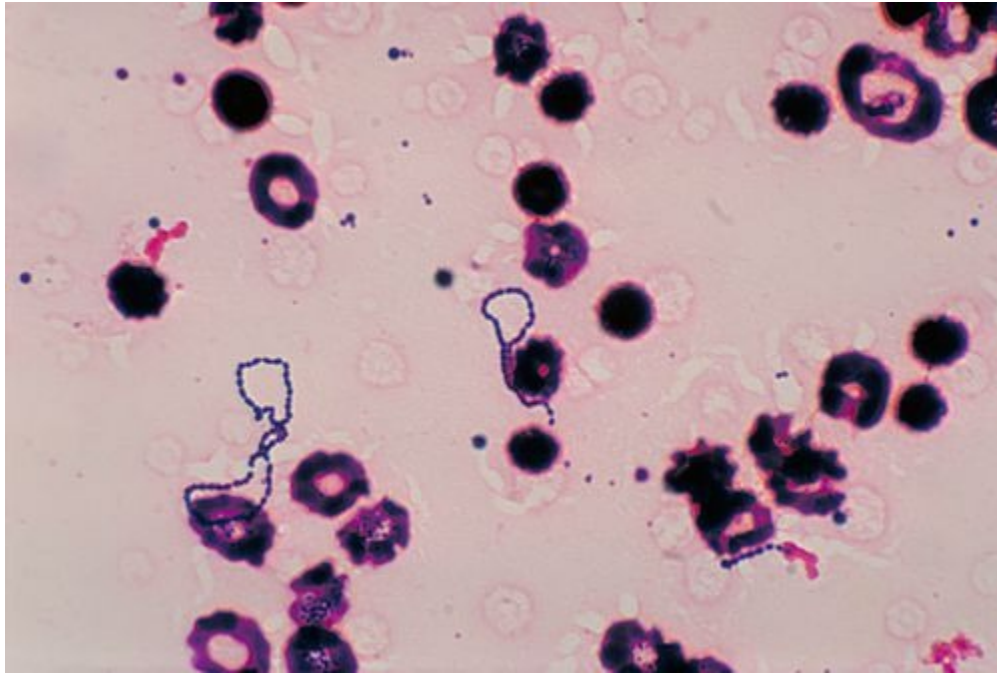


Meet the Microbes



viridans group streptococcus bacteria

GermS are all around us. They're in the soil, in the air, and in the water. GermS are even found on us and in us! They live on your hair, skin, teeth, and in your stomach. But even if you look carefully, you can't see them. GermS are so tiny that they can only be seen with the help of a microscope. This is why germS are sometimes called *microorganisms* or *microbes*.

Friends Or Enemies?

GermS have a bad name because they can cause disease. But most of them are harmless. Some germS actually help us. GermS in our throats protect us by making substances that keep other, more harmful germS from invading our bodies. And there are germS in our stomachs that help us digest our food.

But some germS do cause disease, and sometimes even death. Here are four of the common types of disease-producing germS.

1. Viruses

Viruses are the smallest of germs.

You need a special microscope called an electron microscope to see them. Viruses cause many mild illnesses such as the common cold. But they also cause more serious, even deadly, diseases, such as AIDS and SARS (severe acute respiratory syndrome).

Viruses make you sick by invading the cells of your body. They attach to your cells and *replicate* (REH-plih-kate; make more virus cells). The new virus cells in turn attack more of your body cells. Eventually, there are enough virus cells floating around in your body to make you feel ill. You may have symptoms such as a fever, sore throat, runny nose, or a cough.

2. Bacteria

Bacteria are larger than viruses. Unlike viruses, bacteria do not need to attach to cells to replicate. They can multiply on their own.

Bacteria were one of the first life forms to appear on the earth billions of years ago. They are very tough germs. Some can live in boiling hot temperatures or freezing cold temperatures. But most like it best where it is pleasantly warm and moist. This is why they love to live on and in your body. In fact, every surface of your body has bacteria living there. The harmless bacteria that live on and in our bodies are called *normal flora*.

