



# Meningococcal Vaccines for Preteens and Teens

Last updated NOVEMBER 2015

## Why does my child need to be vaccinated?

Meningococcal vaccines help protect against the bacteria that cause meningococcal disease. These infections don't happen very often, but can be very dangerous when they do. Meningococcal disease refers to any illness that is caused by *Neisseria meningitidis* bacteria. The two most severe and common illnesses caused by these bacteria include infections of the fluid and lining around the brain and spinal cord (meningitis) and bloodstream infections (bacteremia or septicemia). Even if they get treatment, about 10 to 15 out of 100 people with meningococcal disease will die from it.

Meningococcal disease can spread from person to person. The bacteria that cause this infection can spread when people have close or lengthy contact with someone's saliva, like through kissing or coughing, especially if they are living in the same place. Teens and young adults are at increased risk for meningococcal disease.

Meningococcal disease can become very serious, very quickly. The meningococcal vaccine is the best way to protect teens from getting meningococcal disease.

## When should my child be vaccinated?

All 11 to 12 year olds should be vaccinated with a single dose of a quadrivalent meningococcal conjugate vaccine. Older teens need a second shot when they are 16 years old so they stay protected when their risk is the highest.

Teens who got meningococcal vaccine for the first time when were 13, 14, or 15 years old should still get the booster shot when they are 16 years old. If your older teen didn't get the meningococcal shot at all, you should talk to their doctor about getting it as soon as possible.

Teens and young adults (16 through 23 year olds) may also be vaccinated with a serogroup B meningococcal vaccine (2 or 3 doses depending on brand), preferably at 16 through 18 years old. Talk with your teen's doctor or nurse about meningococcal vaccination to help protect your child's health.

## What else should I know about the vaccination?

Like many vaccines, meningococcal shots may cause mild side effects, like redness and soreness where the shot was given (usually in the arm). Note that both meningococcal vaccines can be given during the same visit, but in different arms. Some preteens and teens might faint after getting a meningococcal vaccine or any shot. To help avoid fainting, preteens and teens should sit or lie down when they get a shot and then for about 15 minutes after getting the shot.

## How can I get help paying for these vaccines?

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are uninsured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by going online to [www.cdc.gov](http://www.cdc.gov) and typing VFC in the search box.

## Where can I learn more?

Talk to your child's doctor or nurse to learn more about meningococcal vaccines and the other vaccines that your child may need. You can also find out more about these vaccines on CDC's Vaccines for Preteens and Teens website at [www.cdc.gov/vaccines/teens](http://www.cdc.gov/vaccines/teens).

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**A**s a parent, you do everything you can to protect your children's health now and for the future. Meningococcal disease can become very serious, very quickly. Meningococcal vaccines are the best way to help protect teens from getting meningococcal disease.

## Meningococcal disease

Meningococcal disease refers to any illness that is caused by *Neisseria meningitidis* bacteria. The two most severe and common illnesses caused by these bacteria include infections of the fluid and lining around the brain and spinal cord (meningitis) and bloodstream infections (bacteremia or septicemia).

Even if they get treatment, about 10 to 15 out of 100 people with meningococcal disease will die from it. About 11 to 19 out of every 100 survivors will have long-term disabilities, such as loss of limb(s), deafness, nervous system problems, or brain damage.

The bacteria that cause meningococcal disease spread from person to person when people have close or lengthy contact with someone's saliva, like through kissing or coughing. Teens and young adults are at increased risk for meningococcal disease. Living in close quarters, like in the same household, a dorm, or military barrack, can also increase the risk of getting some types of meningococcal disease.

Meningococcal disease can become very serious, very quickly. Vaccination is the best way to protect teens from getting meningococcal disease.

