



# Breaking News About "B"

**Dear Health Educator,**

As you know, adolescents and young adults like your students are among the groups at increased risk for invasive meningococcal disease — a rare but very serious bacterial infection that can cause death within 24 hours.<sup>1</sup>

Many of your students may think they have been immunized against this disease, but until 2014, the existing vaccines in the U.S. only protected against groups A, C, Y, and W, not B, which is responsible for approximately 40% of meningococcal disease in U.S. adolescents and young adults.<sup>2-4</sup>

Fortunately, separate vaccines are now available to help protect against meningococcal group B disease (also known as meningitis B) — and that's news your students and their families need to hear.

To help you spread the news, the curriculum specialists at Young Minds Inspired have teamed up with Pfizer to provide you with a free health education program, which alerts students in high school to the risk posed by meningococcal disease, including meningitis B. In addition, the program includes a brochure for students to share with their parents and a downloadable parent letter, available at [ymiclassroom.com/pfizer](http://ymiclassroom.com/pfizer), that you can distribute by email or post on your school website.

We encourage you to share this program with all health teachers at your school, as well as your school's nurse and guidance counselors. Although these materials are copyrighted, you have permission to make as many copies as needed for educational purposes. In addition, all components of the program are available in PDF at [ymiclassroom.com/pfizer](http://ymiclassroom.com/pfizer), so that you can download additional copies or disseminate them in the way that best meets your needs.

Please let us know your opinion of this program by returning the enclosed reply card or by commenting at [ymiclassroom.com/feedback-pfizer](http://ymiclassroom.com/feedback-pfizer). We depend on your input to continue providing free programs that make a real difference in students' lives.

Sincerely,  
Dominic Kinsley  
Editor in Chief  
Young Minds Inspired

For questions, contact YMI toll-free at 1-800-859-8005 or by email at [feedback@ymiclassroom.com](mailto:feedback@ymiclassroom.com).

**References:** 1. Thompson MJ, Ninis N, Perera R, et al. Clinical recognition of meningococcal disease in children and adolescents. *Lancet*. 2006;367(9508):397-403. 2. Centers for Disease Control and Prevention. Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*. 2013;62(RR-2):1-28. 3. MacNeil LK, Zagurksy RJ, Lin SL, et al. Role of factor H binding protein in *Neisseria meningitidis* virulence and its potential as a vaccine candidate to broadly protect against meningococcal disease. *Microbiol Mol Biol Rev*. 2013;77(2):234-252. 4. Centers for Disease Control and Prevention. Epidemiology of serogroup B meningococcal disease, United States. Advisory Committee on Immunization Practices, October 30, 2014. Centers for Disease Control and Prevention website. <http://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2014-10/mening-02-MacNeil.pdf>. Accessed March 26, 2015.



## Target Audience

This program is designed for students in grades 9-12.

## Program Objectives

- To teach students about infectious diseases and the everyday behaviors that spread the bacteria that cause them.
- To provide information about meningococcal disease, its risks, symptoms, and treatment.
- To help families learn that group B is different from other forms of meningococcus bacteria.
- To inform students and parents that there are vaccines that are available specifically to help protect against meningitis B.

## Program Components

- This two-page educator's guide.
- Four reproducible student activity sheets.
- An informative wall poster.
- A four-page take-home parent brochure.
- A one-page downloadable parent letter, available at [ymiclassroom.com/pfizer](http://ymiclassroom.com/pfizer).
- A reply card for your comments, or comment online at [ymiclassroom.com/feedback-pfizer](http://ymiclassroom.com/feedback-pfizer).

## How to Use This Program

Review the enclosed materials and schedule time to complete each activity in class, then distribute copies of the activity sheets to your students. Display the poster in a prominent location. Reach out to parents by having students take home copies of the enclosed brochure. This same information is provided in a downloadable parent letter, available at [ymiclassroom.com/pfizer](http://ymiclassroom.com/pfizer), which you can print out if you run short of brochures or send directly to parents as an email attachment. To review how the program aligns with national health standards, visit [ymiclassroom.com/pfizer](http://ymiclassroom.com/pfizer).

## Activity 1 Better Beware<sup>1</sup>

Meningococcal bacteria, like bacteria associated with many other infectious diseases, are spread by everyday activities like sharing drinks and kissing. Review the chart on the activity sheet with your class and have them complete the middle two columns as a group. Then, ask them to pay close attention to their interactions over the course of a week and keep a tally of any direct contact behaviors in the fourth column. At the end of the week, review the chart together. Try to find any patterns or

trends and discuss ways that students could reduce the risk of spreading infectious diseases.