There are many other bacteria that cause disease. Strep throat is caused by bacteria. Eating food that has harmful bacteria growing in it may cause food poisoning.

3. Fungi

When you think of fungus, you may think of mushrooms. Mushrooms are one of thousands of different types of *fungi* (FUN-jigh). Most fungi do not cause disease. In fact, many of them are helpful to us. One kind of fungus, yeast, is used to make some soft drinks and candy. Yeast is also used in breads, rolls, and pizza crust. One of the most important uses of fungi is in making antibiotics such as penicillin. Antibiotics are medicines that kill harmful bacteria.

Some types of fungi can cause infections, though. Ringworm and athlete's foot are caused by

fungi that grow on the skin. Molds are a kind of fungus that can cause allergies and asthma complications.

4. Protozoa

Protozoa are germs that live in almost all soil, including the hot desert sand. They live in all water too. But most of the protozoa that live in water do not cause disease.

Sometimes water becomes contaminated with protozoa that do cause disease. The protozoa get into the water through the waste of sick people or the droppings of animals. Then those people who drink the contaminated water can get sick too. One kind of protozoan disease spread through water is *amoebic dysentery* (uh-ME-bik DIS-un-tair-ee), which causes diarrhea.

The Invaders

In order to cause disease, harmful germs must first find a way to get into the body. Most often, they enter through the eyes, nose, or mouth. Germs can enter your body when you touch a sick person's hands or something they have just touched, like a doorknob or a faucet handle. Then when you touch your eyes, nose, or mouth, the germs can get into your body. If someone has a cold and sneezes or coughs into the air around you, you can breathe cold germs into your nose or mouth. Germs can also enter through a cut in your skin.

Germ Busters

With all of the germs living on and around us, it is a wonder we don't get sick more often! One of the reasons most people stay healthy is their immune system. Your immune system is on duty all of the time to protect you against invading germs. It does this by killing harmful germs as soon as they enter your body.

But sometimes the immune system is not strong enough. It may not be able to kill all of the

germs. Then you may become ill. If the disease is due to bacteria, the doctor may give you antibiotics to help you get better. Antibiotics don't work against viruses.

In Your Hands

You will not be able to prevent all illnesses caused by germs. But there are some things that you can do to reduce your chances of getting sick. Paul McHenry, M.D., works with people who have diseases or infections caused by harmful germs. Dr. McHenry says, "The most important thing you can do to avoid infections is to wash your hands."

This may sound too easy. But if you think about it, it makes sense. Washing your hands often will wash away many of the harmful germs that you pick up from touching other people or objects. Then you will not be able to transfer the germs to your eyes, nose, mouth, or to other people.

When should you wash your hands? Here are the most important times:

- Before and after preparing food
- Before you eat
- After you use the bathroom
- After handling animals or animal waste
- When your hands are dirty

Of course, you should wash your hands more often when someone in your family is sick.

Added Protection

Here are some other things you can do to help prevent disease caused by germs:

Get immunized. Nobody likes shots. But getting the recommended shots can keep you from

catching some diseases caused by germs. Some of the diseases that can be prevented by immunization are measles, mumps, rubella (German measles), tetanus, whooping cough, and hepatitis.

Avoid sharing. Sharing can be good. But sharing germs is not! Avoid sharing utensils, drinking glasses or bottles, and toothbrushes.

Develop good health habits. Keep your immune system healthy and ready to fight invading germs by practicing good health habits. Get enough sleep, eat lots of healthy foods such as fruits and vegetables, and exercise.

Menacing Meningitis

by Guy Falotico



Courtesy of Lauren Leeber

You wouldn't know it now, but Lauren Leeber of New York was once very sick. She got sent home from day care on the day before Halloween, and by the next day, she was in the hospital with a type of the disease called *meningitis*, fighting for her life. It got so bad that she lost a hand, some fingers, and parts of her legs. Later, she needed a new kidney.

