CLOSTRIDIUM DIFFICILE– INFECTION PREVENTION AND CONTROL POLICY
(to be read in conjunction with all other Trust Infection Prevention and Control Policies)

Version: 5
Date issued: December 2018
Review date: December 2021
Applies to: All Trust staff

This document is available in other formats, including easy read summary versions and other languages upon request. Should you require this please contact the Equality and Diversity Lead 01278 432000
To bring in line with MPH policy, including extension of isolation precautions for the duration of the patients stay.

**Document Summary:** To minimise the risks of acquisition and transmission of *Clostridium difficile* in the healthcare setting and provide guidance for health care workers involved with the care of patients with *Clostridium difficile*.

**Approving body:** Quality Assurance Group  
**Date:** November 2018

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**Date:** September 2018

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**Date:** December 2018

**Date of issue:** December 2018

**Review date:** December 2021

**Contact for review:** Head of Infection Prevention and Control

**Lead Director:** Director of Infection Prevention and Control

**CONTRIBUTION LIST**

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<td>Interim Lead for Infection Prevention and Control</td>
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1. INTRODUCTION

1.1 *Clostridium difficile* infection (CDI) is associated with the use of antibiotics and causes a spectrum of disease from mild diarrhoea to severe and life threatening conditions.

1.2 *C. difficile* is an anaerobic bacterium that is present in the gut of up to 3% of healthy adults and higher in the older people and hospital populations (HPA 2009). It rarely causes problems in children or healthy adults as it is kept in check by the normal bacterial population of the intestine. However, when certain antibiotics disturb the balance of the normal gut bacteria, *C. difficile* can multiply rapidly and produce toxins which cause illness. Symptoms of *C. difficile* infection range from mild to severe diarrhoea, and in some cases it causes severe inflammation of the bowel (known as pseudomembranous colitis). People who have been treated with broad spectrum antibiotics, older people and those with serious underlying illness are at greatest risk.

1.3 *C. difficile* is transmitted by spores which are shed in large numbers in the diarrhoeal faeces of symptomatic patients and are capable of surviving for long periods of time in the environment.

1.4 Prevention of CDI relies on limiting patients’ exposure to the organism, and ensuring that they do not become susceptible to infection through disruption of their normal gut flora. Thus, interventions for the control of *C. difficile* can be divided into infection control measures and antibiotic manipulations. These strategies can be applied together.

1.5 The transmission of *C. difficile* can be patient to patient, via the contaminated hands of health care workers, or via environmental contamination including healthcare equipment. It is therefore important that the symptomatic patient is promptly isolated and the isolation policy is strictly followed.

1.6 CDI has been reported with the use of virtually all antibiotics but it is most commonly associated with clindamycin, third generation cephalosporins, fluoroquinolones and other broad-spectrum agents. The risk associated with antibiotics remains for many weeks. It is important to know about antibiotics that may have been given in the preceding 3 months.

1.7 Incidences of CDI are monitored by Public Health England and these are recorded on the Health Care Associated Infection Data Capture System (MESS).

1.8 Diarrhoea can be a side effect of antibiotic therapy and a patient may have bowel movements several times a day. *C. difficile* is complicated by more frequent watery, foul smelling, bowel movements. It can take several weeks for some patients to become diarrhoea free. Infection can range in severity from asymptomatic colonisation to severe
diarrhoea, pseudomembranous colitis, toxic colon, colonic perforation and death. Occasionally, severe CDI may present with abdominal distension and tenderness, ileus or dilated colon, raised WCC and little or no diarrhoea.

2. PURPOSE AND RATIONALE

2.1 The purpose of this policy is to ensure all actions are taken to prevent infection from occurring or in the event of antibiotic associated diarrhoea, to limit the transmission of the infection to others.

2.3 Provide guidance for health care workers involved with the care of patients with Clostridium difficile

2.2 The Trust antibiotic prescribing policy and Primary Care Antimicrobial Guidelines must be adhered to. Medical staff can refer to the Consultant Microbiologist or the Trust’s Medicines Management Lead for further advice. Limiting the use of high risk agents is of paramount importance. Antibiotic stop/review dates written at the time of prescription are to be encouraged and will be monitored by the Trust’s Medicines Management Lead.

2.3 This policy applies to all clinical staff (including Temporary, Locum, Bank, Agency, Contracted staff as appropriate)

3. DUTIES AND RESPONSIBILITIES

3.1 The Trust Board, via the Chief Executive will:

- Ensure there are effective and adequately resourced arrangements for the detection & management of C. difficile within the Trust.
- Identify a Board level lead for Infection Prevention and Control.
- Ensure that the role and functions of the Director of Infection Prevention and Control are satisfactorily fulfilled by appropriate and competent persons as defined by the Department of Health, (2008).

3.2 Director for Infection Prevention and Control (DIPC)

- Will oversee the local control of and the implementation of the C. difficile Infection Prevention and Control Policy.

3.3 Infection Prevention and Control Group

- Will monitor and review root cause analysis investigations undertaken on all toxin positive cases.
- Provide assurance that procedures for the implementation of the C. difficile Infection Prevention and Control Policy are continually reviewed and improved within the Trust as per national guidance
3.4 **Infection Prevention and Control Team**
- Promote the provision of education and training in the Infection Prevention and Control management of inpatients with suspected or confirmed *C. difficile*
- Provide advice and guidance with regard to Infection Prevention and Control management of inpatients with suspected or confirmed *C. difficile*
- Carry out a robust Post Infection Review (PIR) investigation to be undertaken on all inpatients with laboratory confirmed toxin positive *C. difficile*

3.5 **Medicines Management Team**
- Promote adherence to the Trust antimicrobial prescribing policy and oversee the use of antimicrobial agents in the Trust
- Monitor compliance with antimicrobial prescribing guidelines in conjunction with the Consultant Microbiologist, make appropriate changes to antimicrobial prescribing guidelines in response to increased *C. difficile* levels across the Trust
- Undertake weekly pharmacy ward visits whenever possible to monitor choice and duration of appropriate antibiotics
- Participate in root cause analyses carried out for patients with *C. difficile*, advising (in conjunction with Consultant Microbiologist input) on the appropriateness of any antibiotics given in the previous 12 weeks
- Increased advice as required on antibiotic prescribing and review during periods of increased incidence (PII) or outbreaks of *C. difficile*

3.6 **Medical Staff**
- Ensure appropriate medical management of patients with CDI, as detailed in the Trust guidelines
- Follow infection prevention and control management detailed in this policy
- Following the Trust Antimicrobial Prescribing Policy

3.7 **Learning and Development Team**
- Will be responsible for recording attendance at training and will advise Operational Managers of non-attendance.

3.8 **Team Managers/Heads of Service**
- Are responsible for ensuring that staff are aware of the policy and requirements for attending training as identified in the Training Matrix. Managers will ensure that staff have attended all relevant training and have current updates
• Are responsible for ensuring that staff are released to attend relevant Training and for recording attendance at training in local training records. All non-attendance at training will be followed up by managers.

• Are responsible for ensuring individual staff and team’s training needs are met through appraisal and in line with the Training Needs Analysis. Training information should be passed to the Learning and Development Department who will update the electronic staff record.

3.9 All Clinical Staff

• Are required to adhere to the policies, guidelines and procedures pertaining to Hand Decontamination which provide a framework for safe and best practice.

• whatever their grade, role or status, permanent, temporary, full-time, part-time staff and locums, bank staff, volunteers, trainees and students are responsible for booking themselves onto initial and update mandatory training and for attending mandatory training.

4. DEFINITIONS

• **Clostridium difficile Infection (CDI) Toxin Positive** - Clostridium difficile toxin detected in stool sample, which is compatible with Clostridium difficile infection. CDI may also be diagnosed by endoscopic evidence of pseudo membranous colitis

• **Clostridium difficile Detected by PCR but Toxin Not Detected** – Evidence of Clostridium difficile colonisation (the patient is carrying the organism in their bowel). Patients may sometimes need treatment if symptomatic and other causes for diarrhoea are not apparent.

• **Diarrhoea** – defined as a stool loose enough to take the shape of a container used to sample it or as Bristol Stool Chart types 6-7.

• **Period of Increased Incidence (PII) of CDI** – 2 or more new cases (occurring 48 hours post admission, not relapses) in a 28 day period on a ward.

• **Outbreak of C. difficile** – 2 or more cases caused by the same strain related in time and place over a defined period that is based on the date of onset of the first case.

