

Measles Virus (Rubeola)

-Measles is caused by a virus in the Measles is caused by an **RNA virus** classified as a Morbillivirus of the **Paramyxoviridae family** and it is normally passed through direct contact and through the air.

-The virus infects the respiratory tract, then spreads throughout the body.

-Measles is **a human disease** and is not known to occur in animals.

Epidemiology

Measles is a **highly contagious**, serious disease before the rash appears, which enhances the chance of spread before the disease is identified. Measles is also contagious for a few days after rash onset.

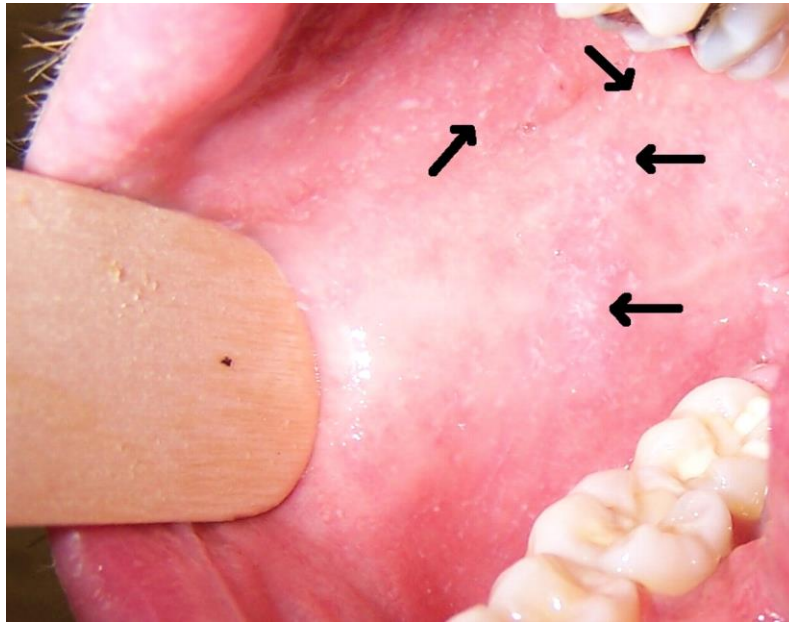
Before the introduction of measles vaccine in 1963 and widespread vaccination, major epidemics occurred approximately every 2–3 years and measles caused an estimated 2.6 million deaths each year.

More than 140 000 people died from measles in 2018 – mostly children under the age of 5 years, despite the availability of a safe and effective vaccine.

Symptoms

Symptoms usually develop 10–12 days after exposure to an infected person and last 7–10 days. Initial symptoms typically include:

- ✓ Fever, often greater than 40 °C
- ✓ Cough, runny nose
- ✓ Conjunctivitis
- ✓ After several days, **the maculopapular rash erupts**, usually on the face and upper neck. Over about 3 days, the rash spreads, eventually reaching the hands and feet. The rash lasts for 5 to 6 days, and then fades. On average, the rash occurs 14 days after exposure to the virus (within a range of 7 to 18 days).
- ✓ Small white spots known as **Koplik's spots**, a characteristic enanthem, that is **specific for measles, precedes the onset of rash** and most often they appear on the mucosa opposite the second molars.



Other diseases associated with Measles virus

-Subacute sclerosing panencephalitis (SSPE) is a chronic, degenerative, fatal neurologic disease that occurs on average 7 years after an attack of measles, particularly in children who had measles before 2 years of age.

-Possibly it is an **autoimmune disease**, it causes by a persistent infection with a measles-related virus in the CNS that occurs despite a vigorous immune response on the part of the host.

