

What are Verocytotoxin producing Escherichia coli (VTEC)?

Verocytotoxin producing *Escherichia coli* [VTEC] are bacteria responsible for a range of illnesses in humans from mild diarrhoea to severe colitis. There are a number of different VTEC bacteria, the commonest one responsible for human disease in the United Kingdom being *E. coli* 0157. Laboratory isolations of *E. coli* 0157 in the United Kingdom have risen steadily from less than 10 each year in the early 1980s to about 1000 in the late 1990s. At present most of these infections are diagnosed in children under 5 years of age and the majority of cases occur in the summer and early autumn. However, the true incidence of this infection is probably much higher as many patients with diarrhoea do not visit their doctor therefore do not have laboratory investigations.

What symptoms do VTEC cause?

Diarrhoea is the commonest symptom produced by *E. coli* 0157 and the other VTEC infections. The incubation period for the illness is usually one to six days with an average of about two days. It is usually a self-limiting, mild diarrhoea which settles within two weeks but it can progress to a more serious colitis with severe abdominal pain and bloody diarrhoea. Nearly half of

all infected patients have blood in their faeces. About 5% of cases go on to develop the haemolytic uraemic syndrome, which is a type of acute renal failure associated with anaemia. This syndrome, which has a fatality rate of about 10%, is a more likely complication of VTEC infections in children and, to a lesser extent, the elderly.

How are VTEC cases treated?

As these infections are usually self-limiting, only simple measures such as plenty of fluids, a light diet and rest are needed. Whether antibiotic treatment is beneficial in this infection has yet to be established. If the haemolytic uraemic syndrome or renal failure should develop, then these are treated by conventional means.

Where do VTEC infections come from and how do they spread to humans?

Cattle are thought to be the main reservoir of infection. Several large outbreaks in the USA have been associated with undercooked beefburgers. Other suggested sources of infection include contaminated pasteurised and unpasteurised milk, yoghurt and faecally contaminated raw vegetables and water. Only small numbers of bacteria, i.e. less than 100 organisms, are necessary to cause illness. Outbreaks due to the

spread of the infection from person to person have occurred within households, nurseries and infant schools. In addition, direct contact with infected animals, particularly on farms or in animal sanctuaries, have also been reported as a source of infection.

What measures can be taken to control the spread of VTEC?

As the recognition of VTEC infections is fairly recent, the best ways of controlling these diseases are still being determined and may be modified in the light of future experiences. All cases should be reported to a Consultant for Communicable Disease Control and notified if the infection is thought to be as a consequence of food poisoning. Environmental Health Officers and Public Health doctors must satisfy themselves as to the adequacy of hygiene, and arrangements for hand washing and toilet facilities within the home of any reported case or contact. Hand washing by children must be supervised in nurseries and infant schools. Cases who pose a special risk of spreading the infection include:

1. food handlers whose work involves touching unwrapped foods to be consumed raw or without further cooking;

2. health care, pre-school nursery or other staff who have direct contact, or contact through serving food, with highly susceptible patients or people in whom a diarrhoeal illness could be serious;
3. children under five years of age attending play groups, pre-school nurseries or other similar groups;
4. older children and adults who are unable to implement good standards of personal hygiene.

All these cases should be excluded from their work or school until two faecal samples taken at intervals of not less than 48 hours have been found to be clear of the organism. Cases who pose no special risk can return to work or school 48 hours after their diarrhoea has settled.

Contacts of cases who are themselves within the groups posing a special risk of spreading the infection should have faeces samples tested to see if they are also infected by VTEC bacteria. Contacts who are children under five years of age attending play groups, pre-school nurseries or other similar groups as well as older children and adults who are unable to implement good standards of personal hygiene should, in addition, be excluded from their work or school until their faeces samples have been found to be clear of the organism.

The Department of Health's Chief Medical Officer advises that exposure to VTEC bacteria as well as other food poisoning organisms can be significantly reduced by cooking beef burgers thoroughly until the juices run clear and there are no pink areas inside. Vulnerable groups such as children, the elderly and immunocompromised patients should also avoid consumption of raw milk.

This leaflet has been compiled using information from the Association of Medical Microbiologists.



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**Environment Services
Department**

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the facts