

UNDERSTANDING VACCINES AND THEIR SAFETY

Vaccines save lives! Before vaccines were available, many diseases caused serious illness or death of children. Vaccines have made it possible to greatly reduce, and in some cases even eliminate, these diseases.



HOW VACCINES PROTECT US

A vaccine builds immunity to a disease by imitating an infection which causes the body to create antibodies and defensive white blood cells.¹ The defensive white blood cells remain in the body and fight the disease if the body encounters it in the future.²

WHY KIDS NEED VACCINES

- Vaccines protect against **15+** serious, and often life-threatening, diseases ³
- Vaccines protect everyone, especially those who have weaker immune systems, including newborns, people undergoing cancer treatments, transplant patients, and older adults.⁴

ENSURING VACCINE SAFETY

Hundreds of large-scale studies conducted around the world have consistently shown that:⁵

- Recommended vaccines are safe for children and teens
- Vaccines are **not** associated with autism or developmental delay
- Vaccine ingredients are safe
- Vaccines continue to be monitored to ensure they remain safe and effective



VACCINES DO NOT CAUSE AUTISM

Decades of high-quality, large-scale studies show that vaccines do **NOT** cause autism, including:

Study: Evidence shows no link between vaccines and autism ⁶

A large review of studies involving more than 1.25 million children found no link between vaccines and autism. This includes no connection between autism and the MMR vaccine or the ingredient thimerosal (a form of mercury).

Study: Research shows no association between vaccine ingredients and autism risk ⁷

Researchers compared vaccine ingredients received by 321 children with autism and 752 children without autism at several ages in early life. They found no association between autism diagnoses and the amount of vaccine components—either over time or in a single day—that children received.

Study: Vaccinating on schedule does not affect long-term development ⁸

Researchers studied more than 1,000 children to see if getting vaccines on time in the first year of life affected learning or behavior years later. They found no negative effects—in fact, children who were vaccinated on time often performed better on many developmental and cognitive tests.

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COMMON VACCINES AVAILABLE TO CHILDREN

The American Academy of Pediatrics' (AAP) Recommended Child and Adolescent Immunization Schedule provides up-to-date, trusted guidance on when children and teens should receive each vaccine.⁹ Before a vaccine is recommended for the AAP's schedule, it must undergo rigorous testing, be proven safe, remain closely monitored, and be licensed by the Food and Drug Administration (FDA).¹⁰ *Please note:* This factsheet was finalized on November 30, 2025. As of that date, **bolded** vaccines appeared on both the AAP's immunization schedule and the Centers for Disease Control and Prevention's immunization schedule.¹¹

Diphtheria*	Pneumococcal Disease*
Hepatitis A*	Polio*
Hepatitis B*	Respiratory Syncytial Virus (RSV)
Hib*	Rotavirus
Human Papillomavirus (HPV)	Rubella*
Influenza (Flu)	1vCOV-mRNA, 1vVOC-aPS (COVID-19)
Measles*	Tetanus*
Meningococcal* (Meningitis)	Tuberculosis
Mumps*	Varicella* (Chickenpox)
Pertussis* (Whooping cough)	

*Vaccines that are required for school or childcare attendance in Georgia.¹²

VACCINE-PREVENTABLE DISEASES AND THEIR SYMPTOMS

Diphtheria

- Can cause difficulty swallowing and breathing and lead to heart failure, paralysis, or even death¹³
- Most commonly spread from person to person through coughing or sneezing¹⁴
- Vaccine was developed in the early 1920s and widely used by the 1930s¹⁵
- Fatality rate for children under age 5 is 20%¹⁶

While diphtheria was one a major cause of illness and death among children, it is now rare in the United States. **Between 2004-2011, no cases of diphtheria were reported**; two cases were reported in 2019, the latest year for which data are available.¹⁷

Hepatitis A

- Liver infection caused by Hepatitis A virus¹⁸
- Can be contracted from contaminated food, drink, stool, or sexual contact¹⁹
- Vaccine developed in 1995²⁰

Since universal childhood vaccination was recommended in 2006, **hepatitis A cases in the U.S. dropped by 95%**.²¹

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VACCINE-PREVENTABLE DISEASES AND THEIR SYMPTOMS, CONTINUED

Hepatitis B

- Liver infection caused by Hepatitis B virus²²
- Spreads when blood and other bodily fluids of an infected person enter an uninfected person²³
- Can be contracted through sexual contact, mother-to-child during pregnancy, sharing needles, and needle sticks²⁴
- Vaccine initially developed in 1981, replaced with an updated version in 1986²⁵

Hepatitis B vaccine is **more than 90% effective** when the full vaccine series is completed.²⁶

Hib (Haemophilus influenzae type b)

- Bacteria that infects the lining of the brain and spinal cord (meningitis) and swelling of the epiglottis in the back of the throat (epiglottitis)²⁷
- Harms the immune system, causes brain damage and hearing loss, and is sometimes fatal²⁸
- Vaccine first licensed in 1985; an improved version was introduced in 1987²⁹