• **PCR** – A molecular test used to detect the presence of Clostridium difficile and the genes that produce the toxins

• **PCR Ribotyping** – A molecular typing method used to investigate whether the same strain of C. difficile is indicated in a PII or suspected outbreak of CDI

• **Source Isolation** - Used for patients suffering from a communicable / infectious disease or carriers of a communicable / infectious disease, to prevent the spread of infection to others.
5. PREVENTION OF \textit{C. difficile} THROUGH RESPONSIBLE ANTIBIOTIC STEWARDSHIP

5.1 Antimicrobial management is a key component of infection prevention and control and prudent antimicrobial prescribing is important in reducing the prevalence of \textit{C. difficile}. Clinicians must comply with the Trust’s Prescribing Policy and should follow the comprehensive antimicrobial prescribing guidelines (Antimicrobial Prescribing Guidelines).

5.2 General principles of antibiotic prescribing include
- Antimicrobials should only be prescribed for a specific indication which must be documented in the patient’s notes.
- Antimicrobials with the narrowest possible spectrum should be used.
- Once a pathogen has been identified, antimicrobial therapy should be tailored to the narrowest spectrum suitable agent
- Antimicrobial medication should be reviewed daily.
- The prescription must have a review date or stop date and the length of course must be limited to the shortest possible time

6. DIAGNOSIS AND TESTING

6.1 If a patient presents with unexplained diarrhoea, a stool specimen should be sent to the laboratory for investigation at the earliest opportunity. Recent and current antibiotic history must be highlighted on the request form. Only stools that are loose enough to take the shape of the pot will be tested. \textit{C. difficile} is detected by a 3-stage testing protocol (includes a GDH screening test, a toxin test and PCR for the toxin gene).

If the toxin test is positive it will be reported as “Clostridium \textit{difficile} toxin detected. Compatible with Clostridium \textit{difficile} infection”.

If the toxin test is negative a PCR test will then be performed. If the PCR test is positive it will be reported as “Clostridium \textit{difficile} detected by PCR but toxin not detected. Evidence of Clostridium \textit{difficile} colonisation”. These patients may sometimes need treatment as though they have do have Clostridium \textit{difficile} infection, dependent on symptoms. Discuss with a Consultant Microbiologist.

6.2 Diarrhoeal specimens for all hospital in-patients \( \geq \) 2 years of age and over 65 years of age will be routinely tested for \textit{C. difficile} (unless positive within the last 4 weeks) by the laboratory as part of the National Healthcare Associated Infection Screening programme.

6.3 Children below the age of 2 years will not be tested without prior agreement of the Consultant Microbiologist, as \textit{C. difficile} is a commensal organism in this age group.
6.4 Clearance specimens are not required for patients diagnosed with a *C. difficile* infection.

6.5 Following treatment for CDI, relapse of symptoms can occur in 20% - 30% of patients. If the patient has had a positive *C. difficile* result within the last 28 days, a further sample should **NOT** be submitted for testing.

7. **TREATMENT AND MEDICAL MANAGEMENT**

7.1 Not all patients who test positive for *C.difficile* require treatment. Asymptomatic patients need not be treated, nor those with resolving and very mild symptoms.

7.2 **For detailed guidance on the medical management of CDI, refer to Appendix D.**

7.3 All Individuals who have tested positive for *C.difficile* and cared for within a Trust managed Hospital setting, are to be commenced on the *C.difficile Care Pathway (Appendix E).* This document is to be maintained by the Medical Practitioner and the Registered General/Mental Nurse caring for the patient. This document is held locally within the inpatient setting and can be referenced at Appendix E.

8. **INFECTION PREVENTION AND CONTROL MANAGEMENT OF SUSPECTED OR CONFIRMED CASES**

8.1 If a patient presents with unexplained diarrhoea or confirmed *C. difficile*, source isolation procedures as per the Isolation policy must be immediately implemented.

8.1.1 **Single Room** - Patient should be nursed in a single room, with ensuite facilities where possible. If ensuite facilities are not available a dedicated commode should be allocated.

8.1.2 **Isolation Notice** - An Isolation notice should be clearly displayed on the door.

8.1.3 **Hand Hygiene** – After contact with the patient or their environment soap and water must be used for hand hygiene rather than alcohol gel. Patients must also be encouraged and offered the opportunity to wash their hands before eating and after using the toilet.

8.1.4 **Protective clothing** - Disposable apron should be worn when entering the room. Gloves should be worn for direct patient contact or prolonged contact with the immediate environment (e.g. cleaning). Aprons and gloves must be disposed of before leaving the isolation area and hands washed with soap and water after removal.
8.1.5 **Cleaning** - Thorough daily cleaning/disinfection of horizontal surfaces and furniture within the room, using Tristell Fuse (Chlorine Dioxide Solution). A terminal clean and laundering of linen and curtains must be carried out prior to the next patient using the room. Further guidance can be accessed via the Trust’s Operational Cleaning Manual. Any equipment that may be contaminated must be thoroughly cleaned and disinfected in accordance with the Trust’s Equipment Decontamination and Cleaning policy.

Disposable cleaning cloths should be used once, then discarded as clinical waste. Microfiber cleaning cloths should not be used once *C. difficile* is suspected.

8.1.6 **Equipment** - Only essential equipment should be taken into the isolation room. Where possible disposable equipment or equipment dedicated for the use of the isolated patient should be used. If the use of common equipment is unavoidable it must be cleaned with a chlorine releasing agent (Tristell Fuse) before being used for another patient. Crockery and cutlery does **not** need to be dedicated for the use of the isolated patient, but must go through the dishwasher before being used for another patient.

8.1.7 **Linen** – Somerset Partnership NHS Foundation Trust does not support the washing of patient laundry on site please refer to the Laundry Policy

8.1.8 **Stool Chart** - An accurate stool chart using the Bristol stool chart (Appendix A) should be maintained. All charts must be kept outside the room. Where stool charts are not available then all bowel actions should be clearly documented on the patients’ progress notes and recorded on the stool chart within Rio.

8.1.9 **Information** - The patient should be given the Trust patient information leaflet on *C. difficile*

8.1.10 **Visitors** – Visitors with only social contact need not wear protective clothing. Those who assist with the patients’ direct care or have more extensive patient contact should wear protective clothing. All visitors must be advised to wash their hands with soap and water on leaving the room.

8.1.11 **Attendance at other departments** - If the patient needs to attend a department for investigations they should wherever possible be ‘last on the list’, unless earlier investigation is clinically indicted. The receiving area should be notified of the patient’s *C. difficile* status and arrangements put in place to minimise the patients waiting time and hence contact with other patients.

8.1.12 **Transfers** Patient transfer to other wards/hospitals whilst the patient is symptomatic should be avoided unless essential. Should the patient require transfer for clinical reasons, the receiving ward and transferring
vehicle staff (ambulance) must be informed of the patient’s infection status and side room accommodation identified.

8.2 Termination of Isolation Precautions - As skin carriage and environmental shedding can continue for a number of weeks in recovered patients, isolation precautions should be maintained for all patients with a positive test result for Clostridium difficile for the duration of the patient’s hospital admission. However, the decision to keep a patient in isolation for the duration of their hospital stay must be balanced against their clinical and rehabilitation needs. If it is thought that keeping the patient isolated for the duration of their stay would be detrimental, infection control advice should be sought and risk assessment undertaken. For Management on subsequent admissions please see the Previous C.diff History Flow Chart (Appendix C). If the patient has had a positive \textit{C. difficile} result within the last 28 days a further sample \textbf{should not be submitted for testing}. Advice concerning management can be sought from the Infection Control Prevention and Control Team.

8.3 Terminal clean – Once isolation precautions have been discontinued or the patient discharged the room and all equipment should be deep cleaned with a chlorine-containing cleaning agent (Tristell Fuse – Chlorine Dioxide solution) detergent and curtains changed.

9. SURVEILLANCE

9.1 The Consultant Microbiologist will inform the ward and the Infection Prevention and Control Team of any confirmed cases of \textit{C. difficile}. Positive results are also reported electronically via the ICNet Healthcare Associated Infection Case Management and Surveillance System.

9.2 The Infection Prevention and Control Team will monitor all in patient cases to ensure the patient is isolated and appropriate precautions are in place. Out of normal office hours the on call Consultant Microbiologist will give infection prevention and control advice to in-patient services, as required.

9.3 The Infection Prevention and Control Team will assist with the assimilation of data to identify contributory risk factors on all cases of \textit{C. difficile} which occur >72 hours post admission. Results are fed back to the Clinical Team, Ward Manager, Service Manager and Trust Board and reviewed quarterly at the Infection Prevention and Control Assurance Group. From 2019 this will change to >48 hours post admission.

9.4 The number of cases of CDI for the organisation is monitored against a nationally set trajectory. These figures are monitored monthly by the Board via the Chief Executive’s report. For a non-acute trust these figures are set by the CCG (Clinical Commissioning Group).
9.5 *C. difficile* as the primary or secondary cause of death noted on death certification, or surgery undertaken because of CDI is required to be reported as a serious untoward incident via the Trust’s incident reporting system. See Section 11 for further details.