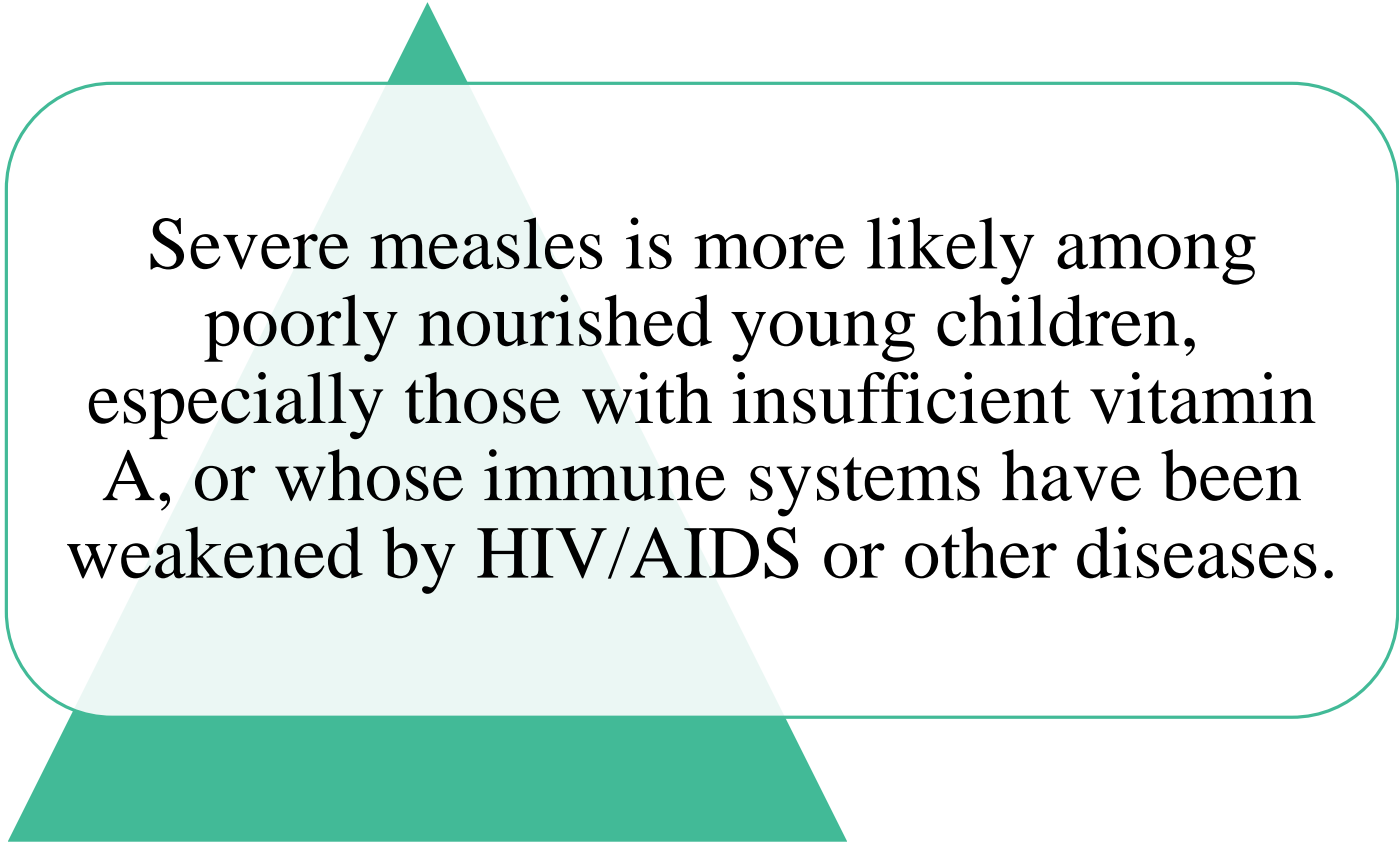
Complications

Most **measles-related deaths** are caused by **complications** associated with the disease. Serious complications are more common in children under the age of 5, or adults over the age of 30.

The most serious complications include:

- Blindness
- Encephalitis: Manifests with a resurgence of fever during convalescence and frequently with headaches, seizures, and changes in the state of consciousness.
- Severe diarrhea and related dehydration
- Ear infections
- Pneumonia

The most common complications of measles involve the respiratory tract and CNS



Severe measles is more likely among
poorly nourished young children,
especially those with insufficient vitamin
A, or whose immune systems have been
weakened by HIV/AIDS or other diseases.

Pregnant Women and Their Offspring

-Rubeola during pregnancy, in contrast to German measles (rubella), is not known to cause congenital anomalies of the fetus; however, measles in pregnancy has been associated with spontaneous abortion and premature delivery.

-Measles can be severe in pregnancy.

