GUIDANCE FOR THE DIAGNOSIS AND MANAGEMENT OF SUSPECTED OR PROVEN *ESCHERICHIA COLI* O157 INFECTION

Prepared by the Scottish Infection Standards and Strategy Group* and supported by the Scottish Executive Health Department

BACKGROUND

Although Scotland has the highest rate of *E. coli* O157 infection in the UK, the number of cases is not large – approximately 250 each year. Infection can, however, be severe, and may result in permanent kidney damage or death. The very young and the elderly are at particular risk.

In September 2000, the Minister for Health and Community Care appointed the *E. coli* O157 Task Force, under the joint sponsorship of the Food Standards Agency (FSA) Scotland and the Scottish Executive Health Department (SEHD). The remit of the Task Force included reviewing current activities to prevent human infection with *E. coli* O157 and considering future measures to protect public health.

The *Final Report* of the Task Force was published in June 2001. In May 2002, the SEHD/FSA response accepted most of the *Final Report*'s 105 recommendations. A key area of the *Final Report* was a series of recommendations relating to the diagnosis, treatment, care and public health management of *E. coli* O157 infections. The Task Force was unequivocal about the need for these recommendations to be actively implemented.

In response to the Task Force *Final Report*, the SEHD invited and sponsored the Scottish Infection Standard and Strategy Group (SISS) to set up a working group to develop guidance relating to the management of patients with known or suspected *E. coli* O157 infection.

DEVELOPMENT AND REVIEW

This guidance was developed by the SISS working group in collaboration with the SEHD and the Scottish Centre for Infection and Environmental Health (SCIEH) and was subject to brief peer review at the SISS National Meeting on 12 November 2002. All registered SISS members and affiliated societies, SEHD, SCIEH, the Clinical Standards Board for Scotland (now National Health Service (NHS) Quality Improvement Scotland (QIS)) and the British Infection Society Council have all had the opportunity to comment. After the first round of consultation was completed on 21 January 2003, the working group redrafted the final document. The guidance is available on the SISS website (www.rcpe.ac.uk OR http://www.rcpe.ac.uk/esd/clinical_standards/siss/ecoli_standards.doc), and the SCIEH website (http://www.show.scot.nhs.uk/scieh/) with appropriate links to other relevant key sites.

REMIT AND SCOPE OF THIS GUIDANCE

It is not within the remit of this document to provide an evidence-based guideline or clinical algorithm of care; the guidance statements are not, therefore, supported with specific references. These statements are based on the best available evidence; core recommendations of the *E. coli* O157 Task Force *Final Report*; key existing literature (referenced in the bibliography); a broad consensus of clinical and public health experience; and the expertise of the working group members.

This guidance should help inform local professional judgement but can never be a substitute for it. It aims to provide a basis for ensuring good practice but should not dissuade the reader from seeking more expert assistance if required. Each guidance statement is supported by simple verification criteria for evaluating compliance and for audit. These rely on good, legible and accessible documentation of care and communication. The working group has included some additional good practice statements, based on experience. As they are not essential guidance they are not supported by verification criteria.

The methodology adopted is similar to that of the Clinical Resource and Audit Group (CRAG) 2002 Good Practice Statements for the Preparation of Injections in Near-Patient Areas, including Clinical and Home Environments (http://www.scotland.gov.uk/consultations/health/learnexperience.pdf). We believe the statements represent a robust set of recommendations to steer good practice. They could form the basis of future standards to be developed according to the NHS QIS recommended methodology (http://www.nhshealthquality.org). Such standards would form the basis for

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internal or external quality assessment.

In keeping with the Task Force *Final Report*, the term *E. coli* O157 has been adopted in this guidance. *Escherichia coli* O157 is, in the UK, the commonest serotype of verocytotoxin-producing *E. coli* (VTEC); many statements apply equally to other, less common, VTEC serotypes (non-O157 VTECs).

Advice on the management of outbreaks, including outbreaks of *E. coli* O157 infection, can be found in *Guidance on the Investigation and Control of Foodborne Outbreaks in Scotland* and in *Managing Incidents Presenting Actual or Potential Risks to the Public Health* (http://www.scotland.gov.uk).

1. EDUCATION AND AWARENESS

Guidance statement

It is the responsibility of NHS Scotland to increase awareness among medical and paramedical services of the *E. coli* O157 Task Force *Final Report* pertaining to the prevention, diagnosis, treatment, care and public health management of suspected or proven cases of *E. coli* O157 infection.

Verification criterion: NHS boards should demonstrate through audit the availability and dissemination of this guidance to relevant groups.

Additional good practice statement: Doctors and other health professionals should consider a diagnosis of *E. coli* O157 infection in any patient presenting with bloody diarrhoea.

2. PATIENT REFERRAL TO HOSPITAL OR SPECIALIST SERVICES

Guidance statement

General practitioners (GPs) should refer patients to hospital, and hospital clinicians should seek appropriate specialist advice or assessment, when the risk of *E. coli* O157 infection is high, or its consequences are likely to be severe. This includes the occurrence of bloody diarrhoea in infants and children (below the age of ten years) or in adults above the age of 60 years; cases with severe abdominal pain or protracted diarrhoea; and those requiring parenteral rehydration.

Verification criterion: GPs and hospital clinicians should record the presence or absence of risk factors in the notes of all such cases. If a risk factor is present and specialist advice or assessment is not sought, the reason should be clearly stated.