10. **MANAGING HIGH PREVALENCE OR OUTBREAKS**

10.1 The Infection Prevention and Control Team will identify any Period of Increased Incidence (PII) of *C. difficile infection*. A PII is defined as 2 or more new cases (occurring > 48 hours post admission, not relapses) in a 28 day period on a ward. If a PII occurs the following actions should be put in place:

- a meeting will be convened with the Ward Manager, Service Manager, and where possible a member of the Medical team and a member of the medicines management team, and the Infection Prevention and Control Lead to investigate and agree actions.
- *C. difficile* positive isolates from patients on the ward should be sent for PCR ribotyping. The ward should be cleaned daily with a chlorine dioxide solution (Tristell Fuse) until there are no further symptomatic patients are on the ward
- Medicine Management Team ward visits should be carried out as regularly as possible with alternate day telephone contact made if a visit is not possible by a member of the Medicines Management Team until there are no further symptomatic patients on the ward
- The Infection Prevention and Control Team should consider carrying out weekly audits using the DH Clostridium difficile High Impact Intervention tool. The audits should continue until the weekly score is > 90% in 3 consecutive weeks and there have been no further >48 hour cases of *C. difficile* on the ward during that period.

10.2 Outbreaks of *C. difficile* are defined as 2 or more cases caused by the same strain related in time and place over a defined period (28 days) that is based on the onset of the first case. In the event that an outbreak is confirmed, the Trust Management of Outbreaks of Infection in Hospital Policy should be followed.

10.3 In the event that there are insufficient single rooms to accommodate patients with *C. difficile*, the Infection Prevention and Control Team will advise re: cohorting patients.

11. **Post Infection Review (PIR) of Trust Apportioned Cases of Clostridium difficile infection**

11.1 The Trust is required to undertake a review of each Trust apportioned case of Clostridium difficile infection. The purpose of the review will be to determine whether the infection was associated with a lapse in the quality of care provided to the patient and identify if there was any part of the care that could have been done differently and therefore might have led to a different
outcome. Where lapses of care are identified, actions should be agreed to improve patient safety.

11.2 The Infection Prevention and Control Team will co-ordinate the review and assessment will include the following:

- Antimicrobial therapy within the last 3 months
- Any other relevant information from the last 3 months
- Treatment for Clostridium difficile infection and outcome
- Environmental factors
- Organisational issues
- Lessons learned
- Preventability

For the complete data collection tool – see Appendix B

11.3 In order to conduct the review a meeting should be convened to determine the cause, and should include the relevant clinical team such as:-

- Consultant responsible for the patient
- Ward Manager
- Infection Prevention and Control Nurse
- Consultant Medical Microbiologist
- Antimicrobial Pharmacist

11.4 Completed Post Infection Reviews and action plans will be submitted to and reviewed by the Infection Control Committee. Action plans should be monitored via the relevant Directorate’s Governance meetings until completed.

11.5 As well as an internal review, the PIR will be reviewed again by a team from or acting on behalf of the relevant commissioner (i.e. Somerset Clinical Commissioning Group). The purpose of this review is to assess whether the relevant commissioner accepts the finding of the Trust’s internal review regarding identification of lapses in the quality of care. Where no lapses of care are identified that could have led to the cases, then that case will not count towards the total number of actual Clostridium difficile infection cases on which any sanction will be based.
12. DEATH CERTIFICATION

12.1 Doctors have a legal duty to mention *C. difficile* on a death certificate if it was part of the sequence of events directly leading to death or contributed in some way.

12.2 If a patient with *C. difficile* dies, the death certificate should state whether *C. difficile* was part of the sequence of events leading directly to death or whether it was the underlying cause of death. If either case applies *C. difficile* should be mentioned in part 1 of the certificate. If *C. difficile* was not part of the sequence of events leading directly to death but contributed in some way to it, this should be mentioned in Part 2.

13. TRAINING REQUIREMENTS

13.1 The Trust will work towards all staff being appropriately trained in line with the organisation’s Staff Mandatory Training Matrix (training needs analysis). All training documents referred to in this policy are accessible to staff within the Learning and Development Section of the Trust Intranet.

- Staff Induction – Standard Infection Prevention and Control Precautions through e-learning
- Hand Hygiene Training
- Infection prevention and Control e-learning package accessible on the Trust Intranet
- Untoward Event Reporting

14. MONITORING COMPLIANCE AND EFFECTIVENESS

14.1 Monitoring arrangements for compliance and effectiveness

- Overall monitoring will be by the Clinical Governance Group.

14.2 Responsibilities for conducting the monitoring

- The Infection Prevention and Control Assurance Group will monitor procedural document compliance and effectiveness where they relate to clinical areas.

14.3 Methodology to be used for monitoring

- incident reporting and monitoring

14.4 Frequency of monitoring

- The Infection Prevention and Control Assurance Group reports to the Clinical Governance Group quarterly

14.5 Process for reviewing results and ensuring improvements in performance occur.
Audit results will be presented to the Senior Managers Operational Group for consideration, identifying good practice, any shortfalls, action points and lessons learnt. This Group will be responsible for ensuring improvements, where necessary, are implemented. Lessons learnt will be forwarded to the Risk Manager who will add to the Lessons Learnt Quarter Report to the Clinical Governance Group.

15. REFERENCES, ACKNOWLEDGEMENTS AND ASSOCIATED DOCUMENTS

15.1 References
Department of Health and Health Protection Agency (2009). Clostridium difficile Infection: How to deal with the problem
Clostridium difficile infection objectives for NHS organisations in 2018/19, guidance on sanction implementation and notification of changes to case attribution from 2019 – NHS Improvement.

Clostridium difficile infection: risk with broad spectrum Antibiotics – NICE guidance 2015

Updated guidance on the management and treatment of Clostridium difficile infection 2013

Department of Health (2007) Saving Lives High impact Intervention No7: Reducing the risk from Clostridium difficile


Mandatory enhanced MRSA, MSSA and Escherichia coli bacteraemia, and Clostridium difficile infection surveillance - Protocol version 4.0

15.2 Cross reference to other procedural documents
All other Infection Prevention and Control Policies
Antimicrobial Prescribing Policy
Consent and Capacity to Consent to Treatment Policy
Consent to Examination and Treatment Policy
Hand Hygiene Policy
Infection Control Policy
Laundry Policy
Learning Development and Mandatory Training Policy
Record Keeping and Records Management Policy
Risk Management Policy and Procedure
Serious Incidents Requiring Investigation
Staff Mandatory Training Matrix (Training Needs Analysis)

Untoward Event Reporting Policy and procedure

All current policies and procedures are accessible in the policy section of the public website (on the home page, click on 'Policies and Procedures'). Trust Guidance is accessible to staff on the Trust Intranet.

16. APPENDICES

15.1 For the avoidance of any doubt the appendices in this policy are to constitute part of the body of this policy and shall be treated as such.

  Appendix A  Bristol Stool Chart
  Appendix B  Guidance for Wards during CDI Outbreak or PII
  Appendix C  Clostridium difficile Care Pathway
    C1 Algorithm of Suspected Clostridium difficile
    C2 Flowchart for the management of suspected CDI – first or second episodes of infection
    C3 Flowchart for the management of recurrent CDI – third or subsequent episodes of infection
  Appendix D  Clostridium difficile Patient Information Leaflet
### BRISTOL STOOL SCALE

#### The Bristol Stool Form Scale

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>Type 1</td>
<td>Separate hard lumps, like nuts (hard to pass)</td>
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<tr>
<td>Type 2</td>
<td>Sausage-shaped but lumpy</td>
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<tr>
<td>Type 3</td>
<td>Like a sausage but with cracks on its surface</td>
</tr>
<tr>
<td>Type 4</td>
<td>Like a sausage or snake, smooth and soft</td>
</tr>
<tr>
<td>Type 5</td>
<td>Soft blobs with clear-cut edges (passed easily)</td>
</tr>
<tr>
<td>Type 6</td>
<td>Fluffy pieces with ragged edges, a mushy stool</td>
</tr>
<tr>
<td>Type 7</td>
<td>Watery, no solid pieces ENTIRELY LIQUID</td>
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GUIDANCE FOR WARDS DURING C. DIFFICILE OUTBREAK OR PII

The SIGHT mnemonic protocol (Table 1) can assist staff with implementing key actions should there be a suspected case.

Patients must be isolated in a single room on suspicion of C. difficile; or where several patients have symptoms, in a cohort bay. Patients may have already been isolated with diarrhoea of unknown origin. There is no requirement to isolate patients with C. difficile infection who have been asymptomatic for >48 hours.

All patients with diarrhoea should be isolated until microbiology is proven.

The Trust’s Infection Prevention and Control Team must be informed immediately of patients within a Trust managed inpatient unit who develop diarrhoea of unknown origin.

