

EHEC

Human pathogen information sheet – hygiene keeps you safe!

What are EHEC?

EHEC stands for enterohaemorrhagic *Escherichia coli*. These bacteria are found in the intestines of ruminants such as cows, sheep, goats and deer. They can produce specific toxins, referred to as Shiga toxins, which usually do not cause any illness in animals. However, if such bacteria are transmitted to humans, they may cause diarrhoeal diseases, in some cases accompanied by severe complications.

How are EHEC transmitted? *From animals to humans*

The bacteria are excreted with the faeces of infected animals. Since EHEC are relatively resistant, they can survive in the environment for weeks. They are highly contagious; a small number of bacteria are already sufficient for transmission. The hide of cows and other ruminants can be contaminated with traces of excrement. By touching and petting animals, the bacteria can find their way onto the hands and subsequently into the mouth. Playing in fields where ruminants are kept also poses a risk of infection to children.

Via foodstuffs

Transmission to humans may also take place via raw or insufficiently heated food.

Foodstuffs that are particularly likely to be contaminated with EHEC:

- ▶ Raw milk and raw milk products
- ▶ Raw or insufficiently heated meat products such as minced beef (e.g. hamburger) and raw sausage spread
- ▶ Food of plant origin such as vegetables contaminated with the pathogens via manure or contaminated water
- ▶ Unpasteurised fruit juice made from contaminated fruit
- ▶ Sprouted vegetables cultivated from contaminated seeds
- ▶ Any foodstuffs to which the pathogen has been transferred directly or indirectly via contaminated hands or kitchen utensils

From human to human

Humans infected with EHEC excrete the pathogen with the stool. Human-to-human transmission is possible by direct contact. Minute traces of stool residues are carried on the hands of infected people, and, by being transmitted from one hand to another, can easily enter the mouth.

Via contaminated objects

As a result of inadequate hand hygiene, the bacteria may also remain on touched objects, from where they can spread indirectly.

Via contaminated water

The pathogens can also enter the human gastrointestinal tract when swimming in waters contaminated with faeces. Swimming pools pose no risk, since EHEC are reliably killed by the use of chlorine.

What symptoms do the patients show?

The predominant symptom of the disease is watery diarrhoea, which may be accompanied by nausea, vomiting, abdominal pain, and, less frequently, by fever. Bloody diarrhoea accompanied by convulsive abdominal pain and, in some cases, by fever may develop in severe cases. A feared *complication*, which occurs primarily in childhood, is haemolytic-uraemic syndrome (HUS), which involves blood coagulation disorders and the destruction of red blood cells, in addition to renal dysfunction, which often necessitates temporary dialysis treatment. Neurological changes (e.g. convulsive seizures) may occur in addition. In isolated cases, HUS may also lead to permanent kidney damage or death.

What is the incubation period and how long are you contagious?

The disease usually breaks out three to four days, sometimes up to ten days after the infection. However, the infection may also be asymptomatic. Even if the symptoms have already disappeared, the pathogens may be excreted with the stool over a few days or several weeks – this often persists for longer in children rather than adults. As long as pathogens are excreted, there is a risk of infection for other people, in particular family members and people in community facilities.

Who is most at risk?

EHEC predominantly affects infants and pre-school age children. This group as well as the elderly or people with a weakened immune system are at particular risk of developing severe forms and complications.

What should I do if I fall ill?

- ▶ If you experience severe diarrhoea or bloody stool, you should seek medical advice. Infants, young children as well as the elderly and people with a weakened immune system should consult a doctor as soon as possible, as they are particularly sensitive to dehydration that may occur as a result of vomiting or diarrhoea.
- ▶ If you suffer from diarrhoea, it is important that you drink plenty of water. Make sure to eat easily digestible food and ensure adequate salt intake. In severe cases, electrolyte replacement solutions from the pharmacy may be helpful.
- ▶ Antibiotic therapy is usually not recommended, as it may even aggravate the condition. Do not use any antimotility agents against diarrhoea either, as this may delay the excretion of pathogens.
- ▶ Ill persons should be isolated at an early point (e.g. in a separate room) and avoid close contact with other people as far as possible.



