



Public Health
England

National increase of verocytotoxin-producing *Escherichia coli* O117:H7

WITHDRAWN
SEPTEMBER 2019

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Background and Interpretation:

PHE are investigating a rise in *Escherichia coli* (VTEC) O117:H7, possibly connected to the men who have sex with men (MSM) community.

Verocytotoxin-producing VTEC O117:H7 is a serogroup that has been reported at low levels in England in recent years. However this is likely to be an artefact of the methods traditionally used to detect VTEC by local diagnostic laboratories.

VTEC O117:H7 is sometimes mis-identified as *Shigella sonnei* by local diagnostic laboratories. Such mis-identifications come to light when suspect strains are referred to the PHE Gastrointestinal Bacteria Reference Unit (GBRU) for confirmation and characterisation. Over the course of the last two years a small number of diagnostic laboratories have adopted polymerase chain reaction (PCR) techniques to detect VTEC in stool specimens. The introduction of these techniques has increased laboratory capabilities to detect non-O157 VTEC from clinical specimens.

VTEC O117:H7 produces Verocytotoxin 1 (VT1) and is considered to be less pathogenic than VTEC O157, is less likely to cause haemolytic uraemic syndrome (HUS) and although it can cause bloody diarrhoea, the clinical illness is more similar to *S. sonnei*.

There has been a shift in the epidemiology of VTEC O117:H7 since September 2013. In the period 01 January 2009 to 13 September 2013, GBRU confirmed 13 cases of VTEC O117:H7. Twelve cases were adults of whom seven cases were female. Ten cases had a history of foreign travel during their incubation periods. Travel histories were not available for the remaining three cases.

Since 14 September 2013 GBRU have confirmed seven cases of VTEC O117:H7. All of the cases are male adults (mean age 39 years) from London, Brighton, Manchester and Yorkshire. One had a recent history of travel outside Europe. The clinical specimens from three cases were referred from genito-urinary medicine clinics. Four cases are reported to be MSM. The sexual preferences of the three remaining cases are unknown.

An outbreak control team has been convened and follow up investigations are being planned.

Implications for PHE Centres

Cases of reported VTEC infection should be followed up in accordance with standard operating procedures.

Adult male cases with laboratory confirmed VTEC O117:H7 infection will be interviewed by specialists in sexually transmitted infections (STIs) in order to allow more detailed epidemiological data to be collected and possible routes of transmission to be identified. The STI team at PHE Colindale will contact PHEC Health Protection Teams to make arrangements to undertake these interviews.

Implications for PHE sites and services

Laboratories are asked to be aware of this increase, and to ensure that all presumptive *Shigella sonnei* isolates and faecal specimens positive by PCR for VTEC from cases are referred to the Gastrointestinal Bacterial Reference Unit (especially those from adult males).

Recommendations to PHE Centres

To ensure that all presumptive *Shigella sonnei* isolates are referred to GBRU, and that the normal enhanced VTEC questionnaire system is followed.

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Information for Clinical Microbiologists in front line laboratories regarding vero cytotoxin-producing *E coli* O117:H7 in MSM (including diagnosis and management)

Laboratory queries:

Are we being advised to set up extra plates/ tests for MSM presenting with diarrhoea?

There is no need to change your current routine protocol on the bench or set up extra plates; the standard protocols for testing for community acquired GI pathogens from stool specimens are adequate.

Which isolates should be referred to the reference laboratory? Currently we do not send all *Shigella sonnei*- should we start referring all isolates to GBRU?

Isolates from symptomatic **adult males** which are identified as presumptive *Shigella* spp by MALDITOF or biochemical tests (API or Vitek etc) but are negative on specific *Shigella* serological testing should be referred to GBRU to confirm/rule out VTEC O117.

In addition any isolates from stool which are identified as presumptive VTEC non O157 should be sent to the GBRU to look for VTEC O117.

(The GBRU will also receive any *Shigella sonnei* isolates **from adult males** should you want a confirmation)

My laboratory performs diagnostic PCR on stool specimens, which specimens are to be referred to the GBRU?

All stool specimens which are positive for VTEC using a commercial gastrointestinal PCR assay but culture negative for VTEC O157 should be sent to GBRU for further testing.

I have received a report of VTEC O117, is this VTEC O117: H7?

Yes. The reference laboratory does not routinely report the H antigens and all cases reported as VTEC O117 should be managed as per VTEC guidelines.

http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1279889252950.

Is there a charge for the GBRU services?

Shigella and VTEC services are free of charge to NHS laboratories.

Clinical queries:

What specific symptoms should we look for in MSM with VTEC O117? (Some may have rectal symptoms due to STIs)?

Data on clinical symptoms is minimal currently (although this should improve as the cases are now being followed up more closely). Presentation seems to be similar to symptoms associated with *Shigella sonnei* infection.

In the cases seen so far; diarrhoea was present in all cases, fever, abdominal pain and blood in stools was seen in some cases. **Persistent diarrhoea was a common feature** [1].

This pathogen produces VT1 only, so the risk of haemolytic uremic syndrome (HUS) is thought to be low (VT2 is more commonly associated with HUS), there have been no cases of HUS to date.

Should we be contact tracing positive MSMs?

There is no current recommendation to contact trace MSM with VTEC O117. However, this is being reviewed. All VTECs should be reported to Health Protection Teams who will undertake public health follow-up as required eg if they are in a risk group like food handlers.

What treatment should we be offering?

The cases of presumptive or proven O117:H7 should be managed as any case of VTEC. (PHE guidance access http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1279889252950) There have been no reported cases of HUS in this series as yet. Patients may have mixed infections and these should be discussed with the regional/ reference clinical microbiology team.

Should we be checking for clearance of infection?

At the moment we have very little information on this pathogen especially regarding the risk of transmission associated with sex between men. However this pathogen is associated with chronic persistent carriage [1].

We are not currently advising checking for microbiological clearance of all MSM with VTEC O117 infection unless directed by Health Protection Teams (eg because they are in a risk group such as a food handler). However, this is under review.

MSM should be provided with advice on how to prevent transmission to others. Infection prevention leaflets are being developed and the guidance will be based on the same principles as that of prevention of Shigellosis in MSM.

(http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317140656520). Also see information in Appendix 1

References:

- Scand J Infect Dis. 2005;37(4):288-94. VTEC O117:K1:H7. A new clonal group of *E. coli* associated with persistent diarrhoea in Danish travellers. Olesen B1, Jensen C, Olsen K, Fussing V, Gerner-Smidt P, Scheutz F.
- Emerg Infect Dis. 2013 Aug;19(8):1302-4. Whole genome sequencing of an unusual serotype of Shiga toxin-producing *Escherichia coli*. Dallman T, Cross L, Bishop C, Perry N, Olesen B, Grant KA, Jenkins C.

Appendix 1:

Wash your hands frequently. Do this after using the toilet and before eating or preparing food. Use warm water and soap. Avoid preparing food for other people while you're ill and for one week after symptoms stop.

Avoid sex until a week after symptoms subside.

Avoid sharing towels – use separate towels at home.

Clean all taps, door handles, toilet handles, levers, seats and any other surfaces that may have become contaminated with hot soapy water frequently followed by a general purpose disinfectant.

Wash clothes, towels and bedding in the washing machine on the hottest cycle that the clothing, bedding and towels can tolerate.

Do not use spas/jacuzzis/hot tubs for one week after symptoms have stopped– you might contaminate the water and infect others.

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