## The vaccines that protect against it

Meningococcal disease is not very common in the United States, but can be devastating and often—and unexpectedly—strikes otherwise healthy people. Vaccination is the best way to help protect teens from getting meningococcal disease. There are two types of meningococcal vaccines, the quadrivalent meningococcal conjugate and the

serogroup B meningococcal vaccine. The quadrivalent meningococcal conjugate vaccine helps protect against 4 strains (serogroups A, C, W, and Y) of the bacteria that cause meningococcal disease. Serogroup B meningococcal vaccine helps protect against one strain (serogroup B) of the bacteria. There is not a meningococcal vaccine that offers protection against all common serogroups in one shot, however both vaccines can be given during the same visit, preferably in different arms.

## More about meningitis

When someone has meningococcal meningitis, the protective membranes covering their brain and spinal cord, known as the meninges, become infected and swell. The symptoms of meningitis include sudden onset of fever, headache, and stiff neck. There are often additional symptoms, such as

- Nausea
- Vomiting
- Photophobia (increased sensitivity to light)
- Altered mental status (confusion)

The symptoms of meningococcal meningitis can appear quickly or over several days. Typically they develop within 3 to 7 days after exposure. If you think your child has any of these symptoms, call the doctor right away.



## When does my child need the vaccine?

Meningococcal vaccination is recommended for all preteens and teens. All 11 to 12 year olds should be vaccinated with a single dose of a quadrivalent meningococcal conjugate vaccine. Since protection decreases over time, a booster dose is recommended at age 16 so teens continue to have protection during the ages when they are at highest risk of meningococcal disease. Teens and young adults (16 through 23 year olds) may also be vaccinated with a serogroup B meningococcal vaccine (2 or 3 doses depending on brand), preferably at 16 through 18 years old. Talk with your teen's doctor or nurse about meningococcal vaccination to help protect your child's health. If your older teen has not received their quadrivalent meningococcal conjugate vaccine, you should talk to their doctor or nurse about getting it as soon as possible.

## More about septicemia

When someone has meningococcal septicemia, the bacteria enter the bloodstream and multiply, damaging the walls of the blood vessels and causing bleeding into the skin and organs. Symptoms of septicemia may include:

- Fever
- Fatigue
- Vomiting
- Cold hands and feet
- Cold chills
- Severe aches or pain in the muscles, joints, chest, or abdomen (belly)
- Rapid breathing
- Diarrhea
- In the later stages, a dark purple rash

If you think your child has any of these symptoms, call the doctor right away.

## What else should I know about these vaccines?

Like many vaccines, meningococcal shots may cause mild side effects, like redness and soreness where the shot was given (usually in the arm). Note that both meningococcal vaccines can be given during the same visit, but in different arms. Some preteens and teens might faint after getting a meningococcal vaccine or any shot. To help avoid fainting, preteens and teens should sit or lie down when they get a shot and then for about 15 minutes after getting the shot. Meningococcal vaccines can also safely be given at the same time as the other recommended vaccines, including the HPV, Tdap, and influenza vaccines. Learn more about all of the recommended preteen vaccines at [www.cdc.gov/vaccines/teens](http://www.cdc.gov/vaccines/teens).

## Help paying for vaccines

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger who are uninsured, Medicaid-eligible, or American Indian/Alaska Native. Learn more about the VFC program at [www.cdc.gov/Features/VFCprogram/](http://www.cdc.gov/Features/VFCprogram/).

Whether you have insurance, or your child is VFC-eligible, some doctors' offices may also charge a fee to give the vaccines.

## Kayla's story: "Twelve hours later, I was fighting for my life."

It was in the spring of 2000 when meningococcal disease forever altered the course of my life. One day in elementary school, I began feeling sick and went to see the school nurse. Suspecting it was the flu, the nurse sent me home to rest.

Twelve hours later, I was fighting for my life.

I woke up at 3 a.m. covered in a blotchy, purple rash and had difficulty walking. Panicked and desperate, I crawled to my parents' room, so they could rush me to a hospital.

The doctors told my parents that I had meningococcal disease and that I only had a 10 percent chance of survival.

Ultimately, I spent a total of 11 months in the hospital receiving various surgeries, going through rehabilitation, and learning how to walk again. I don't go a single day

without feeling the effects of this disease. I lost my legs below the knee, some of my fingers, and function in my kidneys. The disease moves so fast and can be deadly if not caught in time.