3. PATIENT INVESTIGATION

Guidance statements

a) General practitioners and hospital clinicians should obtain an urgent faecal sample for submission to a laboratory, to confirm or eliminate *E. coli* O157 infection, on first presentation of a patient with acute bloody diarrhoea.

b) Patients presenting with haemolytic uraemic syndrome (HUS), with or without diarrhoea, should have an urgent stool sample tested for *E. coli* O157, or other non-O157 VTECs, and a serum sample tested for relevant antibodies.

Verification criterion: These investigations should be recorded in the patient's clinical and laboratory records.

Additional good practice statement: The laboratory request form should indicate all relevant clinical information, including symptoms and date of onset.

4. LABORATORY PROTOCOL FOR STOOL INVESTIGATION

Guidance statements

a) All laboratories should test all diarrhoeal samples for *E. coli* O157.

b) All laboratories should have a documented diagnostic protocol to indicate the requirement for further investigation and/or referral of culture-negative samples from patients suspected of having *E. coli* O157 or other VTEC infection. Additional investigations include immunomagnetic separation (IMS) and toxin detection.

c) Laboratories should, as a matter of urgency, report all new isolates of *E. coli* O157 by phone to the Public Health Department of the appropriate NHS board in office hours, or to the on-call consultant in Public Health Medicine at other times.

Verification criteria: Laboratories should have a written protocol, clearly marked with a review date and including the requirement to report to the relevant Public Health Department(s).

A system should be in place to ensure that all members of the laboratory staff are aware of the existence and core content of the protocol.

5. INFECTION CONTROL

Guidance statements

a) Written advice on personal hygiene and the implications of *E. coli* O157 infection should be given to all patients and carers by attending nursing and/or medical staff or by infection control staff.

Verification criterion: An information leaflet for patients and carers should be available. A record should be kept in the patient's notes, indicating that advice has been issued by the attending staff.

b) All hospitalised patients with acute diarrhoea should be treated in appropriate isolation, with strict enteric

infection control procedures, until a diagnosis of infection has been ruled out.

Verification criteria: Isolation facilities (cubicles, single rooms or cohort nursing in an outbreak), based on an individual risk assessment of patient and facilities, should be available.

Infection control procedures should be documented by attending staff or the ward manager and the local infection control team. These arrangements should be regularly reviewed.

Breaches of infection control procedures should be reported to the infection control team who should keep a record of this information and any advice given.

Additional good practice statement: Hospitalisation should be considered for patients from residential institutions or other group settings who require isolation (e.g. during outbreaks), those who cannot be given suitable accommodation in care homes or those for whom community care arrangements are unsuitable for any reason.

6. CLINICAL MANAGEMENT

Guidance statements

a) All patients (symptomatic or asymptomatic) with suspected or confirmed *E. coli* O157 infection should have baseline blood tests including full blood count, blood film for fragmented red blood cells, urea and electrolytes, lactic dehydrogenase and C-reactive protein.

Monitoring of these variables should continue as clinically indicated until the patient is either asymptomatic and 14 days from the onset of symptoms or seven days from the end of symptomatic diarrhoea.

b) All dehydrated patients with suspected or confirmed *E. coli* O157 (or other VTEC) infection should receive either oral rehydration therapy or intravenous fluid.

c) Patients with bloody diarrhoea should not be treated with antimotility drugs.

d) Patients with bloody diarrhoea should not be treated routinely with antibiotics because of the theoretical risk of promoting HUS.

Verification criterion: Use of antibiotics and antimotility drugs should be clearly justified by entry in the case records.

e) Patients with suspected or confirmed *E. coli* O157 infection who:

- are aged under ten or over 60 years;
- have significantly raised white blood cell polymorphoneutrophil count (>15 x 109/l)
- have a C-reactive protein >100mg/l
- have any evidence of haemolysis or evolving HUS

are at higher risk of developing HUS and should have the support of specialist renal services as appropriate.

Verification criterion: Local protocol/guidelines on the management of bloody diarrhoea should be documented, regularly reviewed and audited.

7. PUBLIC HEALTH MANAGEMENT

Guidance statements

a) Clinicians should, as a matter of urgency, report all patients with suspected or confirmed *E. coli* O157 infection to the Public Health Department of the appropriate NHS board.

Verification criterion: This should be documented in the case notes.

b) The Consultant in Public Health Medicine, in conjunction with the Public Health Infection Control Nurse and/or the Environmental Health Officer, should undertake a risk assessment of any reported cases and put in place appropriate control measures to prevent further spread.

c) All individuals with *E. coli* O157 infection in the following high-risk groups should be excluded from work, school or pre-school care until two consecutive faecal samples taken 24 hours apart are negative for *E. coli* O157:

1. any person of doubtful personal hygiene or with unsatisfactory toilet, hand-washing or hand-drying facilities at home, work or school;
2. pre-school children who attend care groups or nursery (including crèches, toddler groups, childminders where pre-school children attend from several families and holiday clubs);
3. people whose work involves preparing, heating/cooking or serving unwrapped foods not subject to further heating;
4. health and social care staff who have direct contact with highly susceptible patients or persons in whom a gastrointestinal infection could have particularly serious consequences.

d) All individuals in these high-risk groups who may have been exposed to the faeces of a case should be excluded from work, school or pre-school care until two consecutive faecal samples taken 24 hours apart are negative for *E. coli* O157. The timing of these stool samples should be based on a risk assessment of the likelihood of further transmission. If cases have household contacts in the above high-risk groups, these

contacts should similarly be excluded from work, school or pre-school care.

Verification criterion: Exclusion should be documented in Public Health records.

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