

This is an extract from Section 4.12 (Control) of the document: *Guidance for the Public Health Management of Infection with Verotoxigenic Escherichia coli (VTEC). Health Protection Network Scottish Guidance 3 (Second edition, revised February 2013)*. The full version can be found at: <http://www.hps.scot.nhs.uk/giz/guidelinedetail.aspx?id=393361>.

## Exclusion and Microbiological Clearance

In order to assist public health practitioners, an algorithm for exclusion and microbiological clearance is shown on page 15 for cases; it also covers contacts, defined as those individuals that the local risk assessment has identified as having a significant risk of being exposed to the faeces of an infected person (see Glossary). The application of this algorithm will depend on whether the local risk assessment has satisfied the HPT on factors such as the ability of cases and contacts to comply with strict personal hygiene. The algorithm is also explained in more detail in the rest of this section.

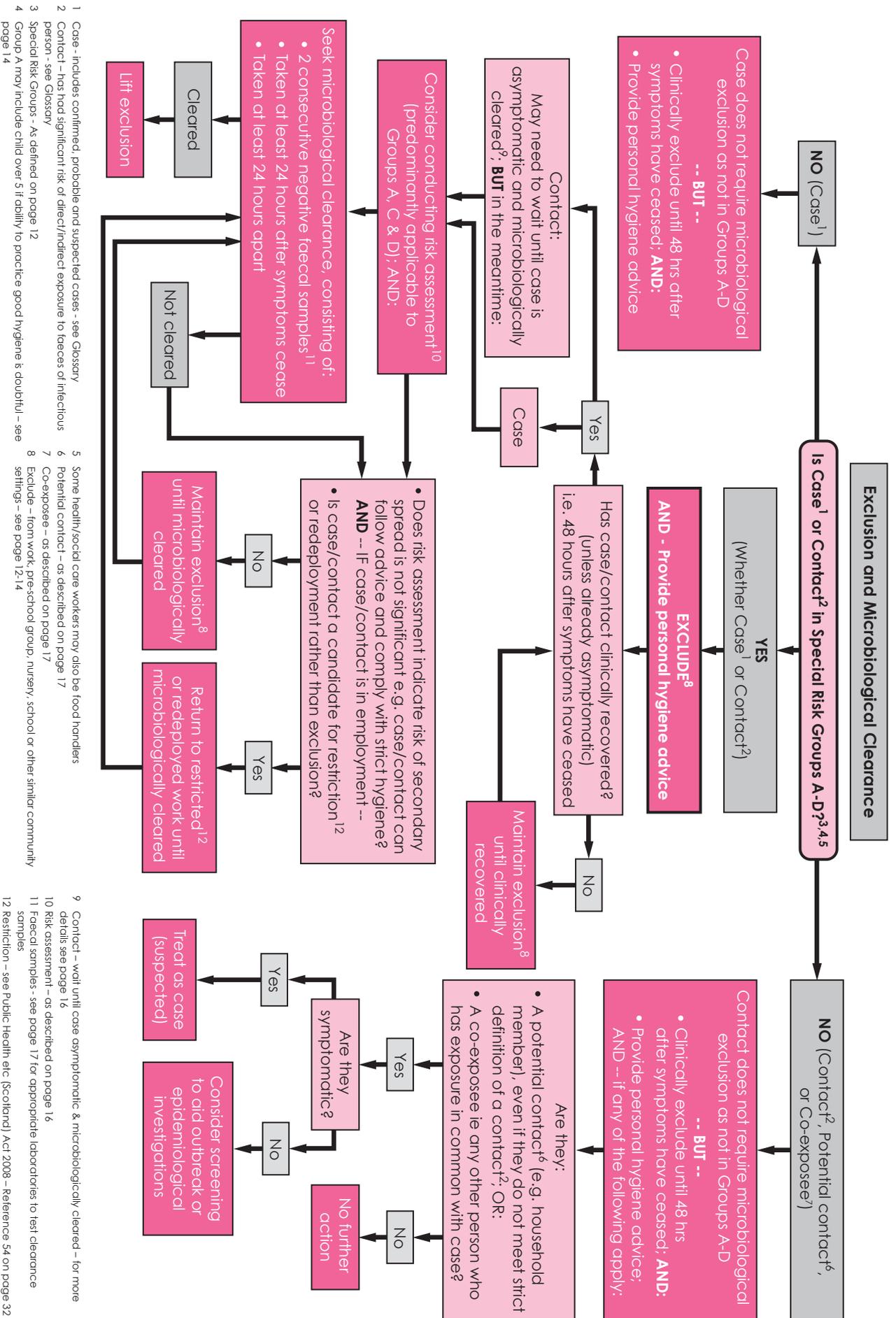
Exclusion of cases and contacts until microbiologically clear reduces but does not eliminate the risk of transmission of VTEC. Whilst microbiological clearance is a necessary condition for the lifting of exclusion, prevention of transmission cannot be guaranteed for a number of reasons, including the possibility of intermittent excretion.

Most exclusion and microbiological clearance requirements apply to both cases (whether suspected, probable or confirmed) and contacts (see Glossary – not all household members will meet this definition).

**Confirmed cases and contacts in Groups A-D** (ie those who are likely to pose a special risk of transmission of infection) should be excluded from work, pre-school group, nursery, school or other similar community settings until they are recovered (i.e. 48 hours after symptoms have ceased [2]) and until they have been cleared microbiologically.