Prior to Hib vaccine development, about 20,000 children younger than five developed severe Hib disease every year and about 1,000 died. **By 2006, the number of reported cases was just 29.**³⁰

Human Papillomavirus (HPV)

- Spread primarily through skin-to-skin contact (e.g., sexual contact, cuts, abrasions, or even a small tear in skin)³¹
- Most infections go away on their own, some can cause certain types of cancer in both men and women³²
- The AAP recommends getting the HPV vaccine starting when your child is between the ages of 9 and 12 years³³
- Nearly all unvaccinated, sexually active individuals will get HPV at some point in their lives³⁴
- Vaccine was originally licensed in 2006, with later versions approved in 2009 and 2014³⁵

HPV vaccines have been shown to be effective in preventing precancerous changes in men and women caused by high-risk cancer-causing HPV strains.³⁶

Influenza (Flu)

- Respiratory illness caused by a virus³⁷
- Pneumonia is the most commonly seen complication of influenza infection³⁸
- At least 260 children died from influenza during the 2024-2025 season³⁹
- Vaccine licensed for all civilians in the U.S. during 1945⁴⁰

The influenza vaccine **reduces flu-related hospitalizations for children by about 50%.**⁴¹



VACCINE-PREVENTABLE DISEASES AND THEIR SYMPTOMS, CONTINUED

Measles

- Highly contagious; 9 out of 10 people catch it if exposed [42](#)
- Can be contracted through airborne particles, which can stay active for up to 2 hours in the air or on objects [43](#)
- Especially serious for young children [44](#)
- Vaccine first available in 1963, and became a part of the combined measles, mumps, rubella program in 1971 [45](#)
- Measles was declared eliminated in the U.S. in 2000, however outbreaks have resurged as vaccine hesitancy drives down immunization rates. [46](#)
 - In 2024, just 87% of Georgia kindergarteners had completed the measles, mumps, and rubella (MMR) vaccine series. [47](#)
 - **As of November 2025, the U.S. had more than 1,400 cases and 2 pediatric deaths due to measles.** [48](#)

The two-dose MMR vaccine provides **97% protection** against measles and contributes to herd immunity when at least 95% of the population is immunized. [49](#)

Meningococcal (Meningitis)

- Bacteria cause meningococcal meningitis; the bacteria infect the lining around the brain and spinal cord (meningitis) and bloodstream (septicemia) [50](#)
- Spreading occurs by sharing respiratory and throat secretions (e.g., saliva or spit) [51](#)
- While anyone can get bacterial meningitis, teens, young adults, and those living in crowded settings (i.e., dorms) are at a higher risk [52](#)
- Meningococcal vaccines have evolved over time; the current vaccine that was licensed in 2005 provides stronger and longer-lasting protection [53](#)

Research shows the meningitis vaccine is **83.7-100% effective.** [54](#)

Mumps

- Contagious disease with most common outbreaks occurring among groups of people who have prolonged, close contact (e.g., sharing eating and drinking utensils, kissing, heavy breathing, sports, close quarters) [55](#)
- Symptoms include salivary gland swelling, fever, and aches and fatigue [56](#)
- Vaccine licensed in the U.S. in 1967 and became a part of the combined measles, mumps, rubella program in 1989. [57](#)
- By 1999, only one in a million kids got sick with mumps. However, vaccine rates have declined since then and now there are 3,000-6,000 cases a year. [58](#)

In the United States, cases of mumps **dropped by 99%** since the introduction of the vaccine in 1967. [59](#)



VACCINE-PREVENTABLE DISEASES AND THEIR SYMPTOMS

Pertussis (Whooping Cough)

- Highly contagious and sometimes deadly for infants; as of November 2025, **4 infants had died of pertussis**⁶⁰
- Known for uncontrollable, violent coughing which makes it difficult to breathe⁶¹
- Pertussis vaccine initially developed in 1914 followed by a combined diphtheria-tetanus-pertussis vaccine in 1948; in 1991, the diphtheria-tetanus-acellular pertussis (DTaP) vaccine is licensed⁶²
- In 2024, the U.S. reported a total of 35,435 cases of pertussis, a more than **six-fold increase** reported in 2023.⁶³

The pertussis vaccine is **98% effective** for children for a year after the full vaccine series is complete, and remains **70% effective** for five years after the series is completed.⁶⁴

Pneumococcal Disease

- Bacterial disease that results in ear and sinus infections, pneumonia, and sometimes meningitis⁶⁵
- Especially dangerous for children and can affect the brain and spinal cord⁶⁶
- Every year, pneumococcal bacteria cause more than 4,800 cases of invasive pneumococcal disease in children younger than age 5; about 5% die from the infection⁶⁷
- Vaccine first used in U.S. in 1977; most recent vaccine was licensed in 2010⁶⁸