**Extension:** Consider extending this activity into a more visible measurement of the everyday risks of spreading infectious diseases. Have students create 'sharing' cards with space for the date, time, and location when they have direct contact with a friend, plus space for their own and their friend's initials. Instruct students to fill out a card every time they share a water bottle, kiss, borrow lipgloss, etc., and then give the card to the friend with whom they've shared the activity. Have students provide that friend with a set of cards and ask them to continue the experiment by handing one out each time they engage in direct contact. After a period of time, assemble all of the students in the class or school who have received a card and have students make observations about how far and quickly they think a disease could potentially spread based on this experiment.

## Activity 2 A Big Difference<sup>2-4</sup>

Your class may have heard of meningococcal meningitis, and students may even think they've already been vaccinated. But until 2014, vaccines available in the U.S. only protected against groups A, C, W, and Y; they did not cover group B. In this activity, students will learn about *N. meningitidis*, the bacteria that cause meningococcal disease, and what makes group B different. To help students gauge their risk of exposure to meningococcal disease, remind them that nearly 1 in 4 teens can be a carrier of the bacteria that cause meningococcal disease, even if they show no symptoms and never get sick. So every time students share germs, they have close to a 25% chance of exposure to the bacteria. Have students use the direct contact data they gathered in Activity 1 to estimate their risk of exposure to meningococcal disease.

## Activity 3 "B"—A Newsmaker<sup>5,6</sup>

This activity alerts students to some recent outbreaks of meningitis B at U.S. colleges and universities. Discuss how the development of vaccines that help protect against meningitis B could help prevent such outbreaks in the future, and how vaccination against all types of the bacteria that cause meningococcal disease could reduce the risk that college freshmen living in dorms face now. Then have students complete the research parts of the activity to learn more about the risks of meningococcal disease on campus and how this disease can damage

young lives. Challenge them to use what they learn to create a news story or presentation that will raise teen awareness of the dangers of meningococcal disease and how to help protect against it.

**Extension:** Launch a public awareness campaign in the school or around the community using the news vehicles and presentations your students created.

## Activity 4 Best to Know

The true/false quiz in this activity summarizes some key points that will help families understand the risks of meningitis B and the importance of getting vaccinated against it. After students complete the quiz, review the answers to each question with your class, then instruct students to bring the quiz home and have a parent complete it. Because high school students are still largely dependent on their parents for medical decisions, it is important that they share a dialogue about this issue and the need for vaccination. **Note:** Answers to the quiz are printed in the parent take-home brochure, so be sure you give students a copy of that brochure to take home.

**Answers:** 1. False; meningococcal disease like meningitis B is spread through direct contact with throat or respiratory secretions. 2. True. 3. False; carriers of the bacteria that cause meningococcal disease may show no symptoms and may not get sick. 4. True. 5. False; many states require college freshmen living in dormitories to be vaccinated against meningococcal meningitis, but the vaccines available before 2014 in the U.S. only protected against serogroups A, C, W, and Y, not B. 6. True; there are now separate vaccines that can help protect against meningitis B. 7. True. 8. False; the vaccines available for meningitis B are dispensed in several doses. 9. True, but early symptoms of meningococcal disease often resemble the flu and can easily be ignored until it is too late. 10. False; approximately 60% of adolescents who survive meningococcal disease suffer permanent physical and mental disabilities.

## Resources

- [www.ActionAgainstMeningitis.com](http://www.ActionAgainstMeningitis.com)
- [www.ymiclassroom.com/pfizer](http://www.ymiclassroom.com/pfizer)
- [www.nlm.nih.gov/medlineplus/ency/article/000608.htm](http://www.nlm.nih.gov/medlineplus/ency/article/000608.htm)
- [www.mayoclinic.org/diseases-conditions/meningitis/basics/definition/con-20019713](http://www.mayoclinic.org/diseases-conditions/meningitis/basics/definition/con-20019713)
- [www.cdc.gov/meningococcal/index.html](http://www.cdc.gov/meningococcal/index.html)
- [www.nfid.org/idinfo/meningitis](http://www.nfid.org/idinfo/meningitis)
- [www.who.int/csr/disease/meningococcal/en/](http://www.who.int/csr/disease/meningococcal/en/)



# Better Beware

Infectious illnesses are caused by pathogens, including bacteria and viruses, which can be passed from one person to another through everyday activities. Some pathogens (aka germs) can be spread through indirect contact, like sharing a keyboard or cell phone. Others require direct contact, such as kissing or sharing food.<sup>1</sup>

Use the chart below to track how you come in contact with germs every day. First, fill in some examples of indirect and direct contact that happen in each of the places listed. (The first one is filled in for you.) Use the extra space to add other places that are part of your everyday routine, such as an after-school job.

