used.

Persons who recover from tetanus do not have natural immunity.

6.6 How is tetanus prevented?

The prevention of neonatal tetanus requires women of childbearing age to receive tetanus toxoid. This results in the protection of mothers and in tetanus antibodies being transferred from them to their fetuses. Infants are thus protected against the disease at birth. Clean practices during delivery and clean wound care are also very important in preventing tetanus.

All children should be immunized against tetanus because antibodies transferred from the mother before birth last for only a few months. Tetanus is caused by a germ found in the natural environment.

Infection occurs when unclean objects puncture or cut the skin and umbilical cord and during unclean delivery practices.

Nearly all newborns with tetanus die.

The most important way to achieve prevention is to immunize women of childbearing age and to ensure clean delivery practices.

7. Hepatitis B

7.1 What is hepatitis B?

This disease, caused by the hepatitis B virus, affects the liver. People usually recover, but some continue to carry the virus for many years and can spread the infection to others throughout the time that they are chronic carriers. It is estimated that there are about 350 million carriers of hepatitis B virus.

7.2 How is hepatitis B spread?

The hepatitis B virus is carried in the blood, saliva, semen, vaginal fluids and most other body fluids. However, it is usually spread by contact with blood in the following ways:

- Injection with unsterilized needles or syringes containing hepatitis B virus from an infected person, for instance another patient or a needle-user.
- Transmission of hepatitis B virus by mothers to their babies during the birth process, when contact with blood always occurs.
- Transmission between children during social contact through cuts, scrapes and scratches.
- Transmission during sexual intercourse through contact with blood or other body fluids.

The virus does not occur in an infected person's stools unless they contain blood. It does occur in the milk of infected mothers but in such small amounts that nursing can proceed.

The disease occurs all over the world and can affect all age groups. Most chronic carriers are in China, South-East Asia, and Africa.

The incubation period averages six weeks but may be as long as six months.

7.3 What are the signs and symptoms?

The younger a person is when infected the more likely it is that he or she will show no signs or symptoms. A person with no symptoms may remain infected for many years and can spread the infection to others. Such a person is more likely than one showing symptoms to suffer complications caused by liver damage in the long term.

Infected people may feel weak and may experience stomach upsets and other influenza-like symptoms. They may also have very dark urine or very pale stools. Jaundice may appear as yellow skin or a yellow colour in the whites of

the eyes. The symptoms may last several weeks. General weakness and fatigue may continue for months. A laboratory blood test is required to determine with certainty whether a person has hepatitis B virus or disease.

Most acute infections in adults are followed by complete recovery, and the affected people rarely become chronic carriers. However, many children, even though they are not acutely ill as a rule, do become chronic carriers, and many develop severe complications.

7.4 What are the complications?

Infected persons who recover and do not become carriers possess antibodies and are protected throughout their lives.

The consequences of acute infection can be severe. Death occurs in a small percentage of adults. Most serious complications, including chronic hepatitis, cirrhosis, liver failure and liver cancer, occur in persons with chronic infection.

There are about 150 million carriers of hepatitis B virus, most of whom are unaware that they are carriers.

Most babies born to mothers who are carriers also become carriers.

About 25% of untreated babies who are infected with hepatitis B virus subsequently develop severe chronic liver disease or even liver cancer.

Hepatitis B kills some 1.1 million people annually.

7.5 What is the treatment for hepatitis B?

There is no treatment for the acute condition. In chronic infection the disease can sometimes be stopped by certain medications.

7.6 How is hepatitis B prevented?

Safe and effective hepatitis B vaccine is available. EPI recommends that children receive three doses during the first year of life, the first dose being administered either at birth or at about six weeks of age on the occasion of the first clinic visit, and the third at 14 weeks. If possible all pregnant women should be tested to determine whether they carry the virus in their blood. Babies of mothers who are carriers should then receive an injection of hepatitis B antibodies (hepatitis B immune globulin) together with the first dose of vaccine at birth.

In some countries the hepatitis B vaccine is offered to or recommended for adolescents and young adults, since the virus is sexually transmitted and is also easily spread through needle-sharing.