Table 1.

<table>
<thead>
<tr>
<th>S</th>
<th>Suspect that a case may be infective where there is no clear alternative cause for diarrhoea</th>
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<tr>
<td>I</td>
<td>Isolate the patient and consult with the Infection Prevention and Control Team while determining the cause of the diarrhoea</td>
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<tr>
<td>G</td>
<td>Gloves and aprons must be used for all contact with the patients and their environment</td>
</tr>
<tr>
<td>H</td>
<td>Hand washing with soap and water should be carried out before and after each contact with the patient and the patient’s environment</td>
</tr>
<tr>
<td>T</td>
<td>Test the stool for toxin, by sending a specimen immediately</td>
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Control Measures

- Hand washing with soap and water following contact with each patient or their environment.
- Aprons should be worn for all close patient or patient environment contact e.g. bed making, cleaning room/area and moving/handling the patient
- Standard precautions apply to use of gloves, e.g. when handling blood and other body fluids. NB Always wash hands with soap and water after removing gloves
- Commode seats including the under surface, ensuite toilets and seat handles need to be cleaned thoroughly with Clinnell Sporicidal Wipes after every use.
- All commodes on the ward should be dismantled daily and thoroughly cleaned with a Clinnell Sporicidal Wipes.
- Patient wash bowls must be single use or washed thoroughly in between each use with Clinnell Sporicidal Wipes
- Ensure surfaces of bedpan macerators are kept clean and that seals are functioning correctly.
- Patients transferring out of the wards to departments for investigations should use a wheelchair or trolley depending on their clinical condition and this equipment must be cleaned after use with Clinnell Sporicidal Wipes
- Wards need to review sluice storage facilities to purchase closed systems for storage to reduce contamination.
- Each infected bed space to be terminally cleaned including curtains and supporting equipment after each patient’s departure with chlorine releasing agent
- Consultant/Medical ward rounds should deal with *C. difficile* patients last.
- Occupational therapists and other peripatetic staff should attend to affected patients last.

**Transfer/Discharge**

- Transfer to nursing home/residential home can proceed once the patient is medically fit and asymptomatic of symptoms for 48 hours. Active *C. difficile* infection can delay transfer home or to an alternative health or social care setting and receiving staff must be informed of previous active infection
- Should a patient require urgent specialist treatment elsewhere, they can move providing they are isolated and that the receiving area is informed and transferring vehicle staff
Previous History of C. difficile Flow Chart

**Previous History of C. difficile Infection or colonisation**

- Specimen within the previous 3 months
- Specimen date between 3 and 12 months ago
- Specimen date longer than 12 months ago

**Is the patient:**
- Currently on Antibiotics
- Having diarrhoea

- **Yes**
  - Source isolation required
  - Record on Rio and ICNet

- **No**
  - Isolation not required

**No further Action**
The Medical Management of Clostridium difficile infection

1. Introduction

1.1. CDI mainly affects the elderly (over 65), the debilitated and the immunocompromised. The infection is particularly associated with the use of certain antibiotics, particularly cephalosporins, and also if a ‘cocktail’ of antibiotics are used. See Table 1. The fluoroquinolones (e.g. ciprofloxacin) have also been historically regarded as high risk antibiotics due to the emergence of ribotype 027 which is resistant to these agents. Antimicrobials alter the normal gut flora, therefore allowing C. difficile to multiply and produce toxins in the absence of competition from the other organisms that make up normal gut flora. The gut flora may also be altered by aperients, enemas, acid suppressants and bowel surgery. See table 2.

1.2. Patients who have had total colectomies with ileostomies probably do not get true CDI, and will often produce liquid stools. Clostridium difficile tests should not be sent from such patients unless discussed with Consultant Microbiologist or Gastroenterologist.

Table 1. Potential for antibiotics to cause CDI

<table>
<thead>
<tr>
<th>Drug Group</th>
<th>Action</th>
<th>Reason</th>
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<tbody>
<tr>
<td>Clindamycin</td>
<td>Review need for PPIs/discontinue if possible</td>
<td>Suppression of gastric acid can increase host susceptibility</td>
</tr>
<tr>
<td>Cephalosporins</td>
<td>Review</td>
<td>Disrupts normal gut flora</td>
</tr>
<tr>
<td>Quinolones (eg ciprofloxacin, levofloxacin)</td>
<td>Review</td>
<td>Disrupts normal gut flora</td>
</tr>
<tr>
<td>Imipenem/ cilastatin</td>
<td>Review</td>
<td>Disrupts normal gut flora</td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>Review</td>
<td>Disrupts normal gut flora</td>
</tr>
<tr>
<td>Metronidazole (May be protective)</td>
<td>Review</td>
<td>Disrupts normal gut flora</td>
</tr>
</tbody>
</table>

Table 2. Non-antibiotic medications in patients with CDI

<table>
<thead>
<tr>
<th>Drug group</th>
<th>Action</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proton pump inhibitors (PPIs)</td>
<td>Review need for PPIs/discontinue if possible</td>
<td>Suppression of gastric acid can increase host susceptibility</td>
</tr>
<tr>
<td>Tube feeds</td>
<td>Review</td>
<td>Disrupts normal gut flora</td>
</tr>
<tr>
<td>Opioids</td>
<td>Consider stopping for duration of diarrhoea</td>
<td>May mask symptoms and may worsen course of disease</td>
</tr>
</tbody>
</table>
1.3. Occasionally CDI may occur in patients who have never received antibiotics.

1.4. There is some evidence that certain antibiotics – notably tetracyclines – may be protective against *Clostridium difficile* acquisition and disease. However that is not sufficient indication alone for their use.

1.5. There is no evidence to support the use of prophylactic antibiotics to prevent *Clostridium difficile* acquisition or disease, and their use may even increase risk.

1.6. There is increasing evidence implicating the use of gastric acid suppressing agents, particularly protein pump inhibitors, in acquisition of *Clostridium difficile*. They should be discontinued where possible in patients with, or at high risk of, CDI.

2. **Management & Specific Treatment**
(See flow chart in Appendix D1 for summary)

- Patients with toxin-positive CDI will be reviewed daily. If necessary contact Consultant Microbiologist for advice.
- Patients with toxin negative *Clostridium difficile* colonization will be reviewed regularly as clinically indicated.
- Stop implicated antibiotics if possible (see Table 1 and section 2.2).
- Contact Consultant Microbiologist for advice if patient still needs antibiotics, see appendix D2.
- Investigate for other causes of diarrhoea e.g. tube feeds, antacids
- Review antimotility drugs, laxatives and proton pump inhibitors (see Table 2, above) and discontinue where possible
- Supportive measures as indicated i.e. adequate fluid and electrolyte replacement
- **Isolate patient immediately** (Do NOT wait for results of stool culture/toxin test)
- **Assess severity of CDI** (this should be re-assessed daily)
- **Start specific empirical antibiotic therapy for *C. difficile***

2.1 **Severity assessment**

<table>
<thead>
<tr>
<th>Antimotility agents</th>
<th>Discontinue and do not prescribe</th>
<th>Can mask symptoms and may worsen course of disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laxatives</td>
<td>Discontinue treatment while diarrhoea persists</td>
<td>Not required and may worsen symptoms &amp; increase spread of spores</td>
</tr>
</tbody>
</table>
- **Mild CDI** – no rise in WCC; typically associated with < 3 stools/day of type 5-7 on Bristol Stool Chart
- **Moderate CDI** – raised WCC but < 15 x 10⁹/L; typically associated with 3-5 stools/day of types 5-7.
- **Severe CDI** – raised WCC > 15 x 10⁹/L, or acute rising creatinine (>50% increase above baseline), or temperature > 38.5°C, or evidence of severe colitis eg.:
  - abdominal distension
  - dilated colon on AXR
  - pseudomembranous colitis

The number of stools may be a less reliable indicator of severe disease

- **Life-threatening CDI** – any of the following:
  - hypotension
  - partial or complete ileus
  - toxic megacolon
  - CT evidence of severe disease
  - Elevated serum lactate

### 2.2 Initial therapy

Oral fidaxomicin is now licensed for use in CDI. It is no more likely to lead to resolution and cure than vancomycin and/ or metronidazole. However there is evidence that recurrence is less likely after fidaxomicin use. It is very expensive (£1600/ course) and is therefore, on the advice of Public Health England and the Department of Health, to be used in patients with unresponsive severe disease, or where recurrence is more likely or has already happened. There is no evidence of benefit from treating the more virulent 027 ribotype with fidaxomicin in preference to vancomycin and/ or metronidazole.

- **Mild and moderate CDI**

  In mild disease (<3 stools in 24 hours and systemically well) supportive treatment may only be required, particularly if implicated antibiotics have just been stopped.

