

# MENINGOCOCCAL B

## CDC RECOMMENDS 2 DOSES FOR SPECIAL SITUATIONS

ACIP recommends a MenB vaccine series for persons aged 16–23 years on the basis of shared clinical decision-making to provide short-term protection against most strains of serogroup B meningococcal disease (Table 2). The preferred age for MenB vaccination is 16–18 years.

### **Bexsero® can cause:**

- + Injection site reactions (including extensive swelling of the vaccinated limb, blisters at or around the injection site, and the injection site nodule which may persist for more than 1 month)
- + Allergic/anaphylactic reactions
- + Rash
- + Eye Swelling
- + Syncope (fainting)
- + Vasovagal responses

### **Trumenba® can cause:**

- + Hypersensitivity reactions
- + Anaphylactic reactions
- + Syncope (fainting)

**ACIP RECOMMENDATION FOR THIS PRODUCT INCLUDES COLLEGE STUDENTS AND MILITARY RECRUITS**



**SOURCES FROM FDA + GLAXOSMITHKLINE + PFIZER**

## IS IT EFFECTIVE?

*According to the manufacturers,*

### **5.3 Limitation of Vaccine Effectiveness**

As with any vaccine, vaccination with Trumenba may not protect all vaccine recipients against *N. meningitidis* serogroup B infections.

The effectiveness of the two-dose schedule of Trumenba against diverse *N. meningitidis* serogroup B strains has not been confirmed.

### **5.4 Limitation of Vaccine Effectiveness**

BEXSERO may not protect all vaccine recipients. BEXSERO may not provide protection against all meningococcal serogroup B strains [see *Clinical Pharmacology (12.1)*].

*According to the CDC,*

Decreases in meningococcal disease incidence began before the introduction of MenACWY and MenB vaccines and have been observed across all age groups and for the predominant disease-causing serogroups in the United States (23). Outbreaks account for approximately 5% of meningococcal disease cases across age groups in the United States (27). In recent years, several outbreaks of serogroup B meningococcal disease among university students and serogroup C meningococcal disease among men who have sex with men (MSM) have been reported (28,29).

[cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

## HISTORY OF MENINGITIS

# what is it?

Meningitis is an inflammation (swelling) of the protective membranes covering the brain and spinal cord. A bacterial or viral infection of the fluid surrounding the brain and spinal cord usually causes the swelling. However, injuries, cancer, certain drugs, and other types of infections also can cause meningitis. It is important to know the specific cause of meningitis because the treatment differs depending on the cause.

# what are all the types?

## Bacterial Meningitis

Meningitis caused by bacteria can be deadly and requires immediate medical attention. Vaccines are available to help protect against some kinds of bacterial meningitis.



## Fungal Meningitis

Meningitis caused by fungi is rare, but people can get it by inhaling fungal spores from the environment. People with certain medical conditions, like diabetes, cancer, or HIV, are at higher risk of fungal meningitis.

## Viral Meningitis

Meningitis caused by viruses is serious but often is less severe than bacterial meningitis. People with normal immune systems who get viral meningitis usually get better on their own. There are vaccines to prevent some kinds of viral meningitis.



## Amebic Meningitis

Primary amebic meningoencephalitis (PAM) is a rare and devastating infection of the brain caused by *Naegleria fowleri*. *Naegleria fowleri* is a free-living microscopic amoeba that lives in warm water and soil.

## Parasitic Meningitis

Various parasites can cause meningitis or can affect the brain or nervous system in other ways. Overall, parasitic meningitis is much less common than viral and bacterial meningitis.

## Non-Infectious Meningitis

Sometimes cancers, systemic lupus erythematosus (lupus), certain drugs, head injury, and brain surgery can cause meningitis.

Bacterial + Viral Meningitis are the only types that have vaccines available per the CDC

# let's look at viral

[Non-polio enteroviruses](#) are the most common cause of viral meningitis in the United States, especially from late spring to fall. That is when these viruses spread most often. However, only a small number of people infected with enteroviruses will actually develop meningitis.

There are no vaccines to protect against non-polio enteroviruses, which are the most common cause of viral meningitis. The best way to help protect yourself and others from non-polio enterovirus infections is to

- [Wash your hands](#) often with soap and water for at least 20 seconds, especially after changing diapers or using the toilet
- Avoid close contact, such as touching and shaking hands, with people who are sick
- Clean and disinfect frequently touched surfaces
- Stay home when you are sick and keep sick children out of school

Vaccines can protect against some diseases, such as measles, mumps, chickenpox, and influenza, which can lead to viral meningitis. Make sure you and your child are vaccinated [on schedule](#).