Now focus on your examples of direct contact. For the next week, keep a tally of how often you engage in each of these behaviors and any other direct contact behaviors that might happen during the week.

Places	Types of Contact		How Often? (direct contact)
	Indirect	Direct	
Home	Share the bathroom doorknob	Share eating utensils	
School			
Sports and after-school clubs			
Social outings: (parties, restaurants, concerts, etc.)			

At the end of the week, discuss in class any patterns you've noticed and think about some solutions to keep yourself and others safe from germs. Write your observations below.

The direct contact germ-sharing behavior I engage in most frequently is:

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Steps I can take to prevent the spread of infectious diseases:

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Meningococcal disease, including meningitis B, is a rare but potentially deadly bacterial infection that can be spread through direct contact with respiratory or throat secretions. This includes the normal things you and your friends do, like drinking from each other's water bottles and sharing lipgloss.<sup>2</sup> That's one reason why teens and young adults are among those at increased risk for this illness.<sup>1</sup> Students sharing living quarters in college dorms are especially at increased risk.<sup>1,3</sup> And since nearly 1 in 4 young adults is a carrier of the bacteria that cause meningococcal disease,<sup>4</sup> even if they never get sick or show any symptoms, it's important to beware when you share.

**References:** 1. Centers for Disease Control and Prevention. Meningococcal disease. Centers for Disease Control and Prevention website. <http://www.cdc.gov/meningococcal/index.html>. Updated April 1, 2014. Accessed April 2, 2015. 2. Thompson MJ, Nirini N, Perera R, et al. Clinical recognition of meningococcal disease in children and adolescents. *Lancet*. 2006;367(9508):397-403. 3. Bruce MG, Rosenstein NE, Capparella JM, et al. Risk factors for meningococcal disease in college students. *JAMA*. 2001;286(6):688-693. 4. Christensen H, May M, Bowen L, et al. Meningococcal carriage by age: a systematic review and meta-analysis. *Lancet Infect Dis*. 2010;10(12):853-861.

**Check with your doctor about getting vaccinated against meningitis B — the strain of meningococcal disease that pre-2014 vaccines in the U.S. could not help prevent.**



# A Big Difference

## What is Meningococcal Disease?

Meningococcal disease is a bacterial infection that can cause swelling of the tissue around the brain and spinal cord (meningitis) or an infection of the blood (septicemia). It is rare, but very serious: Ten percent of those who develop meningococcal disease will die. Three out of five adolescent survivors of meningococcal disease suffer permanent physical and mental disabilities such as brain damage, vision loss, and amputations.<sup>1-3</sup>

## Are You At Risk?

Meningococcal disease can be spread by direct contact with respiratory or throat secretions through behaviors like sharing a drink or kissing. That's one reason why adolescents and young adults like you are among those at increased risk for meningococcal disease.

Meningococcal disease can be treated with antibiotics, if it is caught early, but early symptoms often resemble the flu, so you may not realize it's something serious right away. Fortunately, there are vaccines to help you stay protected.<sup>4</sup>

## The Difference with B

Meningococcal disease is caused by a bacteria called *Neisseria meningitidis*. In the U.S., there are 5 common types of this bacteria, called A, C, Y, W, and B. Until 2014, vaccines could help protect against types A, C, Y, and W, but there was no vaccine in the United States to help protect against type B, which is responsible for approximately 40% of meningococcal disease in U.S. adolescents and young adults.<sup>5-7</sup>

That means, if you were vaccinated against meningococcal disease prior to 2014, you are probably not protected against meningitis B.

**Here's the good news. There are now vaccines available that help protect against meningitis B which are administered separately from the vaccine that helps protect against the other four types of *Neisseria meningitidis*.**

**References:** 1. Centers for Disease Control and Prevention. Meningococcal disease. Centers for Disease Control and Prevention website. <http://www.cdc.gov/meningococcal/index.html>. Updated April 1, 2014. Accessed April 2, 2015. 2. Cohn AC, MacNeil JR, Harrison LH, et al. Changes in *Neisseria meningitidis* disease epidemiology in the United States. 3. Borg J, Christie D, Coen PG, et al. Outcomes of meningococcal disease in adolescence: prospective, matched-cohort study. *Pediatrics*. 2009;123:e502-e509. 4. Thompson MJ, Ninis N, Perera R, et al. Clinical recognition of meningococcal disease in children and adolescents. *Lancet*. 2006;367(9508):397-403. 5. Centers for Disease Control and Prevention. Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*. 2013;62(RR-2):1-28. 6. McNeil LK, Zagurksy RJ, Lin SL, et al. Role of factor H binding protein in *Neisseria meningitidis* virulence and its potential as a vaccine candidate to broadly protect against meningococcal disease. *Microbiol Mol Biol Rev*. 2013;77(2):234-252. 7. Centers for Disease Control and Prevention. Epidemiology of serogroup B meningococcal disease, United States. Advisory Committee on Immunization Practices, October 30, 2014. Centers for Disease Control and Prevention website. <http://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2014-10/mening-02-MacNeil.pdf>. Accessed March 26, 2015.