Although it's been years since Lauren came down with meningitis, she recalls enough from that time to know that what she went through was very difficult. "I would not wish meningitis on my worst enemy," she says.

What Is It?

Meningitis is a disease that involves swelling of the meninges, which are tissues that cover your brain and spinal cord. The disease can be *contagious*. That means it can be passed from infected people to others. Meningitis can spread through contact with fluids from an infected person's mouth or throat. For example, you may get the disease if an infected person coughs or sneezes on or close to you.

Meningitis is hard to diagnose because its early symptoms are similar to those of the flu. They include fever, headache, stiff neck, and throwing up. Rashes are also common. But if meningitis is not picked up on by a doctor quickly, serious problems-even death-can occur in just a few hours.

When meningitis is caught early enough, people have a greater chance of beating it. For example, take Kaeley Hamilton, of Florida, who was 8 when she got sick with meningitis.

"I had all the typical symptoms of the flu, but the fever was really high and made my mom nervous, so we went to the doctor," recalls Hamilton. "They caught the meningitis early."

There are different types of meningitis, but two types are more common. One, *viral meningitis*, is caused by a virus. There is no medicine to treat most viral meningitis cases, but viral meningitis is usually not as severe as the other common type. People sick with viral meningitis usually get better on their own. *Bacterial meningitis* is the more dangerous form, especially when it is caused by bacteria called *meningococcus*. It is treated with antibiotics. But those drugs can work only if the disease is caught early.

Meningococcal meningitis is rare. It strikes fewer than 5,000 Americans each year. Still, teens and young adults have a greater chance of getting the disease compared with many other people. That's because they are more often in crowded settings that can give this type of meningitis a chance to spread, such as schools, college dormitories, or summer camps.

Kayla St. Pierre, of Massachusetts, had meningococcal meningitis when she was 10. "One day I felt sluggish at school, and the nurse said I had the flu and sent me home," says St. Pierre. "The next morning I had a rash all over my body. I didn't know what it was, but my parents knew something was wrong, so we went to the emergency room."

Once she got there, they found out what was wrong. But the disease had already taken hold. Both of her legs needed to be *amputated*, or removed, at the knee. She lost a few fingers too. St. Pierre went through months of surgeries to repair the skin damage from the rash, and she was in physical therapy to strengthen her muscles.

About 15 percent of all of the people who survive meningococcal meningitis end up with other health problems, such as brain damage, kidney disease, or damaged arms and legs.

Fighting Back

The good news is that meningococcal meningitis can be prevented with a vaccine. Health experts recommend that most people between the ages of 11 and 18 get the shot.

Not everyone should get vaccinated, however. Some people have allergies to the vaccine's ingredients. But for almost everyone else, the benefits of getting the vaccine far outweigh the risks.

"The most important message is to get vaccinated," says Dr. John Sinnott. He is an infectious disease specialist at the University of South Florida in Tampa. Vaccination against meningitis is "absolutely essential," he says, "and one of the greatest advances in medicine."

Meningitis Signs

It can be hard to tell whether a person has meningitis. That's because the symptoms, or signs, of the disease can look similar to other illnesses. Meningitis symptoms are serious. They include:



Stiff neck



Headache



Fever



Light sensitivity



Drowsiness



Joint pain



Throwing up



Confusion



Rash

Jason Lee

How to Protect Yourself

The best way to avoid meningitis is by getting the vaccine. Here are some other ways to try to keep from being infected.

- Don't share water bottles, drinking glasses, or eating utensils with friends.
- Don't share lip balms or lip glosses.
- Wash your hands often, especially before eating. Use warm water and soap, and lather

for at least 20 seconds.

- Eat healthy foods for a strong immune system.
- Get enough sleep each night to help your immune system.

What Is a Vaccine?

A vaccine is a shot that prevents a certain disease. It's made with very small parts of the germs it was created to fight. The vaccine teaches your body how to fight the disease for itself. Some types of vaccines need only one shot to protect you for the rest of your life. Other types, such as the one for seasonal flu, change from year to year and need to be given annually.



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