When the doctors told me and my parents I had meningococcal disease, we had never heard of it nor that there was a vaccine that could have prevented it.

Shortly after I got meningococcal disease, four girls in my city contracted the disease. Public health officials were able to trace the cases back to an outing that we all attended with our local girls club.

It's a very real disease with very real symptoms. Vaccination is the best way to protect yourself and your loved ones against this serious disease. All preteens need the meningococcal vaccine to be protected from meningitis and septicemia.

## Helpful Terms

**Bacteremia:** A bloodstream infection

**Meningitis:** An infection of the areas around the brain and spinal cord that can be caused by many things

***Neisseria meningitidis*:** The bacteria that cause meningococcal disease

**Quadrivalent:** Protects against 4 serogroups; for meningococcal disease those serogroups are A, C, W, and Y

**Septicemia:** A serious bloodstream infection; blood poisoning

**Serogroup:** A group of bacteria that are closely related; there are five serogroups of *Neisseria meningitidis* that cause most meningococcal disease in the world — A, B, C, W, and Y

For more information about the vaccines recommended for preteens and teens:

**800-CDC-INFO (800-232-4636)**

[www.cdc.gov/vaccines/teens](http://www.cdc.gov/vaccines/teens)

# Meningococcal: Questions and Answers

## INFORMATION ABOUT THE DISEASE AND VACCINES

### What causes meningococcal disease?

Meningococcal disease is caused by the bacterium *Neisseria meningitidis*. This bacterium has at least 13 different subtypes (serogroups). Five of these serogroups, A, B, C, Y, and W, cause almost all invasive disease. The relative importance of these five serogroups depends on geographic location and other factors. In the United States almost all meningococcal disease is caused by serogroups B, C and Y. Each serogroup accounts for about one third of reported cases.

### How does meningococcal disease spread?

The disease is spread person-to-person through the exchange of respiratory and throat secretions (e.g., by coughing, kissing, or sharing eating utensils). Meningococcal bacteria can't live for more than a few minutes outside the body, so the disease is not spread as easily as the common cold or influenza.

### How long does it take to show signs of meningococcal disease after being exposed?

The incubation period of meningococcal disease is 3 to 4 days, with a range of 2 to 10 days. Meningococcal bacteria can make a person extremely ill by infecting the blood (septicemia) or by infecting the fluid of the spinal cord and around the brain (meningitis). Because this disease progresses quickly, it is important to be diagnosed and start treatment as soon as possible.

### What are the symptoms of meningococcal disease?

The most common symptoms are high fever, chills, lethargy, and a rash. If meningitis is present, the symptoms will also include headache and neck stiffness (which may not be present in infants); seizures may also occur. In overwhelming meningococcal infections, shock, coma, and death can follow within several hours, even with appropriate medical treatment.

### How serious is meningococcal disease?

Meningococcal disease caused by any serogroup is very serious. About 10 to 15% of people with meningococcal disease die even with appropriate antibiotic treatment. Of those who recover, up to 20% suffer

from some serious after-effects, such as permanent hearing loss, limb loss, or brain damage.

### How is meningococcal disease diagnosed?

The diagnosis is made by taking samples of blood and spinal fluid from a person who is sick. The spinal fluid is obtained by performing a spinal tap, where a needle is inserted into the lower back. Any bacteria found in the blood or spinal fluid is grown in a medical laboratory and identified.

Meningococcal disease is uncommon in the United States, and the symptoms can be mistaken for other illnesses, which unfortunately can lead to delayed diagnosis and treatment.

### Can't meningitis be caused by a virus too?

Yes. The word "meningitis" refers to inflammation of the tissues covering the brain and spinal cord. This inflammation can be caused by viruses and fungi, as well as bacteria. Viral meningitis is the most common type; it has no specific treatment but is usually not as serious as meningitis caused by bacteria.

### Is there a treatment for meningococcal disease?

Meningococcal disease can be treated with antibiotics. It is critical to start treatment early.

