CONDITION

Measles

Measles is a highly contagious viral infection that causes fever, breathing symptoms, and a spreading rash.

WHAT IT IS
Highly contagious viral infection causing fever and rash

BODY SYSTEM
Airways, lungs, skin, eyes, and immune system

MAIN SYMPTOMS
High fever, cough, red eyes, spreading rash

WHAT CAUSES IT
Infection with measles virus

HOW IT IS DIAGNOSED
PCR swab or urine test, plus blood antibody testing

MAIN TREATMENT
Supportive care and clinician-directed vitamin A

CAN IT BE CURED?
No, but most infections resolve

IS IT AN EMERGENCY?
Sometimes, with breathing trouble, confusion, or severe dehydration

LONG-TERM OUTLOOK
Most recover fully; rare complications can cause lasting harm

Overview

Measles, also called rubeola, is an infection caused by the measles virus. It is best known for causing a high fever and a red or brown rash, but it also affects the airways, lungs, eyes, and immune system.

The virus spreads through the air when an infected person breathes, coughs, or sneezes. It can remain in the air of an enclosed space after that person has left. Measles is one of the most contagious infections, especially among people who have not been vaccinated or previously infected.

Measles matters because it can cause complications such as pneumonia, dehydration, or inflammation of the brain. Infants, pregnant people, adults, and people with weakened immune systems may have a greater risk of serious illness. However, most people recover with

appropriate monitoring and supportive care.

Vaccination has made measles much less common in many countries. Cases and outbreaks can still occur when the virus is brought into a community where some people are not immune.

Symptoms

Symptoms usually begin about 7 to 14 days after exposure, although the timing can be longer. The illness often starts like a severe respiratory infection.

Early symptoms may include:

Small white spots may appear inside the mouth, often on the inner cheeks. These are called Koplik spots. They can help support a measles diagnosis, but they may be difficult to see and do not appear in everyone.

The rash usually begins several days after the first symptoms. It commonly starts around the hairline, face, or behind the ears. It then spreads down the neck and body to the arms, legs, hands, and feet. The spots may join together as the rash spreads.

The rash can look red on lighter skin. On darker skin, it may look red, purple, brown, or darker than the surrounding skin. It may also be easier to feel than see. The fever may rise as the rash appears.

The rash usually fades in the same general order in which it appeared. Cough, low energy, and reduced appetite can last after the rash begins to clear.

- Fever, which may become high
- Cough
- Runny or blocked nose
- Red, watery, irritated eyes
- Tiredness and reduced appetite

Causes and risk factors

Measles is caused by the measles virus. It spreads mainly by breathing in tiny virus-containing particles that are suspended in the air. It may also spread through direct contact with fluids from an infected person's nose or mouth.

A person with measles is generally contagious from four days before the rash appears until four days after it begins. People with severely weakened immune systems may remain

contagious for longer.

The main risk factor is not having immunity. Immunity usually comes from receiving the recommended measles-containing vaccines or from having had a confirmed measles infection in the past.

Exposure is more likely during a local outbreak, international travel, or close contact with someone who has measles. Schools, homes, healthcare settings, and other shared indoor spaces can allow the virus to spread quickly.

People at increased risk of complications include young children, adults, pregnant people, and those with weakened immune systems. Poor nutrition, including vitamin A deficiency, may also increase the risk of severe illness.

Diagnosis

A rash and fever can have many causes, so symptoms alone cannot always confirm measles. A healthcare professional will consider your symptoms, vaccination history, recent travel, local outbreaks, and possible contact with an infected person.

Testing usually includes a PCR test. PCR looks for the virus's genetic material in a throat or nose swab and sometimes in urine. A blood test can look for IgM antibodies, which are proteins the immune system produces during a recent infection. The timing of the blood test affects how reliable it is.

Measles is a notifiable infection in many countries. This means suspected and confirmed cases are reported to public health authorities. Public health teams can arrange testing, identify exposed people, and advise on isolation.

If measles is possible, call before attending a clinic, laboratory, or hospital. This allows staff to prevent exposing other people in waiting rooms or public areas.

Treatment and management

There is no routinely used antiviral treatment that cures measles. Care focuses on supporting the body while the immune system clears the infection and watching for complications.

Supportive care may include rest, fluids, and medicine to reduce fever or discomfort. Use medicines only as directed on the label or by a healthcare professional. Children and teenagers should not take aspirin during a viral infection because of the risk of a rare but serious condition called Reye syndrome.

Red or irritated eyes may feel more comfortable in a dim room. Drinking small amounts frequently may help if fever, a sore mouth, or poor appetite makes it difficult to drink.

A healthcare professional may recommend vitamin A, particularly for children or people with severe measles. Vitamin A does not replace vaccination or other care. High doses can be harmful, so do not treat measles with vitamin A supplements unless a qualified professional advises it.

Antibiotics like amoxicillin or doxycycline do not treat the measles virus. They may be needed if a bacterial complication, such as some ear infections or pneumonia, develops.

People with measles should remain away from school, work, public transport, and shared public spaces during the contagious period. Follow the isolation instructions given by your local public health service, especially if anyone in the household is pregnant, very young, unvaccinated, or immunocompromised.