  Where treatment is indicated first line should be:
  
  Oral metronidazole 400 mg tds, for 10-14 days.
If there is no improvement in symptoms after 7 days metronidazole, or if worsens and signs of severe disease develop, switch to

Oral vancomycin 125 mg qds, for 10-14 days.

- **Severe CDI**
  
  Oral vancomycin 125 mg qds, for 10-14 days.

  If not improving after 5-7 days, or if worsens, increase dose of oral vancomycin (up to 500 mg qds) and consider adding IV metronidazole 500 mg tds;

  OR change to oral fidaxomicin 200 mg bd po.

  (discuss with Consultant Microbiologist).

  Ideally a Gastroenterologist should review all ‘severe’ cases, particularly if no/poor response to vancomycin, and will also advise on the need for a flexible sigmoidoscopy.

  Further treatment options for patients with severe CDI who fail to improve despite standard treatment are included in Appendix D3

- **Severe CDI in elderly patients (>65) with multiple comorbidities who require continuing antibiotic treatment**

  Consider oral fidaxomicin 200 mg bd po after discussion with Consultant Microbiologist (see Appendix D2). Otherwise treat as “severe CDI”.

- **Life-threatening CDI**

  Oral vancomycin 500 mg qds (via NG tube if necessary, clamped for one hour after instillation)

  **plus** IV metronidazole 500 mg tds, for 10-14 days.

  Consider intracolonic vancomycin (refer to treatment Algorithm, Appendix D1).

  These patients should be monitored closely, with specialist surgical and gastroenterology input, and should have blood lactate measured. Colectomy should be considered, especially if caecal dilation is > 10 cm. Colectomy is best performed before blood lactate rises > 5 mmol/L, when survival is extremely poor.
If CDT-ve: review diagnosis and send a second stool to laboratory. Continue treatment if CDI strongly suspected, but consider other diagnoses.

3. **Non-responders – further treatment options**
   The initial treatment changes for non-responders are detailed above (Section 2). There is no consensus on treatment after failure of metronidazole and/or vancomycin or fidaxomicin, and further treatment must be discussed with a gastroenterologist or microbiologist. Options are set out in Appendix D3 and include the addition of oral rifampicin or IV immunoglobulin or donor stool transplant.

4. **Recurrence / relapse**
   Disease recurs in approximately 20% of patients with a first episode of CDI over the following 3 months. Recurrence occurs in 50-60% after a second episode. This incidence may be higher with the 027 ribotype of *C. difficile*. There is no need to send a stool for *C. difficile* testing if a positive result has been obtained in the previous 28 days.
   Reinfection with *C. difficile* may occur as well as relapse; symptoms that occur within two weeks are more likely to be relapse.
   Guidance from Public Health England suggests that treatment with fidaxomicin may lead to a lower rate of recurrence (15% compared to 25% using vancomycin). For this reason patients with a first recurrence should be treated with fidaxomicin 200mg bd po as per Appendix D2 following discussion with Consultant Microbiologist. This applies whether the first recurrence is mild, moderate or severe.
   The evidence on the efficacy of repeat courses of fidaxomicin for multiple relapses does not show clear benefit; oral vancomycin may be a suitable alternative.
   Refer to Appendix D2 for the management of third, and subsequent, episodes of CDI. Some further treatment options are given in Appendix D3.
Appendix D1 - Flow chart for the management of suspected CDI – first or second episodes of infection.

Diarrhoea AND one of the following
Positive C. difficile GDH/ PCR/ toxin test OR histological evidence of pseudomembranous colitis OR results of C. difficile tests pending AND clinical suspicion of CDI

Ideally discontinue non-C. difficile-treatment antibiotics/ gastric acid suppressants
To allow normal intestinal flora to be re-established

Suspected and confirmed cases must be isolated

Anti-motility agents should not be prescribed in acute CDI

Symptoms/signs of non-severe CDI
Oral metronidazole 400 mg tds 10–14 days
OR
Supportive treatment only

Elderly patient (>65) with multiple comorbidities requiring continuing antibiotics
Oral fidaxomicin 200mg bd 10 days (after consultation with microbiologist)

DAILY ASSESSMENT

Symptoms improving
Diarrhoea should resolve in 1–2 weeks
Recurrence occurs in ~20% after first episode (lower after fidaxomicin) 50–60% after second episode

Symptoms not improving or worsening (should not normally be deemed a treatment failure until received at least one week of treatment)
Or, if there is evidence of severe CDI (WCC > 15 x 10^9/L, or acute rising creatinine >50% increase above baseline, or temperature > 38.5°C, or evidence of severe colitis)

Switch to oral vancomycin 125 mg qds 10–14 days

Surgery / GI / Micro / ID / ITU consultation

AND, depending on degree of ileus, vancomycin 125–500 mg PO/NG qds, +/- metronidazole 500 mg iv tds 10 days
PLS CONSIDER intracolonic vancomycin (500 mg in 100–500 ml saline 4–12-hourly) given as retention enema: 18 gauge Foley catheter with 30 ml balloon inserted per rectum; vancomycin instilled; catheter clamped for 60 minutes; deflate and remove.
OR Oral fidaxomicin 200mg bd 10 days (after consultation with microbiologist)

Further surgery/GI/micro/ID consultation

Depending on choice of therapy (see above), consider:
1. high-dose oral/NG vancomycin (500 mg PO qds) +/- rifampicin 300 mg PO bd.
2. IV immunoglobulin 400 mg/kg, one dose, and consider repeating.

There is no robust evidence for the effectiveness of combination regimens.

NB. severe CDI may present with abdominal distension, ileus and little or no diarrhoea
Appendix D2 - Flow chart for the management of recurrent CDI

**Diarrhoea AND one of the following:**
- Positive *C. difficile* toxin GDH/PCR/toxin test within one month OR
- Results of *C. difficile* tests pending AND clinical suspicion of CDI OR histological evidence of pseudomembranous colitis

Must discontinue non-*C. difficile*-treatment antibiotics if at all possible to allow normal intestinal flora to be re-established

Suspected and confirmed cases must be isolated

**Mild, moderate or severe CDI**
- Oral fidaxomicin 200 mg bd for 10 days

**DAILY ASSESSMENT**
- (include review of severity markers, fluid/electrolytes)

**Symptoms improving**
- Diarrhoea should resolve in 1–2 weeks
- **Recurrence** occurs in 40–60% of relapsing cases or third episode

If multiple recurrences, especially if evidence of malnutrition, wasting etc.

1. Review **ALL** antibiotic and other drug therapy (consider stopping PPIs and/or other GI active drugs)
2. Consider supervised trial of anti-motility agents alone (if NO abdominal symptoms or signs of severe CDI)

Also consider (see Appendix C for details):
3. Fidaxomicin 200mg bd po for 10 days if not already tried (no benefit in repeated use)
4. vancomycin tapering/pulse therapy (4–6-week regimen)
5. oral vancomycin 125 mg qds + oral rifampicin 300 mg bd for two weeks (no robust evidence for effectiveness)
6. iv immunoglobulin, especially if albumin status worsens
7. donor stool transplant

If severe CDI see algorithm for first or second episode of CDI: however FIDAXOMICIN to be used in preference
APPENDIX D3 – Further treatment options in non-responders

There is little consensus in this area (underpinned by a lack of evidence). Options are outlined below – the gastroenterologist will advise on which approach to use.

1. **Tapering / pulsed vancomycin regimen**

   Vancomycin 125 mg po qds for 1 week  
   Vancomycin 125 mg po tds for 1 week  
   Vancomycin 125 mg po bd for 1 week  
   Vancomycin 125 mg po od for 1 week  
   Vancomycin 125 mg po every other day for 1 week  
   Vancomycin 125 mg po every third day for 1 week  
   - then stop

2. **Other antibiotics**

   **Fidaxomicin** (200mg bd orally). There is no evidence of benefit from use of repeated courses of fidaxomicin in multiple recurrences. Only use if fidaxomicin has NOT been used before in recurrence.

   **Rifampicin** (300 mg bd orally) – some authorities recommend giving rifampicin in addition. No randomised, controlled trials have been reported; there is no robust evidence to support the use of rifampicin as an adjunctive agent.

   **Rifamixin** is a non-absorbable antibiotic related to rifampicin. One randomised, controlled study has shown benefit in reducing CDI recurrence using rifamixin as a follow-up adjunct to conventional treatment. There is not sufficient evidence to support its use at present.

   **Teicoplanin** (100-400mg bd orally) – the Cochrane review 2007 comes down in favour of this. It is very expensive and superiority to vancomycin/metronidazole is marginal at best.

   **Fusidic acid** (500mg tds orally) - the response rates in one randomised, double-blind trial comparing metronidazole with fusidic acid showed no significant difference. Recurrence rates were similar, but development of fusidic acid resistance was seen in 55% of recipients who remained culture-positive. Fusidic acid should not be used as a first-line treatment in CDI; its role in treating recurrences is unclear but resistance is likely to limit this use.