After a risk assessment, those primary school children whose ability to practice good hygiene is doubtful, should be managed as Group A.

**Microbiological clearance** consists of two negative faecal samples at an interval of at least 24 hours. **In cases**, clearance samples should not be taken until 24 hours after symptoms have ceased. If a clearance sample is positive, the HPT may consider delaying further sampling for up to a week. The strain of VTEC involved will determine the laboratory to which clearance samples should be submitted (see 'Identifying appropriate laboratories' on page 17).



1 Case - Includes confirmed, probable and suspected cases - see Glossary  
 2 Contact - has had significant risk of direct/indirect exposure to faeces of infectious person - see Glossary  
 3 Special Risk Groups - As defined on page 12  
 4 Group A may include child over 5 if ability to practice good hygiene is doubtful - see page 14  
 5 Some healthy/social care workers may also be food handlers  
 6 Potential contact - as described on page 17  
 7 Co-exposee - as described on page 17  
 8 Exclude - from work, pre-school group, nursery, school or other similar community settings - see page 12,14  
 9 Contact - wait until case asymptomatic & microbiologically cleared - for more details see page 16  
 10 Risk assessment - as described on page 16  
 11 Faecal samples - see page 17 for appropriate laboratories to test clearance samples  
 12 Restriction - see Public Health Act 2008 - Reference 54 on page 32

## Risk assessment of contacts and timing of clearance sampling

In theory, whilst the case is still excreting VTEC, contacts may continue to be exposed to risk of secondary spread, for example, in a household setting. Sampling or screening of such contacts should ideally be delayed until the case is symptom free and microbiologically clear. If however good infection control is implemented this may be sufficient to control the contact's ongoing risk of exposure.

The HPT (or EH department) should therefore undertake a risk assessment to determine the need for and timing of clearance samples, or for lifting exclusion, based on whether the risk of secondary spread is significant or not.

This will be heavily dependent on assessing the extent to which the case and their contacts are likely to understand and comply with advice on personal hygiene and infection control in the home, school, workplace, etc.

There is no standard guidance on such risk assessments, which will often involve a number of factors that are only identifiable locally, and require judgement on a case-by-case basis. Although public health legislation does not define 'significant risk', the principles underlying national guidance on incident-level risk assessment can also be applied to individual cases and their contacts [3, 54].

**Contacts in Groups A and B** - minimising the risk of secondary spread in a household with cases and contacts in Group A or Group B is particularly challenging. The risk of continuing exposure of contacts is likely to be greatest when both the case and contacts are in Groups A or B. Stringent infection control should be in place for all cases, however parents should be advised to supervise young children's toileting and hand hygiene.

Cases under 5 years old have been shown to be a particular risk to their siblings. If it can be reasonably achieved, separation of these cases from their siblings should be considered [73], as well as separate bathing for young children who are symptomatic or excreting, until at least 48 hours after symptoms have ceased, or they are microbiologically cleared.

Strictly speaking, if contacts in Group A and B have continuing contact with a case, they should not be screened until the case is both asymptomatic and has been cleared microbiologically. However, a decision may be taken to start screening contacts before this following a careful assessment of the risk of transmission in the household.

**Contacts in Groups C and D** - should be able to comply with infection control advice. Clearance samples from asymptomatic contacts in these groups could be taken before the case is symptom free or microbiologically clear, providing a careful risk assessment concludes that infection control and personal hygiene is practiced appropriately. The risk of re-exposure is likely to be less if the case is not in Group A or B.

In exceptional circumstances contacts in Group C and D whose hygiene can be relied upon, may be allowed to go to work without the additional reassurance of microbiological clearance. Such decisions will be rare and must be justified by a careful risk assessment.

**Symptomatic household members** should be sampled, whether or not they meet the definition of a contact.

**Asymptomatic household members** - we do not recommend the screening of asymptomatic members of households where there is a case if those members are not contacts (see Glossary), although this may be appropriate at the discretion of the HPT.

**Potential contacts and co-exposees** - there may be circumstances in which potential contacts (e.g. household members who do not fit the strict criteria for a 'contact' as defined in the Glossary), or individuals who have had an exposure in common with a case, should be screened for epidemiological reasons.

**Swimming** - cases of VTEC in Groups A and B should be advised not to swim in public swimming pools until their exclusion has been lifted and for all other cases until at least 48 hours after symptoms have ceased.

Despite this general guidance, decisions about exclusion and timing of microbiological clearance can be highly dependent on specific local circumstances, and may require the exercise of considerable judgement.

Exclusion can present problems for carers and families, particularly if prolonged, so they may require advice and support. Exclusions should be regularly reviewed as required under the Public Health etc (Scotland) Act 2008 [54].

### Identifying appropriate laboratories for microbiological clearance

Microbiological clearance for:

- NSF *E.coli* O157 with or without verotoxin genes is confirmed by conventional laboratory testing at the local diagnostic laboratory;
- SF *E.coli* O157 with or without verotoxin genes is confirmed by PCR for detection of *vtx*<sub>1</sub>, *vtx*<sub>2</sub>, *sfp*, *rfb*<sub>O157</sub> and *eae* genes;
- Non-O157 VTEC is confirmed by PCR for detection of *vtx*<sub>1</sub> and *vtx*<sub>2</sub> genes.

In the case of SF and non-O157 VTEC, microbiological clearance must be confirmed by SERL, which does not culture the organism on clearance samples, but reports samples as positive or negative on the basis of interpretation of the PCR result.