Measles in the offspring of mothers with measles ranges from mild to severe.

-It is therefore recommended that infants born to women with active measles be passively immunized with immune globulin at birth.

Diagnosis

Diagnosis can usually be made based on the **disease's characteristic rash** as well as a small, bluish-white spot on a bright red background — **Koplik's spot** — on the inside lining of the cheek. However, the rash can be confused with a number of other illnesses, (clinically, measles may be confused with Kawasaki disease).

****Laboratory diagnosis can be made by reverse-transcriptase polymerase chain reaction (RT-PCR) on just about any body fluid or tissue.**

Who is at risk?

Unvaccinated young children are at **highest risk** of measles and its complications, including death. **Unvaccinated pregnant women** are also at risk.

- Measles is still common in many developing countries – particularly in parts of Africa and Asia. The overwhelming majority (more than 95%) of measles deaths occur in countries with low per capita incomes and weak health infrastructures.
- Measles outbreaks can be particularly deadly in countries experiencing or recovering from a natural disaster or conflict.
- Damage to health infrastructure and health services interrupts routine immunization, and overcrowding in residential camps greatly increases the risk of infection.

Transmission

- Measles is spread by **direct contact with droplets** from respiratory secretions of infected persons and also by the **airborne route**.
- It is **one of the most communicable of the infectious diseases**, most infectious during the late prodromal phase of the illness, when cough and coryza are at their peak; however, the disease is probably contagious from several days before until several days after the onset of rash.
- Measles virus has been isolated from respiratory secretions of patients with measles only until up to 48 hours after the onset of rash. **Airborne spread of measles in physicians' offices and in a sports complex has been observed.**
- The virus remains active and contagious in the air or on infected surfaces for up to 2 hours. It can be transmitted by an infected person from 4 days prior to the onset of the rash to 4 days after the rash erupts.
- Measles outbreaks can result in epidemics that cause many deaths, especially among young, malnourished children. In countries where measles has been largely eliminated, cases imported from other countries remain an important source of infection.

Management

Supportive measures for nutrition, hydration and fever control are the mainstay of treatment for measles.

- Teaching parents when to seek medical attention after diagnosis is important to avoid complications.
- Rapid medical attention for problems can help avoid serious complications; however, those who are immunocompromised may have a longer course and may even shed the virus for several weeks after the acute illness.

No specific antiviral treatment exists for measles virus.

-**Fever control:** Don't give aspirin to children or teenagers who have measles symptoms. This is because aspirin has been linked to Reye's syndrome, a rare but potentially life-threatening condition, in such children.

-Severe complications from measles can be reduced through supportive care that ensures **good nutrition**, **adequate fluid intake** and treatment of dehydration with WHO-recommended oral rehydration solution.

-**Antibiotics:** should be prescribed to treat eye, ear infections, and pneumonia, but prophylactic antibiotics to prevent superinfection are of no known value and are therefore not recommended.

- **Vitamin A**, 200,000 IU administered orally to children once daily for 2 days, has been reported to decrease the severity of measles, especially in those with vitamin A deficiency.

- Children **6 months to 1 year old** should receive 100,000 IU for 2 days. Children **younger than 6 months old** should receive 50,000 IU for 2 days.

- Children with clinical signs and symptoms of vitamin A deficiency should receive an age-specific dose (a third dose) 2 to 4 weeks later.

**Side effects include transient vomiting and headache.

Vitamin A supplements have also been shown to reduce the number of measles deaths.

Prevention

Routine measles **vaccination** for children, combined with mass immunization campaigns in countries with high case and death rates, are key public health strategies to reduce global measles death. It is **safe, effective and inexpensive**.

The measles vaccine is often incorporated with rubella and/or mumps vaccines. It is equally safe and effective in the single or combined form.

Two doses of the vaccine are recommended to ensure immunity and prevent outbreaks, as about 15% of vaccinated children fail to develop immunity from the first dose.

MMR Adverse Reactions

Fever*	5%-15%
Rash*	5%
Joint symptoms	25%
Thrombocytopenia*	<1/30,000 doses
Parotitis	rare
Deafness	rare
Encephalopathy*	<1/1,000,000 doses

***Reactions usually attributed to the measles component**



THANK YOU