

FAQ

5 September 2024

Noroviruses – recognizing and avoiding sources of infection

Noroviruses are among the most common pathogens leading to gastrointestinal illness in humans in Germany. The most common symptoms are severe vomiting and diarrhoea, which can lead to dehydration. Noroviruses remain very stable in the environment. They are primarily transmitted via contact with infected people and their excretions as well as with contaminated surfaces. Foods contaminated with noroviruses are another common source of infection. Following rules for personal hygiene and ensuring hygienic treatment and preparation of food are essential for prevention of norovirus infections. Additionally, foods like shellfish and frozen berries should always be evenly and thoroughly heated before consumption. In the following, the German Federal Institute for Risk Assessment (BfR) has collected questions and answers about noroviruses, in particular in relation to the route of infection via contaminated foods.

What are noroviruses?

Noroviruses are pathogens which can cause vomiting and diarrhoea in humans. These viruses belong to the virus family *Caliciviridae* and can be divided into so-called genogroups and genotypes based on genetic characteristics. In humans, noroviruses of genogroups I and II play the most significant role. They almost exclusively infect humans, meaning that animals play no role in their transmission. Within these genogroups, the virus changes continuously and new genotypes and virus variants develop regularly which thereafter have the potential to spread all over the world. Noroviruses are widespread and are among the most common pathogens causing gastrointestinal infections in Germany. In the environment, these viruses are very stable and can remain infectious there for days or even weeks. By contrast, sufficient heating of foods while cooking or frying them inactivates the pathogens.

Which illnesses are caused by noroviruses?

Noroviruses can cause disease in people of all ages, although children under the age of five and older people over 70 are particularly often affected. Typical symptoms include severe vomiting and diarrhoea, which can lead to dehydration, commonly accompanied by headache and sometimes fever. Intake of just a few virus particles (10-100) can be sufficient to cause an illness. The first symptoms tend to start around 24 hours after infection (incubation period of between 6 and 50 hours) and typically last one to two days before recovery. After symptoms subside, people often still excrete large virus amounts, which is conducive to further transmission of the virus. Most norovirus illnesses happen during the winter months and disease outbreaks are common in communal facilities such as nurseries, hospitals and retirement homes. You can find further information about norovirus infections on the website of the Robert Koch Institute at www.rki.de/en.

How are noroviruses transmitted?

Noroviruses are typically transmitted via the faecal-oral route, meaning through intake of virus-containing excretions via the digestive tract. Infected persons excrete noroviruses through stool or vomit. Large amounts of norovirus can be expected to be excreted in stool for at least two days after illness symptoms have subsided, but longer durations are also possible. After excretion, the norovirus is highly stable and can remain on objects and surfaces such as toilets or door handles for days or even weeks. This presents a risk of infection for other people. Food which has been contaminated with noroviruses and is not heated before consumption can also be a source of infection and illness.

Can noroviruses be transmitted via foods?

Noroviruses are predominantly transmitted through direct contact with diseased people or their excretions and well as indirectly via contaminated surfaces. However, infection can also occur following consumption of contaminated foods. Foods can become contaminated with noroviruses in a variety of different ways. These include foods which have been treated or prepared by infected persons without proper adherence to general kitchen hygiene rules. Virus contamination can also occur through people whose illness symptoms have already subsided, but who are still excreting noroviruses immediately after being ill.

While noroviruses do not multiply in foods, they remain infectious for a prolonged period of time. Deep-freezing foods does not inactivate noroviruses. Their presence cannot be identified by the smell or the taste of the foods. If the contaminated food is then consumed raw or without being sufficiently heated, norovirus illness can be the result. Contaminated foods in community catering, on cruise ships or at larger events (buffets) can also lead to larger disease outbreaks.

A special role in norovirus transmission can play food that may come into contact with human wastewater during its production. One example is shellfish and oysters, which, under certain conditions during growing, can accumulate different viruses. If thereafter not properly heated or not cooked at all, they can lead to norovirus illnesses. Certain plant-based foods can also come into contact with human wastewater if they are improperly farmed, or can be contaminated with noroviruses by infected persons during harvesting. For

example, frozen berries which were consumed raw or not thoroughly heated before eating have been identified as the cause of norovirus outbreaks in the past.

How can norovirus infections be prevented?

There is currently no vaccination against noroviruses. Therefore, hygiene is the most important insurance against contracting and spreading norovirus infections. Thorough hand-washing with soap lowers the risk of becoming sick as well as of contaminating surfaces and foods with the virus.

It is also particularly important that foods are treated and prepared hygienically. Fruit, vegetable, fresh herbs, and salads should be carefully washed before consumption. Additionally, certain risk foods such as oysters and frozen berries should always be evenly and thoroughly heated before consumption in order to inactivate potentially present noroviruses. Short cooking or warming, for example in the microwave, might not be sufficient.

Infected persons should not prepare foods for others during or shortly after illness, as the norovirus can still be excreted in stool for a prolonged duration following the subsidence of disease symptoms.

Further information on the BfR website

Foodborne infections – general information

https://www.bfr.bund.de/en/foodborne_infections-317029.html

About the BfR

The German Federal Institute for Risk Assessment (BfR) is a scientifically independent institution within the portfolio of the Federal Ministry of Food and Agriculture (BMEL) in Germany. The BfR advises the Federal Government and the States ('Laender') on questions of food, chemicals and product safety. The BfR conducts independent research on topics that are closely linked to its assessment tasks.

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Responsible according to the German Press Law: Dr Suzan Fiack



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