
Extended-Spectrum Beta-Lactamase-Producing Bacteria

Extended-spectrum beta-lactamases are enzymes made by certain kinds of germs (bacteria). These germs (or ESBL bacteria, for short) break down several types of common antibiotics so that they are not effective. So when you get sick because of ESBL bacteria, the infection is harder to treat. You may need different antibiotics. Infections caused by ESBL bacteria often affect the urinary tract and gut (intestine). They can also infect wounds, intravenous (IV) catheters, the lungs, and the blood.

ESBL bacteria are mainly spread among people in hospitals and long-term care facilities. Sometimes you can carry these germs and not be sick. This is called being colonized. It is especially common in the urinary tract in people who have been treated before with antibiotics. You can spread ESBL infection to others. But because you aren't sick, you don't need treatment. But if ESBL bacteria gets into the body and causes an infection, it can make you very sick. It can even be fatal if not treated correctly. This sheet tells you more about ESBL bacteria and what hospitals are doing to control this serious problem. It also tells you how you can help in this effort.

Who is at risk for ESBL infection?

Healthy people often are not colonized or infected with ESBL bacteria. But certain things can make colonization or infection more likely. These are called risk factors. They include:

- A current or recent stay in a hospital or long-term care facility.
- A current or recent stay in the intensive care unit or neonatal intensive care unit.
- A recent surgery or wound treatment.
- Having a urinary catheter, feeding tube, or other tube placed in the body.
- Older age.
- A weak immune system, such as after an organ transplant or cancer treatment.
- Long-term antibiotic treatment or taking antibiotics often.
- Close and prolonged contact with a person who is colonized or sick from an ESBL, such as caring for a friend or relative who has returned home from a hospital.

How do ESBL bacteria spread?

ESBL bacteria can spread the following ways:

- Someone who is colonized or infected with ESBL bacteria touches you with unwashed hands.
- You touch objects or surfaces that have the germs.
- Health care workers touch you without washing their hands correctly after contact with an infected person, object, or surface.

ESBL bacteria can enter your body in these ways:

- Through the mouth. This happens if you have the germs on your hands and then touch your mouth, such as when you eat. The germs are then swallowed and live in your intestine.
- Through the urinary tract. This occurs if you already have ESBL in your bowel and don't cleanse correctly after a bowel movement. ESBL bacteria can also enter the urinary tract through a urinary catheter, if you have one.
- Through a wound or IV site.
- Through the airway. This happens if the person with the ESBL bacteria coughs or sneezes on you. Or it can occur if you are on a breathing machine, called a ventilator, and have other risk factors for the germs.

What are the symptoms of ESBL infection?

ESBL bacteria cause different symptoms, depending on where the infection is. Common places and symptoms include:

- Urinary tract. You may have pain and burning when urinating, the need to urinate more often, and fever.
- Intestine. You may have diarrhea (may be bloody), pain in the belly (abdomen), stomach cramps, gas, fever, and loss of appetite.
- Skin wound. You may have redness of the skin around the wound and oozing of fluid from the wound.
- Blood. You may have high fever, chills, nausea and vomiting, shortness of breath, and confusion.

How are ESBL bacterial infections diagnosed?

Your health care provider will take a sample of urine, stool, infected tissue, or blood. They may also take a swab of the area around the rectum or of another place in the body. The sample, swab, or both are sent to a lab and tested for ESBL bacteria. The results often take 2 to 5 days. But newer methods may make this information available in a few hours.

How is ESBL bacterial colonization treated?

If you test positive for ESBL bacterial colonization, you often will not get treated. This is because no treatment is needed. Any treatment could cause more antibiotic resistance. In some cases, your body can get rid of the germs on its own. This can be true even after having been colonized for many months. If you are admitted to a hospital or other care facility for another health problem, people coming into contact with you may need to wear protective clothing. You may also need to be in a private room. These steps help to prevent the spread of ESBL to others. Always let new providers know if you have been diagnosed with colonized ESBL bacteria.

How is ESBL infection treated?

Because ESBL germs are resistant to many kinds of antibiotics, your health care provider will tell you how you'll be treated. You may need to be treated with 1 or 2 antibiotics, often intravenously. New antibiotics are being made available to help treat these germs.