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What should I do if I fall ill?

- ▶ If possible, ill persons should use a separate toilet.
- ▶ Pay attention to adequate hand and sanitary hygiene. Always wash your hands thoroughly with soap after using the toilet or changing the nappies of ill children and make sure your ill child does so as well. This also applies once the symptoms have already disappeared.
- ▶ Do not prepare any meals for others if you are ill yourself.
- ▶ Immediately clean all surfaces and objects thoroughly that may have come into contact with bodily fluids or excretions of ill persons using common household cleaners. Wearing disposable gloves can offer additional protection against infection. Wash your hands thoroughly after removing the gloves.
- ▶ Change the wipes, underwear, flannels and towels of ill persons regularly and wash them at a minimum temperature of 60°C.
- ▶ In the event of illness, obtain advice on the use of appropriate disinfectants for hands or smaller surfaces and follow the directions of your doctor or local health authority.
- ▶ EHEC infections are subject to the regulations of the German Prevention of Infection Act. Children and adults diagnosed with or suspected to have an EHEC infection are temporarily prohibited from attending or working at community facilities such as schools or nurseries. This also applies to persons who share a household where an infection has been diagnosed or is suspected. Affected persons must inform the community facility of the infection.
- ▶ The attending doctor or competent health authority will determine when the affected person may resume attending or working at the community facility.
- ▶ If you are handling foodstuffs in your job and suffer from contagious vomiting and/or diarrhoea, you must not attend work for that time.

How can I protect myself?

Good hand hygiene

- ▶ Wash your hands thoroughly with soap and water after using the toilet, before preparing food and before eating.
- ▶ When visiting a farm or petting zoo, make sure that your children do not put their fingers into their mouth or eat without washing hands first. The hands should be washed with water and soap after every contact with animals or soil.

Good kitchen hygiene: Correct handling of foodstuffs

- ▶ Boil raw milk (unpasteurised milk) before drinking.
- ▶ To protect yourself against EHEC, you should always store raw food of animal origin at refrigerator temperature. Raw meat should be stored and prepared separately from other foodstuffs and heated for at least 10 minutes at a minimum temperature of 70°C before consumption. Make sure to cook meat completely.
- ▶ Use separate worktops and kitchen utensils, such as chopping boards or knives, for raw meat products and rinse them thoroughly with warm water and detergent or in the dishwasher after use and contact with the meat packaging or thawing water. Then wash your hands thoroughly with soap.
- ▶ You should thoroughly wash or peel raw vegetables and fruit before eating.
- ▶ Leave sprouts to grow at no more than room temperature. Store them separately from other foodstuffs, preferably in the fridge, and use them up as soon as possible. Sprouts should be sufficiently heated or at least washed thoroughly before eating. Then clean all used kitchen utensils thoroughly. Do not forget to wash your hands.
- ▶ As a precaution, people with an immature or weakened immune system such as young children, the elderly or people with chronic underlying diseases, e.g. diabetes, as well as pregnant women should only eat sprouts after they have been sufficiently heated and should refrain from eating raw sausage and raw milk cheese.

Where can I find out more?

Your local health authority can provide you with further advice and information. Since contagious diarrhoeal diseases are subject to the regulations of the German Prevention of Infection Act, they will also have the latest information and be very experienced in dealing with the disease.

Useful customer advice can also be found online on the pages of the Federal Institute for Risk Assessment (www.bfr.bund.de). More (specialist) information is also available online from the Robert Koch Institute (www.rki.de/ehec).

For more information about how hygiene can prevent infections, please visit the website of the Federal Centre for Health Education (www.infektionsschutz.de).



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