### How common is meningococcal disease in the United States?

Fewer than 700 cases of meningococcal disease were reported each year since 2010 in the United States. An estimated average 80 deaths from meningococcal disease occurred each year in the United States since 2010.

The disease is most common in children younger than 5 years (particularly children younger than age 1 year), people age 16–21 years, and people age 65 years and older.

### What people are at special risk for meningococcal disease?

For all meningococcal serogroups risk factors include age, having a damaged or missing spleen, persistent

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complement component deficiency (an immune system disorder), and occupation as a microbiologist in a laboratory that works with meningococcal isolates.

Certain groups are at increased risk for meningococcal serogroups A, C, Y, and W but not serogroup B. These risk factors include travel to places where meningococcal disease is common (such as certain countries in Africa and in Saudi Arabia), and college freshmen who live in a dormitory (see question below for more on college students). Other risk factors for serogroups A, C, Y and W include having a previous viral infection, living in a crowded household, having an underlying chronic illness, and being exposed to cigarette smoke (either directly or second-hand).

**How common is meningococcal disease in the world?**

Meningococcal disease occurs throughout the world, but is more common in the area of Africa known as the “meningitis belt.” Serogroup A is responsible for most of the meningococcal disease in sub-Saharan Africa. This serogroup is uncommon in the United States.

**Can you get meningitis more than once?**

Yes. Meningitis can be caused by different serogroups of the meningococcal bacterium, by other bacteria such as *Streptococcus* and *Haemophilus*, as well as by viruses and fungi. Being vaccinated against *Neisseria meningitidis* or having had the disease will not protect you against meningitis from other bacteria or viruses.

**If a child is diagnosed with meningococcal disease, can anything be done to protect the other children with whom he has contact?**

Individuals who have been exposed to a person with bacterial meningitis can be protected by being started on a course of antibiotics immediately (ideally within 24 hours of the patient being diagnosed). This is usually recommended for household contacts and children attending the same day care or nursery school. Older children and adults (e.g., who are in the same school or church) aren’t usually considered exposed unless

they have had very close contact with the infected person (e.g., kissing or sharing a glass).

In addition to the antibiotic treatment, vaccination may be recommended for people 2 months of age and older if the person’s infection is caused by meningococcus serogroup A, C, Y, or W-135, which are contained in 3 of the 4 meningococcal vaccines available in the United States.

**What meningococcal vaccines are available in the United States?**

There are 2 types of meningococcal vaccine available in the United States. Vaccines for meningococcal serogroups A, C, W and Y are composed of polysaccharide (sugar molecules) from the surface of the meningococcal bacteria. Meningococcal vaccines in which the polysaccharide is chemically bonded (“conjugated”) to a protein produce better protection and are more effective in young children than the original polysaccharide vaccine. Vaccines for meningococcal serogroup B (MenB) are composed of proteins also found in the surface of the bacteria. Neither type of vaccine contains live meningococcal bacteria.

Meningococcal polysaccharide or conjugate vaccines provide no protection against serogroup B disease and MenB vaccines provide no protection against serogroup A, C, W or Y disease. For protection against all 5 serogroups of meningococcus it is necessary to receive both vaccines.

Meningococcal Vaccines Licensed in U.S.				
TRADE NAME	TYPE OF VACCINE	SEROGROUPS INCLUDED	YEAR LICENSED	APPROVED AGES
Menomune	Polysaccharide	A, C, W, Y	1981	2 years and older
Menactra	Conjugate	A, C, W, Y	2005	9 months–55 years*
Menveo	Conjugate	A, C, W, Y	2010	2 months–55 years*
MenHibrix	Conjugate	C, Y and Hib	2012	6 weeks–18 months
Trumenba	Protein	B	2014	10–25 years†
Bexsero	Protein	B	2015	10–25 years†

\*may be given to people age 56 years or older  
 †may be given to people age 26 years or older

**How is this vaccine given?**

Meningococcal polysaccharide vaccine (MPSV4) is given as an injection into the fatty tissue of the upper arm. Meningococcal conjugate vaccines (MCV4) are given in a leg muscle of a young child or the deltoid

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(arm) muscle of an older child or adult. MenB vaccines are given in the deltoid muscle.

