



Serial Number: 2024/019

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Event: Increase in non-O157 Shiga toxin-producing *E. coli* and re-emergence of STEC O145:H28 outbreak cluster t5:206

Notified by: Gastrointestinal Infections, Food Safety and One Health Division

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Instructions for Cascade:

- **Devolved Administrations** to cascade to Medical Directors and other DA teams as appropriate to their local arrangements
 - **Regional Deputy Directors** to cascade to Directors of Public Health (DsPH)
 - **UKHSA microbiologists** to cascade to NHS Trust infection leads
 - **NHS labs/NHS infection leads/NHS microbiologist/NHS infectious disease specialists** to cascade to appropriate clinical services including emergency departments, general medicine, renal medicine and paediatrics- Royal College of General Practitioners, Royal College of Emergency Medicine, Royal College of Paediatrics and Child Health
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Summary

UKHSA and partner agencies are investigating an outbreak of Shiga toxin-producing *E. coli* (STEC). The specific organism involved in the outbreak is STEC O145:H28 stx2a, eae+, 5-single nucleotide polymorphism (SNP) designation 2.8.17.17.197.206.% (t5:206) and in addition there is an overall exceedance of non-O157 STEC reports identified across the UK since 21 May 2024, which are being assessed to understand whether they are linked to the same outbreak. The purpose of this communication is to ensure healthcare professionals are aware of the current increase in cases, the national level investigation into the t5:206 cluster and the guidance and recommendations for action.

Background and Interpretation:

The UK Health Security Agency (UKHSA), Public Health Scotland (PHS), Public Health Wales (PHW) and the Public Health Agency of Northern Ireland (PHA) are working together with the Foods Standards Agency and Food Standards Scotland to rapidly identify any common exposures to enable implementation of acute risk management actions. No source has yet been identified.

The STEC O145 t5:206 cluster was previously investigated August to November 2023 ([BN 2023/055](#)). Several suspect foods were identified as potential vehicles of infection, however a single vehicle/supply chain was not conclusively identified. No further cases were reported after week 40 of 2023. Case reporting has resumed with the first 2024 case reported with a sample date of 29 February 2024, with notable escalation in reports in May with onset dates clustering between 13 to 20 May. As of 17:00 on 31 May, there are 43 confirmed cases (40 in England and 3 in Wales). Confirmed cases are mostly adults (range 11 – 66 years of age, median 30) with 56% of cases male. There are a further 89 probable cases distributed across the UK.



STEC (previously known as VTEC) infection frequently presents as abdominal pain, diarrhoea with or without blood in stool, vomiting and dehydration. Presentations vary depending on the case demographics, genomic profile of the strain, virulence factors (stx genes) and the source of infection. Approximately 10% of STEC cases develop haemolytic uraemic syndrome (HUS), a life-threatening condition characterised by microangiopathic haemolytic anaemia, thrombocytopenia and acute kidney injury. The risk of HUS is highest in children under five years of age. The STEC O145 t5:206 cluster investigations in 2023 indicated higher than usual clinical severity indicators including a 50% hospitalisation rate.

Implications & Recommendations for UKHSA Regions

Health Protection Teams (HPTs) are requested to conduct Enhanced Surveillance Questionnaires and follow up any cases of STEC as per the STEC public health guidance algorithm (available [here](#)). GIFSOH and Field Service are leading the collection of additional trawling questionnaires as necessary for the cluster under investigation.

A context has been set up on HPZone: **STEC O145 t5:206 May 2024**

Implications & Recommendations for UKHSA sites and services

UKHSA sites and services should continue to report STEC results (including serogroups other than non-O157) to national surveillance following normal procedures and should promptly refer samples to the Gastrointestinal Bacteria Reference Unit (GBRU) for confirmation and further characterisation (through WGS) as detailed below.

Food Water & Environment (FW&E) laboratories may be asked by the Incident Management Team to examine food and environmental samples taken as part of the outbreak investigations.

