

Professional information factsheet

***E. coli* O157**

Introduction

Escherichia coli (*E. coli*) are common, normal, harmless bacteria in the human large intestine. However, vero cytotoxin-producing *E. coli* (VTEC) is a particular strain of the bacteria, not normally present in humans, which produces potent toxins and can cause severe disease in humans. VTEC O157 is the most common strain, although there are other strains (given other numbers) that occur occasionally. It is often referred to as *E. coli* O157.

The illness

VTEC O157 can cover a range of symptoms from mild diarrhoea (some people may even have no symptoms at all) to bloody diarrhoea (haemorrhagic colitis) and haemolytic uraemic syndrome (HUS). HUS is characterised by acute renal (kidney) failure, haemolytic anaemia and thrombocytopenia (lowered platelets that can cause problems with blood clotting). It usually occurs in young children and is the major cause of acute renal failure in Britain. HUS develops in up to 10% of patients infected with VTEC O157. Some patients, usually adults with VTEC O157, develop thrombotic thrombocytopenic purpura (TTP), where the clinical features of HUS are seen together with neurological complications.

The incubation period can range from 1–14 days, and is most commonly 3–4 days. Symptoms usually resolve within two weeks, except in cases of HUS or TTP. The fatality rate is variable and depends on age (highest in the very young and elderly), ranging from 1% to 5%, but has been higher in some institutional outbreaks. There is no specific treatment and each phase of the disease is treated symptomatically. Antibiotics do not help and may increase the risk of complications such as HUS.

The source

The main source is the gut of healthy cattle, although it may be present in sheep and other animals. It can spread to humans in a number of ways.

- Eating infected food, mainly meat (especially minced meat such as in beef burgers), unpasteurised milk and cheese. However, it has also been associated with other foods, such as unwashed vegetables and salads, due to cross contamination.
- Contact with infected animals, such as at farms, animal sanctuaries, open farms or petting farms.
- Drinking or swimming in infected water (exposed to animal faeces) such as river water, stream water or water from wells.
- Contact with land where cattle have previously grazed, eg campsites.

The organism is very easily passed from one person to another. This leads to 'secondary spread', where the original patient may have caught the infection in one of the ways detailed above, but then others close to them catch it from them. This can lead to outbreaks becoming much more widespread. It is more likely to occur through inadequate hand washing after using the toilet and/or before handling food, and is particularly common in households, nurseries and infant schools.

Prevention

It is unlikely that VTEC O157 carriage by cattle will ever be eliminated as it does not cause disease in cattle. Prevention therefore needs to be aimed at stopping the spread from cattle intestines and faeces to humans. The measures needed are extremely wide-ranging, from minimising the contamination of carcasses at slaughter, to detailed guidelines for the food industry, open farms and the public.

Guidelines for the public include:

- cooking all beef and other meat products thoroughly, especially when minced or in the form of burgers;
- preventing cross contamination from raw to cooked foods, or from raw to ready to eat foods such as salad items;
- not drinking unpasteurised milk or eating unpasteurised cheese;
- careful hand washing after going to the toilet, after touching animals, and before handling food.

Cases

Fortunately, VTEC O157 is relatively uncommon. In 2007 in Northern Ireland, there were 54 cases, compared to 883 cases of campylobacter and 159 cases of salmonella. It is nevertheless a significant number for a potentially serious disease. The number of cases in Northern Ireland has been fairly stable at around 50 per year since 1999, apart from 2002 and 2004, when there were much fewer cases (27 and 19).

Cases of VTEC O157 in Northern Ireland 1997–2011

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
30	29	54	54	46	27	53	19	49	47	54	59	48	77	56

Source: Communicable Disease Surveillance Centre Northern Ireland

www.cdscni.org.uk

There have been no deaths reported from VTEC O157 in Northern Ireland in recent years (definitely none since 2001 when ICD 10 codes were introduced, and we are not aware of any before then)