### Who should get the meningococcal vaccine?

Certain groups should receive both MCV4 and MenB vaccines. Others are recommended to receive MCV4 only. MPSV4 is recommended only for certain people older than 55 years.

**MCV4** is recommended for these groups:

- All children and teens, ages 11 through 18 years
- People younger than 22 years of age if they are or will be a first-year college student living in a residential hall
- People age 2 months and older who have a damaged or missing spleen (MenHibrix may be used for children age 6 weeks through 18 months in this group)
- People age 2 months and older who have persistent complement component deficiency (an immune system disorder), or are at risk during an outbreak caused by a vaccine serogroup (MenHibrix may be used for children age 6 weeks through 18 months in these groups)
- People age 2 months and older who reside in or travel to certain countries in sub-Saharan Africa as well as to other countries for which meningococcal vaccine is recommended (e.g., travel to Mecca, Saudi Arabia, for the annual Hajj).
- People working with meningococcus bacteria in laboratories

**MenB** is recommended for these groups:

- People age 10 years and older who have a damaged or missing spleen
- People age 10 years and older who have persistent complement component deficiency (an immune system disorder), or are at risk during an outbreak caused by a vaccine serogroup
- People working with meningococcus bacteria in laboratories

MenB vaccines are not routinely recommended for all adolescents or college students. However, at their June 2015 meeting ACIP voted to recommend that a MenB vaccine series may be administered to persons 16 through 23 years of age with a preferred age of vaccination of 16 through 18 years. This permissive (Category B) recommendation allows the clinician to make a MenB vaccine recommendation based on the risk and benefit for the individual patient.

### Should college students be vaccinated against meningococcal disease?

The MCV4 vaccine is recommended for previously unvaccinated first-year college students, age younger than 22 years, who are or will be living in a residence hall. Some colleges and universities require incoming freshmen and others to be vaccinated with MCV4; some may also require that a dose of MCV4 have been given since the age of 16 years. MCV4 may be available from the college health service.

Although several small MenB outbreaks have occurred on college campuses since 2013, college students in general are not at higher risk of MenB than persons of the same age who are not college students. Consequently, ACIP does not routinely recommend MenB vaccination for college students. However, college students may choose to receive MenB vaccine to reduce their risk should a MenB outbreak occur.

### Why doesn't ACIP recommend MenB vaccination for all adolescents or all college students?

Although a person with MenB disease can die or be permanently scarred or disabled, and may incur staggering medical expenses, MenB disease is rare and MenB vaccine is very expensive. A recommendation to vaccinate all adolescents or all college students is not cost-effective.

### How many doses of meningococcal vaccine are needed?

For MCV4 vaccines the number of doses recommended depends on the age when the vaccine is given and the presence of certain medical conditions or risk factors. All adolescents should be vaccinated with one dose of MCV4 at ages 11 or 12 years and with a booster dose at age 16 years. All teens who were vaccinated with MCV4 at ages 13 through 15 years need a booster dose at age 16 through 18 years (at least 8 weeks after the first dose). First-year college students younger than 22 years who are living in a residential hall should get an MCV4 booster dose if their previous dose was given before age 16 years. People ages 2 months and older who have certain risk factors such as no spleen or a damaged spleen, or persistent complement component deficiency (an immune system disorder), may need more than one dose. In addition, vaccinated people who remain at risk, such as people without a spleen, microbiologists who work with meningococcus, or

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those who travel repeatedly to parts of Africa, should receive a booster dose of MCV4 every 5 years.

A series of MenB vaccine is either 2 (for Bexsero) or 3 (for Trumenba) doses. Booster doses of MenB vaccine following the initial series are currently not recommended, including for people with no spleen or persistent complement component deficiency.