Preventing ESBL infection: What hospitals are doing

Many hospitals and long-term care facilities take steps to help prevent ESBL infection:

- **Handwashing.** This is the single most important way to help prevent the spread of germs. Health care workers wash their hands with soap and water or use an alcohol-based hand cleanser before and after treating each person. They also clean their hands after touching any surface that may be contaminated with germs.
- **Protective clothing.** Health care workers and visitors will likely wear gloves and a gown when entering the room of a person with ESBL. Before leaving the room, they remove these items and clean their hands.
- **Private rooms.** People with ESBL are put in private rooms.
- **Personal care items.** People with ESBL may have their own patient care items, such as thermometers and stethoscopes. If these items are shared, they are fully cleaned and disinfected before reuse.
- **Monitoring.** Hospitals and long-term care facilities keep track of the presence and spread of ESBL. They teach caregivers the best ways to prevent it.

Preventing ESBL: What you as a patient with ESBL can do

As a patient, you have an important role to play in preventing the spread of an ESBL infection. Here are some things you can do:

- Ask all hospital staff to wash their hands before touching you. Don't be afraid to speak up!
- Wash your own hands often with soap and clean, running water for at least 20 seconds. Or use an alcohol-based hand gel that is at least 60% alcohol.
- Ask that stethoscopes and other instruments be cleaned with alcohol before they are used on you.
- Ask visitors to wash their hands before they enter and right after they leave your room. Visitors also may be told by hospital staff to put on protective gloves and a hospital gown when they're in your room. Just before leaving your room, they will take these off and wash their hands.
- Stay in your room. Don't go into the hallway or other places, such as the visitor waiting area, ward kitchen, hospital cafeteria, or other people's rooms.
- If you need to have a test done, such as an X-ray, follow instructions from staff. You may need to change into a clean hospital gown and wash your hands just before leaving your room.

Preventing ESBL infection: What you can do after leaving the health care facility

- Wash your hands often with soap and clean, running water for at least 20 seconds. Or use an alcohol-based hand gel that is at least 60% alcohol. Hand cleaning is especially important after going to the bathroom and before preparing and eating food.
- Follow instructions that you've been given for caring for surgical wounds or any tubes that you have, such as a catheter or dialysis port. Ask for instructions in writing.
- Keep cuts and scrapes clean and covered until they heal.
- Don't share towels, razors, clothing, or athletic equipment.
- Tell your other health care providers, including dentists, that you have ESBL, so that they can take precautions to prevent its spread.

Tips for good handwashing

- Use clean, running water (cold or warm is fine) and plenty of soap. Work up a good lather.
- Clean the whole hand, under your nails, between your fingers, and up the wrists.
- Wash for at least 20 seconds. Don't just wipe. Scrub well.
- Rinse, letting the water run down your fingers, not up your wrists.
- Dry your hands well. In a public restroom, use a paper towel to turn off the faucet and open the door.

Using alcohol-based hand gels

Alcohol-based hand gels can be used when your hands aren't visibly dirty.

- Use enough gel to get your hands completely wet.
- Rub your hands together briskly, cleaning the backs of your hands, the palms, between your fingers and up the wrists.
- Rub until the gel is gone and your hands are completely dry.

Precautions when caring for someone with ESBL bacteria

- Wash your hands well with soap and clean, running water for at least 20 seconds before and after any contact with the person. Use an alcohol-based hand gel that is at least 60% alcohol if your hands aren't visibly dirty.
- Wear disposable gloves when changing a bandage or touching an infected wound. Throw away the gloves after each use. Then wash your hands well.

-
- Wash and dry the person's bed linen, towels, and clothing using the warmest temperatures recommended on the labels. Use liquid bleach during the wash cycle if the label permits.

Understanding drug resistance

Hard-to-kill (resistant) germs, such as ESBL, often develop when antibiotics are taken. They can also develop when antibiotics are taken when they aren't needed or if they are not taken exactly as directed. This might mean not taking the full prescribed course or taking them for too long. The more often antibiotics are used, the more chances resistant germs have to develop. This is why your health care provider may hesitate to prescribe antibiotics unless they are certain antibiotics are needed.