



## Alert: EHEC and HUS outbreak in Germany

A large ongoing outbreak of enterohaemorrhagic *E. coli* (EHEC) and resultant cases of haemolytic uraemic syndrome (HUS) has been observed in northern Germany in recent weeks. The causative pathogen has been identified as EHEC O104:H4, a relatively rare serogroup of Shiga-toxin (a.k.a. verotoxin) producing *E. coli* (STEC/VTEC). As of 31 May 2011, German health authorities have identified 470 cases of HUS caused by STEC (including 9 deaths), and an additional 1 064 cases of EHEC (including 6 deaths). The World Health Organization (WHO) has also reported cases from ten other European countries; the majority of these cases are travellers who had recently visited northern Germany or residents who had contact with a visitor from that area. A collective total of 499 cases of HUS and 1 115 cases of EHEC (1 614 cases in total) was reported across Europe as of 2 June 2011. An additional two travel-associated cases were reported from USA.

Investigations into the cause of the outbreak are ongoing. Preliminary results of a small case-control study indicate that cases are more likely to have consumed raw tomatoes, cucumbers or lettuce than controls. Media reports identifying cucumbers from Spain as the source are unsubstantiated. Other foods may still be implicated as this outbreak unfolds.

### Disease background

EHEC is a zoonosis, transmitted to humans primarily through consumption of contaminated foods (including various meats, dairy, vegetables and other food products). Outbreaks have additionally been associated with direct exposure to animals or their excreta, and consumption of contaminated water (drinking and recreational). Secondary person-to-person transmission from infected persons also occurs.

Disease in humans typically presents as abdominal pain/cramps with diarrhoea, which may progress to bloody diarrhoea or haemorrhagic colitis in some cases. Disease is self-limiting in most instances, but approximately 10% of patients (particularly young

children and the elderly) develop HUS. HUS results from the introduction of Shiga toxin into the blood stream, and is characterised by acute renal failure, haemolytic anaemia and thrombocytopenia. HUS usually presents a few days to weeks after the initial diarrhoea. There may also be neurological complications (including seizures, stroke and coma) in up to 25% of patients (more commonly in adults, where the disease may present as thrombotic thrombocytopenic purpura or TTP). Up to 3-5% of HUS cases are fatal and 50% of survivors may develop chronic renal sequelae.

### Response to suspected cases and laboratory testing:

In response to this outbreak, EHEC O104 infection should be included in a differential diagnosis for persons meeting the following suspected case definition: any person presenting with diarrhoea (which may be bloody) or HUS and a history of recent travel to Germany, or close contact with a visitor/returning traveller from Germany. Obtaining a detailed history is, therefore, of paramount importance in identifying these cases. All suspected cases should be reported by the healthcare worker to the NICD Hotline (082-883-9920) and a stool specimen should be collected for laboratory testing. Please specifically request EHEC O104 testing; the laboratory will liaise with the Enteric Diseases Reference Unit (EDRU) of the NICD-NHLS regarding the specialised testing required.

### Management of suspected cases:

The treatment of EHEC infection is entirely supportive. Antibiotics are currently contraindicated because they may induce the release of Shiga toxin and precipitate HUS. Antimotility agents are also not recommended. The management of HUS cases should be referred to specialists.

### Infection prevention and control:

There is a risk of secondary spread from persons with EHEC to close contacts. Scrupulous hand and personal hygiene must be reinforced

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to prevent spread within households, and those suffering from/suspected to suffer from EHEC should avoid preparing food for others where possible.

In healthcare facilities, contact precautions in addition to standard infection control practices are recommended.

**Advice to travellers:**

There are currently no restrictions on travel to, or trade with, Germany. The German authorities have advised refraining from eating raw/uncooked tomatoes, cucumber and green lettuce for the present time. Personal hygiene, including frequent hand washing, also plays an

important role in the prevention of enteric infections. Returning travellers should be on the look out for symptoms of EHEC and HUS, and seek immediate medical care making special mention of their recent travel history.

The NICD Hotline is a service for healthcare professionals only. Members of the public can contact the Department of Health hotline at 0861364232 for any queries.

**Source:** Outbreak Response Unit, and Enteric Diseases Reference Unit, NICD-NHLS