3. **Non-antibiotic treatments**

   Theoretically there are advantages to non-antibiotic treatments: firstly antibiotics are only able to target vegetative *C. difficile* cells and not spores, and secondly, antibiotics will disrupt the normal colonic flora, thereby compromising resistance to further *C. difficile* colonization.

   **IV immunoglobulin**  
   Several case reports and small series have been published regarding the use of this method to treat refractory disease. A dosage of 400mg/kg IV as a stat dose has been beneficial in about two thirds of intractable cases. No randomized controlled clinical trials have been performed to evaluate the efficacy of immunoglobulin in recurrent or severe CDI. Recurrence or severe refractory CDI is considered an appropriate use of iv immunoglobulin (Department of Health 2011).
Donor stool faecal enemas
There is increasing evidence for efficiency of faecal transplant in animal models and in human disease. Although the number of human studies reported is small, the results are promising for refractory/relapsing CDI. A fresh stool from a healthy donor is administered in normal saline by enema, slurries via nasogastric tube, or flexible sigmoidoscopy / colonoscopy as advised by a Gastroenterologist (Aas et al, 2003). Adverse events have rarely been reported (Gough et al 2011) and objections to the procedure are largely aesthetic. Patients and relatives often do not share healthcare workers’ aesthetic objections in life-threatening disease. A comparative study showed significant benefit for donor stool instillation in recurrent CDI compared to Vancomycin with or without colonic washout (van Nood et al 2013). The procedure has been successfully carried out in other hospitals in the South West and may be considered in severe refractory/ recurrent disease after consultation with Consultant Microbiologist.

Probiotics
These are mono- or mixed-cultures of live microorganisms which are postulated to work by a number of methods eg to enhance re-establishment of the normal flora, or to inactivate the C difficile toxin. There is a lot of published data in this area and a number of systematic reviews – meta-analyses have failed to demonstrate statistically any significant efficacy in treating or preventing CDI. So the evidence of benefit is nil to weak and further RCTs are warranted.

Perhaps the most promising candidate is Saccharomyces boulardii (1g/day for 28 days) which may have some benefit in recurrent cases. There are risks (fungaemia, variable virulence, non-viability in many commercial preparations), and it is NOT recommended for widespread use.

Adsorbents
Oral cholestyramine (4 g packet tds) has been used in the treatment of refractory CDI because it is thought to bind C. difficile toxins. There is no robust evidence to support the use of cholestyramine as an adjunctive agent, and there is a risk that it may bind antibiotics used to treat CDI. It is not recommended.

4. Colectomy

Colectomy is required in some patients with megacolon (dilatation >10 cm), perforation or septic shock, and should be done before the blood lactate rises above 5 mmol/L. Patients should have a total or subtotal colectomy rather than a hemicolecotomy or a caecostomy. It may be preferable to preserve the rectal stump for subsequent ileo-rectal anastomosis. The recto-colonic stoma can then be perfused with vancomycin liquid if necessary (see Appendix A for details).
### CLOSTRIDIUM DIFFICILE CARE PATHWAY

<table>
<thead>
<tr>
<th>Patient surname:</th>
<th>First name:</th>
<th>Hospital number:</th>
<th>Date of birth:</th>
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*Or attach patient sticker*

**NB:** Please use black ink to complete this pathway and ensure you have added your details to the accountability record below. You can then use your initials when recording care.

Once on the pathway, this document becomes the formal record of the patient’s care and treatment. Therefore, it must be completed fully and accurately.

<table>
<thead>
<tr>
<th>Print name</th>
<th>Signature</th>
<th>Designation</th>
<th>Bleep</th>
<th>Initials</th>
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GUIDELINES FOR USING THIS PATHWAY

- Please complete the accountability record on the front page before using this document
- Each page must be identified with the patient’s name and hospital number/date of birth

Criteria for Inclusion on the Pathway
Your patient should only commence this pathway where the following criteria are met:

- One episode of stool loose enough to take the shape of the container (type 6-7 Bristol Stool Chart) not attributable to any other cause and where laboratory diagnosis has confirmed *Clostridium difficile* infection

  Or

- Where a clinical diagnosis of *Clostridium difficile* infection has been made despite the absence of a positive laboratory test.

Discontinue pathway when patient has been without diarrhoea and a return to their normal bowel habit for at least 48 hours.

Initial Assessment

- A healthcare professional should complete this assessment when the decision to use the pathway has been made
- Complete all sections using the pre-printed prompt. Free text comments may be added where appropriate
- If you record a ‘No’ against any goal, the variance grid at the bottom of the page must be used to record the action taken
- A member of medical staff must complete goals 1 to 3

Evaluation/Record of care

- Entries should be completed for each day the patient remains on the pathway
- Daily clinical assessments are to be undertaken at the Medical clinician’s discretion utilising a risk assessment approach, or at the request of the Nursing staff if the patients clinical condition dictates
- The document facilitates frequent review of the patient’s condition. Some sections require completion daily or more frequently
• All negative responses must be identified with a ‘V’ and details recorded on the variance grid at the bottom of the page

Treatment Protocols

• Protocols are available for the medical management of Clostridium Difficile and Assessment of Disease Severity

• Policies for the Cleaning and Decontamination of Equipment, Hand Hygiene and Isolation Precautions are available on the Trust intranet

Care following death

See Policy: Infection Control of the Deceased Patient available on the Trust intranet

Notes re Isolation

• Barrier precautions and personal protective equipment should be applied even if isolation in a side room is not possible

• An incident form must be completed if isolation is not available. Inform the Infection Prevention and Control Team (IPCT). This is a breach of the Health Act (2008)

• Strict and thorough hand washing with soap and water after every contact with patients or patients’ environment. NB: alcohol hand gel is ineffective against Clostridium difficile spores

• Use of disposable equipment and/or enhanced cleaning with 1000ppm hypochlorite

Notes re transfer to other wards/departments

• Inform IPCT if the patient is required to leave the room for diagnostic/treatment purposes. Consider delaying non-urgent investigations whilst the patient is symptomatic

• Symptomatic patients should not be transferred out to other wards or hospitals without prior consultation with the IPCT

• Ensure all other departments involved in the patients’ care are informed of the patients status e.g. Physiotherapy, Occupational Therapy

• Ensure the patient is transferred to and from other areas promptly, minimising time spent in communal areas

Notes re cleaning post discharge/ transfer

• Inform Housekeeping Services as soon as discharge time is known/as soon as a bed is vacated
• Nursing staff are responsible for cleaning and disposing of medical equipment

NB: The room/bed must not be used again before a terminal clean has taken place. The nurse in charge must verify that the room has been satisfactorily cleaned.

Ensure receiving healthcare setting e.g. nursing/residential homes and the GP are informed of the patients' diagnosis.
Appendix C1

Algorithm for Suspected Clostridium difficile

Diarrhoea AND one of the following:
Positive C.diff toxin/PCR test OR results of C.diff toxin test pending and clinical suspicion of CDI

Must discontinue non C.diff antibiotics if at all possible to allow normal intestinal flora to be re-established.
Review all drugs with gastrointestinal activity or side effects (stop PPIs unless required acutely)
Suspected cases must be isolated

Discuss treatment with Consultant Microbiologist See Appendix C2

Daily assessment during acute symptomatic period
(Include review of fluid/electrolyes)

Symptoms improving
Diarrhoea should resolve in 1-2 weeks
Recurrence occurs in ~20% after 1st episode;
40-60% after 2nd/3rd episode

IF MULTIPLE RECURRENCES ESPECIALLY IF EVIDENCE OF MALNUTRITION, WASTING etc

1. Review all antibiotic and other drug therapy (consider stopping PPIs and/or other GI active drugs)
2. Consider trial of anti-motility agents along (no abdominal symptoms or signs of severe CDI)

Also consider:
4. Vancomycin taper/pulse therapy (AM J Gastroenterol 2002;97:1769-75)
5. IV immunoglobulin, especially if worsening albumin status (J Antimicro Chemother 2004;53:882-4)
Appendix C2

Flow chart for the management of suspected CDI – first or second episodes of infection.