The pneumococcal disease vaccination was added to the recommended childhood vaccination schedule in 2000. Since then, invasive pneumococcal disease in children has **dropped by nearly 80%** in the United States.⁶⁹

Polio

- A virus which lives in the infected individual's throat and intestines but can enter the brain and spinal cord and result in paralysis or death⁷⁰
- Spreads from person to person via contact with an infected person's feces; a less common spread can occur through sneezing or coughing⁷¹
- Can be contracted through contaminated food and unsanitary water⁷²
- Vaccine was developed in 1955⁷³

Introduction of polio vaccine led **99% reduction** in cases across the world.⁷⁴

Respiratory Syncytial Virus (RSV)

- Common respiratory virus causing cold-like symptoms⁷⁵
- Spreads through coughing, sneezing or even talking⁷⁶
- Infants and older adults are at risk for severe cases and hospitalization; the most common complication is respiratory failure⁷⁷
- Two to three out of every 100 infants with RSV will be hospitalized⁷⁸
- Vaccines for pregnant women can protect infants and young children from severe RSV⁷⁹

Infant RSV vaccination has been shown to be **80-90% effective** in preventing infants from being hospitalized⁸⁰



VACCINE-PREVENTABLE DISEASES AND THEIR SYMPTOMS

Rubella

- Spreads through sneezing and coughing 67 AAP [81](#)
- Symptoms include low-grade fever, respiratory problems, and a rash of pink or light red spots that typically begin on the face and spread downward; rash appears two to three weeks after exposure to the virus [82](#)
- Especially dangerous to pregnant women and fetuses 69 AAP [83](#)
- Fetuses infected with rubella can be born with Congenital Rubella Syndrome, resulting in deafness, blindness, and intellectual disabilities; infection can also result in neonatal deaths and spontaneous miscarriage [84](#)
- Vaccine first available in 1969 and became a part of the combined measles, mumps, rubella program in 1971; an improved rubella vaccine replaced the original in the MMR in 1979 and rubella was declared eliminated in the U.S. in 2005 [85](#)

The rubella vaccine (MMR) is about **95% effective** in preventing the rubella disease. [86](#)

SARS-COV-2 (COVID-19)

- Highly contagious respiratory disease caused by the SARS-CoV-2 virus; discovered in 2019 [87](#)
- Symptoms similar to a cold, the flu, or pneumonia: fever, cough, shortness of breath, sore throat [88](#)
- Many people have mild symptoms, but some can become severely ill (approximately 1.2 million U.S. deaths as of June 24); certain health conditions raise the risk of serious illness [89](#)
- Vaccine made available to the public in December 2020; The COVID-19 vaccine was developed rapidly in response to the pandemic, building on decades of research and clinical trials that began in 1984. [90](#)

Studies show the SARS-COV-2 vaccine is **39% effective against COVID-19-associated hospitalizations** and **64% effective against COVID-19-associated deaths.** [91](#)

Tetanus

- Serious, and potentially fatal, infection caused by a toxin made by the bacteria [92](#)
- Bacteria is found in soil and can be contracted through wounds and burns; more likely to occur in a deep puncture wound [93](#)
- Causes muscle stiffness and spasms, paralysis, and breathing problems; also known as “lockjaw,” which comes from the tightening of the muscles around the jaw [94](#)
- Treatment usually requires hospitalization [95](#)
- Vaccine first introduced in 1938; combined with diphtheria vaccine in mid-1940s; FDA approved DTaP in 1991 [96](#)

Tetanus is very rare, especially in immunized individuals, which suggests an **efficacy rate of nearly 100%**; immunity wanes over time, so boosters are recommended every 10 years. [97](#)



VACCINE-PREVENTABLE DISEASES AND THEIR SYMPTOMS

Tuberculosis

- Bacteria spread through the air (i.e., coughing, sneezing, speaking, singing) from one person to another [98](#)
- Bacteria can linger in droplets in poorly ventilated spaces for hours [99](#)
- Symptoms can include a cough lasting three weeks or longer, chest pain, and coughing up blood [100](#)
- Treatment is extensive: four antibiotics taken for 6 months [101](#)

The United States is considered low-risk for tuberculosis in children; **no universal recommendation to vaccinate against tuberculosis currently exists**. Vaccination is typically reserved for healthcare workers exposed to drug-resistant tuberculosis. [102](#)

Varicella (Chickenpox)

- Highly contagious disease that spreads via coughing, sneezing, or exposure to the fluid from blisters [103](#)
- Causes a very itchy, blister-like rash and fever [104](#)
- Can be serious, leading to bloodstream infections, lung infections, and encephalitis [105](#)
- Vaccine licensed for use in the U.S. in 1995 [106](#)

Since the introduction of the varicella vaccine in 1995, infections have **dropped by 97%**. A single dose **reduces the risk of chickenpox between 70-90%**. Two doses reduce the risk even further. [107](#)



Why haven't I heard of some of these diseases?

Because vaccines work!

Many of these diseases have been wiped out or are exceedingly rare, thanks to vaccines!

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