Persons with hepatitis B virus should not donate blood and should not allow other persons to come into contact with their blood or other body fluids. They

should use barrier methods when having sex and should not share eating utensils, toothbrushes, needles or razors with other people.

Health care workers should use all necessary precautions with all patients because patients who are carriers of the virus can spread the infection to them quite easily through blood contact.

The hepatitis B virus is spread through contact between people's blood and other body fluids.

The disease occurs in both acute and chronic forms.

The younger a person is on becoming infected, the less probable it is that symptoms will occur but the more probable it is that he or she will become a carrier of the disease and develop a severe liver condition later.

Most people are infected by non-symptomatic carriers of the disease, and many children are infected by mothers who are carriers.

All children should receive hepatitis B vaccine, starting at birth or at the age of 4-6 weeks, when the first visit to a clinic takes place.

8. Yellow fever

8.1 What is yellow fever?

Yellow fever, an acute disease of short duration, is caused by a virus. It occurs in tropical and subtropical areas, mainly in sub-Saharan Africa and Central and South America, and affects people of all ages.

8.2 How is yellow fever spread?

The yellow fever virus is spread by mosquitos when they bite humans. It is not spread directly from person to person. The mosquitos act as hosts for the infection and deliver it to people, and are said to be vectors of the disease. They breed in small accumulations of stagnant water. Once infected, mosquitos carry the virus for life.

Mosquitos may acquire the virus by biting either infected monkeys or infected humans, and they can subsequently spread it to humans.

8.3 What are the signs and symptoms?

The illness may be so mild that it is not noticed or diagnosed. It can be confused with malaria, hepatitis and other diseases. Three to six days after a person has been infected by a mosquito he or she suddenly develops fever, chills, headache, backache, general muscle pain, upset stomach and vomiting. When the disease progresses the person becomes slow and weak and there is bleeding of the gums and blood in the urine. There may be jaundice and black vomiting.

8.4 What are the complications?

The disease usually lasts two weeks, after which the patient either recovers or dies. Death may follow convulsions and coma. In areas where the disease is endemic about 5% of infected persons die from the disease. In epidemics, when large numbers of people are infected during a short period, up to 50% of infected people may die.

Yellow fever is diagnosed by performing a laboratory blood test. Persons recovering from yellow fever have lifelong immunity.

Yellow fever causes about 30 000 deaths annually.

Children in 33 African countries are at highest risk for the disease.

The disease is of short duration and can be fatal.

8.5 What is the treatment for yellow fever?

There is no specific treatment. Patients may require fluids to compensate for dehydration.

8.6 How is yellow fever prevented?

The disease is prevented by immunization with yellow fever vaccine, which is given to children in a single dose, usually when they are aged 9 months and at the same time as measles vaccine. The vaccine is very safe and effective, producing antibodies against yellow fever which can last for 30 years or longer.

Prevention should also involve the elimination of the accumulations of stagnant water in which the vector mosquitos breed.

Yellow fever is caused by a virus that is transmitted by mosquitos.

It is an acute disease from which patients either recover completely or die.

There is a safe and effective vaccine against the disease for children.

EPI recommends that children in 33 African countries should be given the vaccine.

Glossary

Acute	Of short duration (not chronic).
Antibodies	Proteins in the blood which give a person immunity to an infection; they may be produced as a result of vaccination or natural infection.
Carrier	A person or animal that has germs of a certain infection but does not show symptoms of disease. A carrier can transmit the infection to other people.
Chronic	Of long duration (not acute).
Croup	Any affliction in children which involves the throat, with difficult noisy breathing and a hoarse cough.
Disease	Illness.
Immunity	Resistance and protection against an infection or disease, resulting from previous exposure to the infection or from vaccination.
Incubation period	The time interval between first contact with a germ and the appearance of the first sign or symptom of disease.
Infection	Entry and multiplication of an infectious agent into the body.
Signs	Abnormal conditions indicating disease, discovered by examination of a patient.
Symptoms	Abnormal function, appearance or sensation indicating a disease, as experienced by a patient.
Toxin	Poisonous substance formed during growth of germs.
Toxoid	A toxin, treated to destroy any poisonous properties, which is capable of stimulating the body to produce antibodies and thereby create immunity to an infection or disease.