

Measles

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Key facts

- Even though a safe and cost-effective vaccine is available, in 2018, there were more than 140 000 measles deaths globally, mostly among children under the age of five.
- Measles vaccination resulted in a 73% drop in measles deaths between 2000 and 2018 worldwide
- In 2018, about 86% of the world's children received one dose of measles vaccine by their first birthday through routine health services – up from 72% in 2000.
- During 2000- 2018, measles vaccination prevented an estimated 23.2 million deaths making measles vaccine one of the best buys in public health.

Overview

Measles is a highly contagious, serious disease caused by a virus. 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.

Measles is caused by a virus in the paramyxovirus 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.

Accelerated immunization activities have had a major impact on reducing measles deaths. During 2000– 2018, measles vaccination prevented an estimated 23.2 million deaths. Global measles deaths have decreased by 73% from an estimated 536 000 in 2000* to 142 000 in 2018.

Signs and symptoms

The first sign of measles is usually a high fever, which begins about 10 to 12 days after exposure to the virus, and lasts 4 to 7 days. A runny nose, a cough, red and watery eyes, and small white spots inside the cheeks can develop in the initial stage. After several days, a 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).

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 (an infection that causes brain swelling), severe diarrhoea and related dehydration, ear infections, or severe respiratory infections such as pneumonia. 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.

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. Any non-immune person (who has not been vaccinated or was vaccinated but did not develop immunity) can become infected.

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 one of the world's most contagious diseases. It is spread by coughing and sneezing, close personal contact or direct contact with infected nasal or throat secretions.

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.

Treatment

No specific antiviral treatment exists for measles virus.

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. This solution replaces fluids and other essential elements that are lost through diarrhoea or vomiting. Antibiotics should be prescribed to treat eye and ear infections, and pneumonia.

All children diagnosed with measles should receive two doses of vitamin A supplements, given 24 hours apart. This treatment restores low vitamin A levels during measles that occur even in well-nourished children and can help prevent eye damage and blindness. 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 deaths. The measles vaccine has been in use for nearly 60 years. It is safe, effective and inexpensive. It costs approximately one US dollar to immunize a child against measles.

The measles vaccine is often incorporated with rubella and/or mumps vaccines. It is equally safe and effective in the single or combined form. Adding rubella to measles vaccine increases the cost only slightly, and allows for shared delivery and administration costs.

In 2018, about 86% of the world's children received 1 dose of measles vaccine by their first birthday through routine health services – up from 72% in 2000. 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. In 2018, 69% of children received the second dose of the measles vaccine.

Of the estimated 19.2 million infants not vaccinated with at least one dose of measles vaccine through routine immunization in 2018, about 6.1 million were in 3 countries: India, Nigeria and Pakistan.

WHO response

In 2010, the World Health Assembly established 3 milestones towards the future eradication of measles to be achieved by 2015:

- increase routine coverage with the first dose of measles-containing vaccine (MCV1) by more than 90% nationally and more than 80% in every district;
- reduce and maintain annual measles incidence to less than 5 cases per million; and
- reduce estimated measles mortality by more than 95% from the 2000 estimate.

In 2012, the Health Assembly endorsed the Global Vaccine Action Plan, with the objective of eliminating measles in four WHO regions by 2015 and in five regions by 2020.

By 2018, the global push to improve vaccine coverage resulted in a 73% reduction in deaths. During 2000– 2018, with support from the Measles & Rubella Initiative and Gavi, the Vaccine Alliance, measles vaccination prevented an estimated 23.2 million deaths; most of the deaths averted were in the African region and in countries supported by the Gavi Alliance.

But without sustained attention, hard fought gains can easily be lost. Where children are unvaccinated, outbreaks occur. Because of low coverage nationally or in pockets, multiple regions were hit with large measles outbreaks in 2018, causing many deaths. Based on current trends of measles vaccination coverage and incidence, the WHO Strategic Advisory Group of Experts on Immunization (SAGE) concluded that measles elimination is greatly under threat, and the disease has resurged in a number of countries that had achieved, or were close to achieving, elimination.

WHO continues to strengthen the global laboratory network to ensure timely diagnosis of measles and track international spread of the measles viruses to allow more coordinated country approach in targeting vaccination activities and reduce measles deaths from this vaccine-preventable disease.

The Measles & Rubella Initiative

Launched in 2001, the Measles & Rubella Initiative (M&R Initiative) is a global partnership led by the American Red Cross, United Nations Foundation, Centers for Disease Control and Prevention (CDC), UNICEF and WHO. The Initiative is committed to ensuring that no child dies from measles or is born with congenital rubella syndrome. The Initiative helps countries to plan, fund and measure efforts to stop measles and rubella for good.