Diarrhoea AND one of the following:
- positive *C. difficile* PCR/toxin test OR histological evidence of pseudomembranous colitis OR results of *C. difficile* tests pending
- AND clinical suspicion of CDI

**Suspected and confirmed cases must be isolated**

- Ideally discontinue non-*C. difficile*-treatment antibiotics / gastric acid suppressants
  - To allow normal intestinal flora to be re-established

**Symptoms/signs of non-severe CDI**
- Oral metronidazole 400 mg tds 10–14 days
- OR
- Supportive treatment only

**Symptoms improving**
- Diarrhoea should resolve in 1–2 weeks
- Recurrence occurs in ~20% after first episode (lower after fidaxomicin)
- 50–60% after second episode

**Symptoms not improving or worsening (should not normally be deemed a treatment failure until received at least one week of treatment)**
- Or, if there is evidence of severe CDI
  - (WCC > 15 x 10^9/L, or acute rising creatinine >50% increase above baseline, or temperature > 38.5°C, or evidence of severe colitis) (Document in patient’s notes)
- OR
- Oral vancomycin 125 mg qds 10–14 days

**Further Surgery/GI/Micro/ ID consultation**

- Depending on choice of therapy (see above), consider:
  1. high-dose oral/NG vancomycin (500 mg PO qds) +/- rifampicin 300 mg PO bd.
  2. IV immunoglobulin 400 mg/kg, one dose, and consider repeating.
- There is no robust evidence for the effectiveness of these approaches in severe CDI. See Appendix C3.
Flow chart for the management of recurrent CDI – third or subsequent episodes of infection.

Diarrhoea AND one of the following:
positive C. difficile toxin PCR/ toxin test within one month
OR
results of C. difficile tests pending AND clinical suspicion of CDI
OR
Histological evidence of pseudomembranous colitis

Must discontinue non- C. difficile-treatment antibiotics if at all possible to allow normal intestinal flora to be re-established

Suspected and confirmed cases must be isolated

Mild, moderate or severe CDI
Oral fidaxomicin 200mg bd for 10 days

DAILY ASSESSMENT
(include review of severity markers, fluid/electrolytes)

Symptoms improving
Diarrhoea should resolve in 1–2 weeks
Recurrence occurs in 40–60% of relapsing cases or third episode

If severe CDI
see algorithm for first or second episode of CDI: however FIDAXOMICIN to be used in preference

If multiple recurrences, especially if evidence of malnutrition, wasting etc.

1. Review ALL antibiotic and other drug therapy (consider stopping PPIs and/or other GI active drugs)
2. Consider supervised trial of anti-motility agents alone (if NO abdominal symptoms or signs of severe CDI)
   Also consider (see Appendix C3 for details):
3. Fidaxomicin 200mg bd po for 10 days if not already tried (no benefit in repeated use)
4. vancomycin tapering/pulse therapy (4–6-week regimen)
5. oral vancomycin 125 mg qds + oral rifampicin 300 mg bd for two weeks (no robust evidence for effectiveness)
6. iv immunoglobulin, especially if albumin status worsens
7. donor stool transplant
### Disease severity rating

<table>
<thead>
<tr>
<th>Disease severity</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Non-Severe Disease** | - Typically three or fewer stools per day, of types 5-7 stools on Bristol stool chart  
- Normal WCC  
- Typically three to five stools per day  
- Raised WCC that is still < 15 x 10⁹/L |
| **Severe disease** | - WCC > 15 x 10⁹/L or  
- Temperature of >38.5° or  
- Acute rising serum creatinine (e.g. >50% increase above baseline) or  
- Evidence of severe colitis (abdominal or radiological signs)  
NB: the number of stools may be a less reliable indicator of severity |
| **Complicated disease** | - Hypotension or  
- Partial ileus or  
- CT evidence of severe disease |
| **Life threatening disease** | - Complete ileus or  
- Toxic megacolon |
Is this Pathway appropriate for your patient?

This Pathway has been designed for those patients for whom:

ONE EPISODE OF STOOL LOOSE ENOUGH TO TAKE THE SHAPE OF THE CONTAINER (TYPE 5-7 BRISTOL STOOL CHART), NOT ATTRIBUTABLE TO ANY OTHER CAUSE AND WHERE LABORATORY DIAGNOSIS HAS CONFIRMED CLOSTRIDIUM DIFFICILE INFECTION

OR

WHERE A CLINICAL DIAGNOSIS OF C. DIFFICILE INFECTION HAS BEEN MADE DESPITE THE ABSENCE OF A POSITIVE LAB TEST

Patient information

Admission details

| Date of admission: | / | / |
| Time of admission: | : |

Route of admission:
- ☐ GP referral
- ☐ Elective admission
- ☐ Inter hospital transfer
- ☐ Other

Admitted from:
- ☐ Own home
- ☐ Nursing/residential home
- ☐ Other

Reason for admission/diagnosis:

Does your patient fit the criteria for this pathway? ☐ Yes ☐ No

If NO: Do not continue this pathway

If YES: Ensure that a senior member of the medical staff signs below

Name:

Signature:

| Date: | / | / | Time: | : |
| Date: | / | / | Time: | : |
### Bristol stool chart

<table>
<thead>
<tr>
<th>Type 1</th>
<th>Separate hard lumps, like nuts (hard to pass)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2</td>
<td>Sausage-shaped but lumpy</td>
</tr>
<tr>
<td>Type 3</td>
<td>Like a sausage but with cracks on its surface</td>
</tr>
<tr>
<td>Type 4</td>
<td>Like a sausage or snake, smooth and soft</td>
</tr>
<tr>
<td>Type 5</td>
<td>Soft blobs with clear-cut edges (passed easily)</td>
</tr>
<tr>
<td>Type 6</td>
<td>Fluffy pieces with ragged edges, a mushy stool</td>
</tr>
<tr>
<td>Type 7</td>
<td>Watery, no solid pieces. Entirely Liquid</td>
</tr>
</tbody>
</table>
### Stool chart

- Identify formation of stool using Bristol Stool Form Scale
- Record every episode of stool

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Stool type</th>
<th>Date</th>
<th>Time</th>
<th>Stool type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Date</td>
<td>Time</td>
<td>Stool type</td>
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</tr>
</tbody>
</table>

Name: (Affix patient label here)
Hospital No:
Initial assessment

Date onset of symptoms: / / 

Is this the patients first episode: 1st 2nd 3rd or more

Date patient isolated: / / 

Time patient isolated: 

Laboratory confirmation: 

Date of laboratory confirmation: 

Other factors

Is patient prescribed a proton pump inhibitor?  

Is the patient prescribed laxatives?  

Has the patient received probiotic drinks?  

Date probiotic commenced: / / 

Has the patient had contact with another C.diff positive patient?  

Does the patient have any of the following risk factors:

Older patient

Severe underlying disease

ICU admission

Presence of NG tube

Duration of hospital stay

Infection Prevention and Control Team Comments:
### Non-antibiotic medications in patients with *Clostridium Difficile*

<table>
<thead>
<tr>
<th>Drug group</th>
<th>Action</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proton pump inhibitors (PPIs)</td>
<td>Review need for PPIs</td>
<td>Suppression of gastric acid can increase host susceptibility</td>
</tr>
<tr>
<td>Tube feeds</td>
<td>Review</td>
<td>Disrupts normal gut flora</td>
</tr>
<tr>
<td>Opioids</td>
<td>Consider stopping for duration of diarrhoea</td>
<td>May mask symptoms and may exacerbate the disease</td>
</tr>
<tr>
<td>Antimotility agents</td>
<td>Discontinue and do not prescribe</td>
<td>Can mask symptoms and may exacerbate the disease</td>
</tr>
<tr>
<td>Laxatives</td>
<td>Discontinue treatment while diarrhoea persists</td>
<td>Not required and may exacerbate symptoms and increase spread of spores</td>
</tr>
</tbody>
</table>
# Medical measures

To be completed by Medical Staff

## Goal 1 – Accurate recording of clinical symptoms

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of appetite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watery diarrhoea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Abdominal pain/tenderness</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Stool smell/green appearance</td>
<td></td>
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</tr>
</tbody>
</table>

## Goal 2 – Diagnosis information and communication

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the patient and/or relatives been informed of the diagnosis?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has a record been made in the patients notes?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has a review of the patient’s medication been carried out?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have the appropriate treatments been commenced?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Record a ‘V’ against any goal on this page which is not completed AND record accurate details as a variance below

<table>
<thead>
<tr>
<th>Variance</th>
<th>Reason and action taken</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

## Antibiotics

To be completed by a Pharmacist

### Current antibiotics
Type: 

Date commenced:  

Dose: 

Indication for antibiotics:  

Is it appropriate  

---

**Previous antibiotics**

List all antibiotics prescribed over the past six weeks:

