

Measles infection and encephalitis

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Encephalitis can occur in children and unimmunised adults either during or after a measles infection. This can happen because of the brain becoming infected with the virus during the rash phase of the illness or by an immune-mediated brain inflammation after measles infection. Measles is also the cause of a disease called subacute sclerosing panencephalitis (SSPE). This is a rare condition that can develop years after natural measles infection. SSPE is a degenerative neurological condition which progressively destroys nerve cells in the brain and almost always leads to mental deterioration and death. Symptoms typically appear 6-15 years after the measles infection. More information on SSPE is available on our website www.encephalitis.info.

Measles, mumps, and rubella (MMR) vaccine

The MMR vaccine is a very effective way to prevent against measles, mumps, and rubella. Two doses of the MMR vaccine provide 97% protection against measles. On the other hand, 90% of unvaccinated people exposed to measles will become infected and a single person with measles will be able to infect nine other people who aren't immune. These infections are high-risk causes of encephalitis, and before the MMR vaccine was introduced all three infections were common in the UK. There is a wide range of credible information available on the good safety record of MMR vaccine at

www.gov.uk/government/uploads/system/uploads/attachment_data/file/147968/Green-Book-Chapter-21-v2_0.pdf

For both adults and children, vaccination is safer than catching the disease. The example below compares the risk of measles with the risk of MMR vaccine.

Measles

- 1-3 in 1,000 children contracting measles will develop encephalitis concurrent with the measles infection, called primary measles encephalitis. 10–15% of those children will die and a further 25% of patients will be left with permanent neurological damage.
- 1 in 1,000 children with measles will develop acute post-infectious encephalitis within 2-30 days after measles infection.
- 1 in 25,000 of children (1 in 5,500 children if they are under 1) with measles will develop subacute sclerosing panencephalitis (SSPE) which has a fatal (death) outcome.
- 1-2 in 1,000,000 children who had vaccination will develop encephalitis from the vaccination which is less than the incidence of all types of encephalitis.

Recent history of measles

In 1962, Roald Dahl's daughter, Olivia, died from measles encephalitis. This prompted him to become an ardent supporter of the measles vaccine after the tragic loss of his child. He wrote a letter to parents encouraging them to get their children vaccinated: <https://www.roalddahl.com/roald-dahl/timeline/1960s/november-1962>.

In 1990, measles killed 870,000 people worldwide.

Acute encephalitis contributed to two of three measles related deaths reported in Europe in 2012.

According to a joint report published in November 2023 by the World Health Organization (WHO) and the U.S. Department of Health and Human Services, between 2000 and 2022, measles vaccination prevented close to 57 million deaths worldwide.

The same report found a significant increase in measles deaths, estimating an increase of 43% during 2021-2022 from 95,000 to 136,200 (260-373 people dying every day).

The COVID-19 pandemic has led to millions of children missing vaccinations, resulting in the lowest coverage of those receiving their first dose of measles vaccination since 2008.

Of the children who missed their first measles vaccine dose in 2022 globally, over 50% live in just 10 countries: Angola, Brazil, the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Madagascar, Nigeria, Pakistan, and the Philippines.

Many countries across Europe are currently experiencing large epidemics of measles due to not enough children having the MMR vaccine. Between January and October 2023, more than 30,000 cases of measles were reported across Europe compared to just 941 in all of 2022. Since October 2023, over a 5-month period, 581 laboratory-proven cases have been reported.

In the first 4 months of 2024 alone, 58 measles cases have been reported in the US, the same number as in all of 2023.

Low-income countries, where the risk of death from measles is highest, continue to have the lowest vaccination rates at only 66%.

For information on encephalitis and its effects, please see our information resources at www.encephalitis.info.

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Thank you!

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