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# “B” — A Newsmaker

Protecting yourself against meningococcal disease is especially important at college. In the U.S., college freshmen who live in dorms are three times more likely to get this disease than those age 18 to 23 years old in the general population. In fact, there have been serious outbreaks of meningitis B at several colleges in recent years.<sup>1-4</sup>

- Two students became infected at Providence College in Rhode Island in 2015.
- Six students became infected at the University of Oregon in 2015, including one who died.

Meningitis B was responsible for both of these outbreaks. There are vaccines available to help protect against meningitis B. And you can help by educating other teens about meningococcal disease, including meningitis B, and how they can get protected.

**Part 1:** Start by researching recent outbreaks of meningitis B on college campuses at the National Foundation for Infectious Diseases website ([www.nfid.org/idinfo/meningitis/meningococcal-b-college-outbreaks.html](http://www.nfid.org/idinfo/meningitis/meningococcal-b-college-outbreaks.html)) and on Google. Summarize what health officials have done to control such outbreaks.

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**Part 2:** Next, visit the “Videos” section at [www.ActionAgainstMeningitis.com](http://www.ActionAgainstMeningitis.com) to meet some young survivors of meningococcal disease. Summarize what you learn from their stories that you think all teens should know.

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**Part 3:** Now get the word out by creating a news article or blog or a classroom presentation that explains why teens and young adults are at a greater risk of getting meningococcal disease, especially at college, and how vaccination, including vaccination for meningitis B, can help protect them from this potentially deadly disease.

**References:** 1. Centers for Disease Control and Prevention. Meningococcal disease. Centers for Disease Control and Prevention website. <http://www.cdc.gov/meningococcal/index.html>. Updated April 1, 2014. Accessed April 2, 2015. 2. Bruce MG, Rosenstein NE, Capparella JM, et al. Risk factors for meningococcal disease in college students. *JAMA*. 2001;286(6):688-693. 3. Salit R. Providence College students asked to help evaluate meningitis vaccine. *The Providence Journal*. February 21, 2015. <http://www.providencejournal.com/article/20150221/NEWS/150229826/13972>. Accessed March 27, 2015. 4. Hill C. UO vaccination push reaches 8,000. *The Register-Guard*. April 2, 2015. <http://registerguard.com/rg/news/local/32843525-75/one-third-of-students-recommended-for-meningococcosis-vaccine-took-it.html.csp>.

**Check with your doctor about getting vaccinated against meningitis B — the strain of meningococcal disease that pre-2014 vaccines in the U.S. could not help prevent.**



## Best to Know

Take this quiz to check what you've learned about meningococcal disease and how to get protected against meningitis B. Write T for true or F for false. Then take this sheet home, fold back your answers, and have a parent take the quiz, so they can be informed about this serious health risk. Talk about how meningitis B could affect your family and discuss your options and plans to be vaccinated against it.

### My Answers

- 1. Meningococcal disease like meningitis B is transmitted through indirect contact, like sitting at a desk after an infected person has sat there.
- 2. Students who live in close quarters like college dormitories or summer camps are at a higher risk of contracting meningococcal disease.
- 3. "Carriers" of a contagious illness will always have symptoms.
- 4. Early symptoms of meningococcal disease resemble the flu and include stiff neck, drowsiness, fever, headache, and confusion.
- 5. Prior to 2014, high school students and college freshmen in the U.S. could not be vaccinated for meningitis B.
- 6. Since 2014, there are vaccines in the U.S. that can help protect against the bacteria that cause meningitis B.
- 7. Meningococcal disease can cause death within 24 hours.
- 8. The vaccines that help protect against meningitis B are administered as a single dose separately from the vaccines that help protect against the other common types of meningococcal disease.
- 9. When it is caught early, meningococcal disease can often be treated effectively with antibiotics.
- 10. About 20% of adolescents who survive meningococcal disease suffer permanent physical and mental disabilities such as brain damage, vision loss, and amputations.

### Parent Answers

- 1. T F
- 2. T F
- 3. T F
- 4. T F
- 5. T F
- 6. T F
- 7. T F
- 8. T F
- 9. T F
- 10. T F

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