### **How soon after their first MCV4 dose should people who remain at risk for meningococcal disease be vaccinated again?**

The time between the primary (initial) doses(s) of MCV4 and the first booster varies. Children who received their primary MCV4 dose(s) before their seventh birthday should get their first booster 3 years after their primary dose(s). Children who received their primary MCV4 dose(s) at or after age 7 years and all adults should get MCV4 boosters 5 years after their primary dose(s).

### **What are the side effects of this vaccine?**

Up to about half of people who get meningococcal vaccines have mild side effects, such as redness or pain where the shot was given. These symptoms usually last for one or two days and are more common after MCV4 than after MPSV4. A small percentage of people who receive the vaccine develop a fever. Severe reactions, such as a serious allergic reaction, are very rare.

More than 60,000 persons have received MenB vaccines during clinical trials or for outbreak control on college campuses. The most common side effect was pain at the injection site, which was reported by about 80% of recipients. The Vaccine Adverse Event Reporting System (VAERS) and other vaccine safety systems will carefully monitor MenB vaccine safety as they do for other U.S.-licensed vaccines.

### **How effective is this vaccine?**

The MPSV4 vaccine is 85 percent to 100 percent effective at preventing infection from the subtypes of

meningococcus found in the vaccine. Based on results of laboratory studies, MCV4 is believed to be at least as effective as MPSV4.

Because of the low incidence of serogroup B meningococcal disease, MenB vaccine efficacy estimates were based on demonstration of an immune response after vaccination. From 63% to 88% of recipients of a full series of MenB vaccine develop a protective level of antibody against representative strains of serogroup B meningococcus.

### **Who should not receive meningococcal vaccine?**

These groups should not receive either type of meningococcal vaccine:

- People who have had a serious allergic reaction to a previous dose of either meningococcal vaccine or to one of the vaccine components. The packaging of some meningococcal vaccines may contain latex. Information on the contents of each vaccine is included with each vaccine.
- People who are moderately or severely ill.

### **Can a pregnant woman get meningococcal vaccine?**

Studies of vaccination with MPSV4 during pregnancy have not documented adverse effects among either pregnant women or newborns. Post-licensure safety data suggest no concerns with the safety of MCV4 during pregnancy. Pregnancy is not considered to be a contraindication to either MPSV4 or MCV4. Although experience with MenB vaccines is limited they have not been shown to be detrimental to a pregnant woman or fetus.

### **Can the vaccine cause meningococcal disease?**

No. Only the *Neisseria meningitidis* bacterium can cause meningococcal disease. Meningococcal vaccines contain only the sugar capsule or capsule protein of the microbe.

# Protect yourself from meningococcal disease... Get vaccinated!

## What is meningococcal disease?

Meningococcal disease is a life-threatening illness. It is caused by bacteria that infect the blood, brain, and spinal cord. People often call it meningitis.

## How do you catch it?

The disease is spread person-to-person. It is easily spread in crowded settings. You can catch meningitis from a person who looks healthy.



## Is it serious?

Ask your health care provider if you need this vaccine!

Yes! Even with proper treatment, 10–15% of people with meningococcal disease die. Of the people who survive, as many as 20% suffer from some serious complication, such as loss of an arm or leg, brain damage, or permanent hearing loss.

Meningitis can cause shock, coma, and death within hours of the first symptom.

## Am I at risk?

The disease most often strikes older teens and young adults. If you travel internationally or have certain medical conditions, you may also be at risk.

## How can I protect myself from meningitis?



Vaccination is the best way to prevent meningitis.

There are different types of meningococcal vaccines: MCV4 (conjugate), MenB (serogroup B), and MPSV4 (polysaccharide). MCV4 is given to preteens and teens beginning at age 11–12 years. A second dose is needed at 16. Teens and young adults age 16–23 may also be given MenB.

People with certain medical conditions should get vaccinated and some should receive booster doses throughout life. Travelers to certain countries should also get vaccinated.

► For more information, visit [www.vaccineinformation.org](http://www.vaccineinformation.org)

For other vaccine handouts in this series, visit [www.immunize.org/vaccine-summaries](http://www.immunize.org/vaccine-summaries)



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