In other words, the CDC recommends getting the MMR, Varicella (chickenpox), and Influenza vaccines to protect against viral meningitis.

Then why do all those products have symptoms of meningitis listed as adverse reactions including meningitis?

## Signs and Symptoms

Meningitis symptoms include sudden onset of

- Fever
- Headache
- Stiff neck

There are often other symptoms, such as

- Nausea
- Vomiting
- Photophobia (eyes being more sensitive to light)
- Altered mental status (confusion)

Newborns and babies may not have or it may be difficult to notice the classic symptoms listed above. Instead, babies may

- Be slow or inactive
- Be irritable
- Vomit
- Feed poorly

In young babies, doctors may also look for a bulging fontanelle (soft spot on infant's head) or abnormal reflexes. If you think your baby or child has any of these symptoms, call the doctor right away.

## MMR

- + fever
- + headache
- + nausea
- + vomiting
- + irritability
- + malaise (discomfort)

## Chickenpox

- + aseptic meningitis
- + meningitis

## Influenza

- + photophobia

## Flumist

- + meningitis
- + parasitic meningitis

Each of these also can cause the very virus it's meant to prevent, which could lead to meningitis

let's look at bacterial

## How It Spreads

Generally, the germs that cause bacterial meningitis spread from one person to another. Certain germs, such as *L. monocytogenes*, can spread through food.

How people spread the germs often depends on the type of bacteria. It is also important to know that people can have these bacteria in or on their bodies without being sick. These people are "carriers." Most carriers never become sick, but can still spread the bacteria to others.

Here are some of the most common examples of how people spread each type of bacteria to each other:

- **Group B *Streptococcus* and *E. coli*:** Mothers can pass these bacteria to their babies during birth.
- **Hib and *S. pneumoniae*:** People spread these bacteria by coughing or sneezing while in close contact with others, who breathe in the bacteria.
- ***N. meningitidis*:** People spread these bacteria by sharing respiratory or throat secretions (saliva or spit). This typically occurs during close (coughing or kissing) or lengthy (living together) contact.
- ***E. coli*:** People can get these bacteria by eating food prepared by people who did not wash their hands well after using the toilet.

People usually get sick from *E. coli* and *L. monocytogenes* by eating contaminated food.



Meningococcal vaccines help protect against *N. meningitidis*  
Pneumococcal vaccines help protect against *S. pneumoniae*  
Hib vaccines help protect against Hib

Interestingly, the Hib vaccine manufacturer listed "early onset Hib disease" as an adverse reaction.  
Does this protect us from bacterial meningitis?

*also,*

Like with any vaccine, the vaccines that protect against these bacteria are not 100% effective. The vaccines also do not protect against all the types (strains) of each bacteria. For these reasons, there is still a chance vaccinated people can develop bacterial meningitis.

If the CDC acknowledges vaccinated people can still develop bacterial meningitis, then are these effective products?

## MORE FROM THE CDC

Vaccines that help protect against meningococcal disease work well, but cannot prevent all cases.

As part of the licensure process, MenACWY and MenB vaccines showed that they produce an immune response. This immune response suggests the vaccines provide protection, but data are limited on how well they work. Since meningococcal disease is uncommon, many people need to get these vaccines in order to measure their effectiveness.

Available data suggest that protection from MenACWY vaccines decreases in many teens within 5 years. Getting the 16-year-old booster dose is critical to maintaining protection when teens are most at risk for meningococcal disease. Available data on MenB vaccines suggest that protective antibodies also decrease quickly (within 1 to 2 years) after vaccination.

Does that second paragraph make sense? Because the disease is uncommon, many people have to get vaccinated to measure the effectiveness?

*History matters*

Today, meningococcal disease is at a historic low in the United States. Rates of meningococcal disease have been declining in the United States since the 1990s. Much of the decline occurred before the routine use of MenACWY vaccines. In addition, serogroup B meningococcal disease declined even though MenB vaccines were not available until the end of 2014.

*so what do we do?*

The CDC has a simple answer.

You can also help protect yourself and others from bacterial meningitis by maintaining healthy habits:

- Don't smoke and avoid cigarette smoke
- Get plenty of rest
- Avoid close contact with people who are sick