Implications & Recommendations for NHS including diagnostic laboratories

Clinicians should be aware of the recommendations regarding sampling:

Take a faecal sample/rectal swab (routine bacterial culture/charcoal swab) particularly in children under five years of age or elderly/immunocompromised patients, when there is:

1. Admission to hospital with gastroenteritis and/or HUS,
2. Severe symptoms and signs of gastroenteritis e.g. bloody diarrhoea, or
3. Symptoms and signs of gastroenteritis that have not resolved or are worsening after 72 hours

It is particularly important to obtain a faecal specimen from individuals with bloody diarrhoea, systemically unwell patients, young children (5 years old and under), the immunocompromised, food handlers and those working in health and social care.

All cases of suspected HUS should have an urgent faecal sample sent for STEC PCR. A rectal swab (standard bacterial culture **swab** or **charcoal swab**) is an alternative if the case is unable to produce stool due to severe colitis (often the case in late presentations).

Antibiotics should be avoided in suspected STEC or HUS cases; consult your local infection team for advice.

HUS is a clinically notifiable disease, and identification of any confirmed or suspected HUS cases should be notified to the local UKHSA HPT upon **clinical suspicion**, regardless of the microbiology results. Suspected cases should be discussed with the local paediatrician and/or renal team to arrange further investigation and optimal clinical management. (The relevant HPT can be found using the 'find my HPT' tool: <https://www.gov.uk/health-protection-team>).



Diagnostic laboratories – It is requested that:

1. Unless the laboratory has the capability to test by PCR locally, all laboratories (NHS, UKHSA Regional Public Health, collaborating laboratories (including private)) should send an aliquot for the stool sample (or rectal swab in Amies medium with charcoal or bacterial rectal swab if patients cannot give a stool sample) on **all suspected cases of HUS urgently** to the Gastrointestinal Bacterial Reference Unit (GBRU) at UKHSA, Colindale using the [L5 referral form](#) for testing of all STEC serogroups, using overnight Dx or courier if appropriate. This is important as delays affect GBRU's capability to adequately culture STEC and therefore sequence it for detection of outbreaks.
2. In addition follow local standard operating procedures (SOPs) for processing stool specimens such as enteric PCR and culture, noting the instructions to clinicians above to send samples from appropriate cases of gastroenteritis for diagnosis of STEC.
3. Culture based laboratories will not be able to detect non O157 unless they use selective media such as Chromagar which detects non O157 STEC, it is recommended you use this method for detection of STEC on cases with haemorrhagic colitis.
4. All laboratories should continue to promptly refer all isolates of presumptive STEC (including non-O157 if detected using ChromAgar) to the GBRU at UKHSA, Colindale for confirmation and typing using [L4 referral form](#)
5. The [local Health Protection Team](#) is notified of confirmed or suspected HUS cases upon clinical suspicion so they can initiate public health investigations

Further guidance and information is available at:

- CKS guidelines <https://cks.nice.org.uk/topics/gastroenteritis/management/child-gastroenteritis/>
- <https://cks.nice.org.uk/topics/diarrhoea-adults-assessment/management/acute-diarrhoea-less-than-4-weeks/>

Implications and recommendations for Local Authorities

Depending on local arrangements, local authorities may be asked to support the investigations by interviewing cases and taking food samples where needed.

References

Jenkins C, Perry NT, Godbole G, Gharbia S. Evaluation of chromogenic selective agar (CHROMagar STEC) for the direct detection of Shiga toxin-producing Escherichia coli from faecal specimens. J Med Microbiol. 2020 Mar;69(3):487-491. doi: 10.1099/jmm.0.001136. PMID: 31935188;

Rodwell EV, Chan YW, Sawyer C, Carroll A, McNamara E, Allison L, Browning L, Holmes A, Godbole G, McCarthy N, Jenkins C. Shiga toxin-producing Escherichia coli clonal complex 32, including serotype O145:H28, in the UK and Ireland. J Med Microbiol. 2022 Aug;71(8).