Complications

Many people recover without lasting problems, but complications can occur during or after the infection.

Common complications include diarrhea, dehydration, and middle-ear infection. Measles can also cause croup, which produces a harsh barking cough, or pneumonia, an infection or inflammation affecting the lungs.

Less common but serious complications include encephalitis, meaning inflammation of the brain. This can cause seizures, unusual sleepiness, confusion, weakness, or loss of consciousness. Brain inflammation may occasionally lead to lasting hearing, movement, or learning problems.

Measles temporarily disrupts immune memory. This can make it harder for the immune system to respond to some infections it had encountered before, increasing vulnerability to other illnesses for a period after recovery.

Measles during pregnancy is associated with a higher risk of complications for the pregnant person and pregnancy, including pneumonia, pregnancy loss, premature birth, and low birth weight.

A very rare condition called subacute sclerosing panencephalitis, or SSPE, can develop years after measles. It causes progressive inflammation and damage in the brain. There is currently no cure for SSPE.

Prevention

Measles can usually be prevented with vaccination. The combined measles, mumps, and rubella vaccine, known as MMR, is commonly used. Two doses provide stronger protection than one.

The recommended age and timing of vaccination can differ by country, age, travel plans, and outbreak conditions. People who are unsure whether they are protected can check their vaccination records or contact a healthcare or public health service.

After a known exposure, an MMR vaccine given within 72 hours may prevent measles or make the illness milder in an eligible person. Immune globulin, a product containing protective antibodies, may help certain high-risk people if given within six days. Public health teams decide which option is appropriate.

MMR is a live vaccine and is generally not given during pregnancy or to some people with severe immune suppression. People in these groups may need immune globulin after exposure instead.

Someone who may have measles should avoid close contact with others and call ahead before seeking in-person care. Good ventilation and avoiding shared indoor air reduce exposure, but they do not replace vaccination.

Living with it and what to expect

Measles usually develops in stages. Fever, cough, runny nose, and red eyes appear first. The rash follows several days later and spreads down the body. It commonly lasts about five or six days before fading.

Most people gradually recover over several weeks. Fever should improve, while cough and tiredness may take longer to settle. Appetite and normal activity often return gradually rather than all at once.

During recovery, continue to watch for new breathing problems, dehydration, severe headache, unusual drowsiness, or a fever that returns after improving. These may suggest a complication rather than the expected recovery period.

Routine follow-up may be advised after severe illness, hospitalization, pneumonia, or complications involving the brain, hearing, or pregnancy. People with uncomplicated measles may need only the follow-up arranged by their healthcare or public health team.

Having measles usually produces long-lasting immunity. However, it does not protect against other causes of fever and rash, and recovery does not prevent the temporary immune effects

that can follow the infection.

When to get medical help

If you think you or your child may have measles, contact a healthcare or public health service promptly. Call before arriving so that testing and assessment can be arranged without exposing other people.

Seek prompt medical advice if the person is pregnant, under one year old, has a weakened immune system, is drinking poorly, or has symptoms that are worsening rather than improving.

Get urgent medical help for:

Call emergency services for severe breathing difficulty, loss of consciousness, a prolonged seizure, or any rapidly worsening condition. Tell the dispatcher that measles may be involved so responders can use suitable infection-control measures.

- Difficulty breathing, very fast breathing, or blue or grey lips
- Severe dehydration, such as very little urine or inability to drink
- Confusion, unusual drowsiness, weakness, or difficulty waking
- A seizure
- A severe headache with repeated vomiting or a stiff neck
- A child who becomes floppy, unresponsive, or markedly less alert

Common questions

How long is measles contagious?

A person is generally contagious from four days before the rash begins through four days after it appears. The first day of the rash is counted as day zero. People with severe immune suppression may spread the virus for longer.

Can I get measles if I was vaccinated?

It is possible, but much less likely after the recommended two doses. No vaccine prevents every infection. Vaccinated people who develop measles may have a milder illness, but they still need medical and public health advice.

Can you get measles twice?

Most people develop long-lasting immunity after a confirmed infection, so a second infection

is unusual. Other viral infections and skin conditions can cause a similar-looking rash and may be mistaken for measles.

Can the MMR vaccine give me measles?

The MMR vaccine cannot cause contagious measles. Some people develop a mild fever or rash after vaccination as their immune system responds. They do not spread measles to other people through this reaction.

How is measles different from chickenpox?

Measles usually causes high fever, cough, runny nose, red eyes, and a flat or slightly raised rash that spreads down from the face. Chickenpox usually causes an itchy rash with fluid-filled blisters appearing in crops. Testing and professional assessment may be needed because rashes can be difficult to identify by appearance alone.

When can someone return to school or work?

People are usually kept away until at least four full days have passed after the rash began. A public health team may recommend a longer period for someone with severe immune suppression or another specific concern. Follow the instructions given for the individual case.

Sources

- Centers for Disease Control and Prevention: Clinical Overview of Measles
- Centers for Disease Control and Prevention: Pink Book, Chapter 13 - Measles
- Centers for Disease Control and Prevention: Measles Vaccination
- World Health Organization: Measles fact sheet
- UK Health Security Agency: National Measles Guidelines