



# Vaccine-preventable diseases: signs, symptoms & complications



Vaccines can prevent all of the diseases listed on this sheet, most of which can have serious complications, as well as other diseases. In order to protect your family against disease, make sure your children are fully immunized according to your national immunization schedule.

**Here are just a few facts you should know about some vaccine-preventable diseases.**

## Measles

Measles is a highly contagious disease caused by a virus, which spreads through coughing and sneezing, close personal contact or direct contact with infected nasal or throat secretions. An infected person can transmit measles from four days prior to the onset of the rash to four days after the rash appears.

*Signs and symptoms.* Earliest signs include:

- high fever
- runny nose
- cough
- red and watery eyes
- small white spots, which develop inside the cheeks in the initial stage.

After several days, a rash appears, usually on the face and upper neck. The rash spreads, eventually reaching the hands and feet and lasts five to six days before fading. The most serious complications include:

- blindness
- encephalitis (an infection that causes the brain to swell)
- severe diarrhoea and related dehydration
- ear infections
- severe respiratory infections such as pneumonia.

In the most severe cases, complications from measles can be fatal. Measles outbreaks in the European Region have resulted in such deaths.

## Rubella

Rubella is a viral disease, which spreads by contact with an infected person, through coughing and sneezing. The disease is most contagious when the person has a rash, but it can spread up to 7 days before the rash appears. People without symptoms can still transmit rubella.

*Signs and symptoms.* Rubella infection may begin with 1-2 days of mild fever and swollen, tender lymph nodes, usually in the back of the neck or behind the ears. A rash then begins on the face and spreads downward. However, some people who get rubella do not have any symptoms.

In children, rubella is usually a mild disease, though serious problems can occur in rare cases. These include brain infections and bleeding problems. Rubella is most dangerous for unborn babies when pregnant mothers become infected. Congenital rubella syndrome can cause miscarriage or birth defects such as deafness, intellectual disability and malformation of organs like the heart.



© WHO / M. Bring

## Poliomyelitis (Polio)

Polio is caused by a virus that invades the nervous system. The virus enters the body through the mouth and multiplies in the intestine. The route of infection is usually fecal-oral. Food or drinking water contaminated through poor personal hygiene, poor sanitation or poor control of sewage can often be the infection source. Polio virus is also spread through coughing and sneezing.

*Signs and symptoms.* Initial symptoms include:

- fever
- fatigue
- headache
- vomiting
- stiffness in the neck and pain in the limbs.

Polio primarily affects children but can also lead to paralysis in adolescents and adults who are not immune.

Polio can cause total paralysis in a matter of hours, as the disease can affect the spinal cord and/or brain. Such paralysis can be irreversible. In case of paralysis, breathing muscles can become immobilized and this can cause death. **There is no specific treatment for polio.**

## Mumps

Mumps is spread when a person breathes in the mumps virus that has been coughed or sneezed into the air by an infectious person. It can also spread through contact with saliva. Mumps can spread before swollen glands appear and for five days afterward.

*Signs and symptoms.* Common symptoms of mumps include: fever, loss of appetite, tiredness, muscle aches, headaches, followed by swollen glands in front of the ears or under the jaw. Some people with mumps have no symptoms.

In most children, mumps is quite mild, but it can cause serious, lasting problems. These include meningitis (a serious infection of the membranes covering the brain and spinal cord) and deafness. In rare cases, mumps can be fatal.

## Rotavirus

Rotavirus is found in the stool (feces) of infected people and is spread by hands, diapers, or objects such as toys, baby changing tables or doorknobs. The disease commonly spreads within families, hospitals and child-care centres.

*Signs and symptoms.* Rotavirus causes:

- fever
- watery diarrhoea
- vomiting
- stomach pain.

Diarrhoea and vomiting may last for three to eight days. These can lead to serious dehydration. If dehydration is not treated, it can be deadly. Children under five years of age, especially those between six months and two years, are most vulnerable to the disease.

## Haemophilus influenzae b (Hib) disease


Hib disease is caused by a bacteria. Hib bacteria usually stay in a person's nose and throat and do not cause illness. But if the bacteria spread into the lungs or blood, the person can become ill. Hib disease spreads when an infected person coughs or sneezes.

*Signs and symptoms.* Symptoms of Hib disease depend on the part of the body affected. Fever is present in all forms of Hib disease. The most common type of Hib disease is meningitis; symptoms include stiff neck, headache, vomiting and loss of alertness. Other types of Hib disease can cause difficulty breathing and swallowing, cough, sore throat, chest pain and headache.

Hib disease is very dangerous. An infection can cause:

- meningitis (infection of the membranes around the brain and spinal cord)
- epiglottitis (severe swelling of the epiglottis at the back of the throat)
- pneumonia (infection of the lungs)
- osteomyelitis (infection of the bones and joints)
- cellulitis (infection of the tissue under the skin, usually on the face).

These conditions can develop quickly, and meningitis and epiglottitis can be fatal. Children who survive Hib meningitis can have brain damage or become deaf. Most children with Hib disease need care in the hospital. **Even with treatment there is a risk of death.**



**Take action.** Check your child's and your own immunization status today.


## Pneumococcal disease

The bacterium *Streptococcus pneumoniae* causes pneumococcal disease. The disease is spread by airborne or direct exposure to respiratory droplets from a person who is infected or carrying the bacteria; for example, by a sneeze or cough.

*Signs and symptoms.* Many types of pneumococcal disease exist, and symptoms depend on the site of infection. Pneumonia (lung infection) is the most common serious form. It causes the following:

- fever and chills
- cough
- rapid breathing or difficulty breathing
- chest pain.

Pneumococcal meningitis, which is an infection of the covering of the brain and spinal cord, is another serious form. The symptoms include: stiff neck, fever, headache and pain when looking into bright lights. Pneumococcal meningitis can lead to long-term disabilities or death. Pneumococcal infections can be difficult to treat, particularly because some of the bacteria are resistant to antibiotics.



For more information about vaccine-preventable diseases, please visit:  
<http://www.who.int/immunization/topics/en/>