---

**Treatment for clostridium difficile**

Have antibiotics been prescribed  

- Vancomycin  
- Metronidazole  

Has it been prescribed according to protocol  

Is the patient on probiotics  

---

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---

**Interventions**

Has patient been isolated in a side ward  

---

Clostridium difficile (C. Diff) – Infection Management and Control  
V4.1  
January 2018
<table>
<thead>
<tr>
<th>If isolation unavailable, incident form completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolation posters displayed</td>
</tr>
<tr>
<td>Stool chart commenced</td>
</tr>
<tr>
<td>PPE available and visible</td>
</tr>
<tr>
<td>Hand washing with soap and water advocated to all staff and visitors</td>
</tr>
<tr>
<td>Infection Control Team informed</td>
</tr>
<tr>
<td>Matron informed</td>
</tr>
<tr>
<td>Outreach informed</td>
</tr>
<tr>
<td>Antimicrobial Management review arranged</td>
</tr>
<tr>
<td>Patient informed</td>
</tr>
<tr>
<td>Relatives/carers informed</td>
</tr>
<tr>
<td>Leaflets given</td>
</tr>
<tr>
<td>Housekeeper informed and enhanced cleaning instigated to include cleaning of toilet after each use</td>
</tr>
<tr>
<td>Single use/single patient use equipment in place</td>
</tr>
</tbody>
</table>

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</table>
Daily evaluation/record of care

To be completed by a Doctor

Date: / / Time: :

Number of stools in last 24 hours: 

Medical review

Severity disease score:
-☐ Mild
-☐ Moderate
-☐ Severe
-☐ Complicated
-☐ Life threatening

Monitor signs of deterioration:

<table>
<thead>
<tr>
<th></th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRP</td>
<td></td>
<td></td>
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<tr>
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Fluid balance indicates fluid/electrolyte replacement? Yes No N/A

Nutritional review? No

Assessment for colectomy? No

Refer to Gastroenterologist? No

Refer to General Surgeon? No

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To be completed by a Doctor

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Number of stools in last 24 hours: __________

Medical review

Severity disease score: □ Mild □ Complicated □ Moderate □ Life threatening □ Severe

Monitor signs of deterioration:

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To be completed by a Doctor

Date: __________ / __________ / __________ Time: __________ : __________

Number of stools in last 24 hours: __________

Medical review

Severity disease score: □ Mild □ Complicated
□ Moderate □ Life threatening
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Nutritional review? □ Yes □ No □ N/A

Assessment for colectomy? □ Yes □ No □ N/A

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Refer to General Surgeon? □ Yes □ No □ N/A

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One page per day. Complete each section by initialling the box.
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Daily evaluation/record of care

To be completed by a Doctor

Date: ___/___/___  Time: ___:___

Number of stools in last 24 hours:

Medical review

Severity disease score:

- □ Mild
- □ Moderate
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- □ Complicated
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Monitor signs of deterioration:

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Yes  No  N/A

Fluid balance indicates fluid/electrolyte replacement?

Nutritional review?

Assessment for colectomy?

Refer to Gastroenterologist?

Refer to General Surgeon?

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Daily evaluation/record of care
To be completed by a Doctor

Date: __/__/__ / Time: __:__

Number of stools in last 24 hours: _____________________________

Medical review
Severity disease score: □ Mild □ Complicated
□ Moderate □ Life threatening
□ Severe

Monitor signs of deterioration:

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Daily evaluation/record of care
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Date:    /    /    Time:    :

Number of stools in last 24 hours: 

Medical review
Severity disease score:    □ Mild    □ Complicated
□ Moderate    □ Life threatening
□ Severe

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Yes    No    N/A

Fluid balance indicates fluid/electrolyte replacement?    □    □    □
Nutritional review?    □    □    □
Assessment for colectomy?    □    □    □
Refer to Gastroenterologist?    □    □    □
Refer to General Surgeon?    □    □    □

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# Daily evaluation/record of care

To be completed by a Doctor

**Date:** [ ] / [ ] / [ ]  **Time:** [ ] : [ ]

**Number of stools in last 24 hours:** [ ]

**Medical review**

Severity disease score:  
- [ ] Mild  
- [ ] Complicated  
- [ ] Moderate  
- [ ] Life threatening  
- [ ] Severe

Monitor signs of deterioration:

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</table>

**Fluid balance indicates fluid/electrolyte replacement?**  
[ ] Yes  
[ ] No  
[ ] N/A

**Nutritional review?**  
[ ] Yes  
[ ] No  
[ ] N/A

**Assessment for colectomy?**  
[ ] Yes  
[ ] No  
[ ] N/A

**Refer to Gastroenterologist?**  
[ ] Yes  
[ ] No  
[ ] N/A

**Refer to General Surgeon?**  
[ ] Yes  
[ ] No  
[ ] N/A

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### Daily evaluation/record of care

To be completed by a Doctor

**Date:** \[ \] / \[ \] / \[ \]  \n**Time:** \[ \] : \[ \]

**Number of stools in last 24 hours:**

**Medical review**

**Severity disease score:**
- ☐ Mild
- ☐ Complicated
- ☐ Moderate
- ☐ Life threatening
- ☐ Severe

**Monitor signs of deterioration:**

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<tr>
<th>Monitor</th>
<th>Results</th>
<th>Comments</th>
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<th>Fluid balance indicates fluid/electrolyte replacement?</th>
<th>Yes</th>
<th>No</th>
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<tr>
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Daily evaluation/record of care
To be completed by a Doctor

Date: ____________ / ____________ / ____________ Time: ____________ : ____________

Number of stools in last 24 hours: ____________

Medical review

Severity disease score: □ Mild    □ Complicated
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Assessment for colectomy? □ □ □

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Yes  No  N/A

Fluid balance indicates fluid/electrolyte replacement?  
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- □ No  
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Deterioration/complications

Monitoring for deterioration and/or complications should be ongoing and part of the daily medical review. Treatment is indicated according to the Disease Severity score (see protocol).

Complications may include:

- Relapse of diarrhoea
- Pseudomembranous colitis
- Toxic megacolon
- Perforation of the colon
- Sepsis
- Death

Persistent diarrhoea

If diarrhoea persists despite 20 days of treatment and the patient is stable, the daily number of types 5-7 stools has decreased, WCC is normal and there is no abdominal pain or distension, the persistent diarrhoea may be due to post-infectious non-specific causes.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Initial</th>
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</thead>
<tbody>
<tr>
<td>Commence anti-motility agent</td>
<td></td>
<td></td>
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<tr>
<td>Observe for therapeutic response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check for no evidence of colonic dilation</td>
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Recurrence

First response:

Repeat same antibiotic used to treat initial episode (unless the first episode was treated with Metonidazole and the recurrence is severe CDI, in which case treatment with Vancomycin).

Subsequent recurrence:

Use Vancomycin 125mg qds and seek advice from Consultant Microbiologist.

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</table>
### Outcome

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Date</th>
<th>Time</th>
<th>Initial</th>
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</thead>
<tbody>
<tr>
<td>Resolved</td>
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<tr>
<td>Transferred</td>
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<td></td>
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<tr>
<td>Discharged</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Patient died</td>
<td></td>
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<tr>
<td>Transferred to alternative pathway</td>
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### Patient discharge/transfer

Kept in isolation for 48 hours clear of symptoms:  
☐ Yes  ☐ No

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Terminal clean of environment and room

Information pertaining to infection sent to GP

Receiving healthcare facility notified (if applicable)

Sepsis

Death

### Care following death

**Care of the patient**

Use a plastic body bag for the deceased patient if they are leaking bodily fluids.

**Death certification**

If the patient dies the death certificate should reflect whether CDI was part of the sequence of events leading directly to death or was an underlying cause. If either case applies CDI should be mentioned in Part 1.

If CDI was not part of the direct sequence but contributed in some way to death, it should be mentioned in Part 2.

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## Multidisciplinary notes

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Specimen Infection Control Notification Sheet

Name of deceased: ________________________________

Date and time of death: ________________________________

Source hospital and ward: ________________________________

Are the deceased’s remains a potential source of infection:
☐ Yes
☐ No
☐ Unknown

If YES (see note 2 below) the remains present a potential infectious hazard of transmission by:
☐ Inoculation
☐ Aerosol
☐ Ingestion

Instructions for handling remains (if YES, tick as appropriate)
☐ Can relatives view the body
☐ Body bagging required
☐ Embalming presents high risk

Signed (see note 3):
______________________________

Print name:
______________________________

On behalf of:
______________________________
(Hospital/Mortuary/General Practitioner)

Notes:
1. Not all infected patients display typical symptoms, therefore some infections may not have been identified at the time of death.

2. In accordance with Health & Safety law and the information provided in the Health Services Advisory Committee Guidance, Safe Working and the Prevention of Infection in the Mortuary and Post-Mortem Room (second edition 2002)

3a. In hospital cases, the doctor certifying death, in consultation with ward nursing staff, is asked to sign this Notification Sheet.

3b. Where a post-mortem examination has been undertaken, the pathologist is asked to sign this Notification Sheet.

3c. In no-hospital situations, the doctor (e.g. GP) certifying death is asked to sign this Notification Sheet

Ref to DHS_S001
Isolation of patients with Clostridium difficile diarrhoea and good infection control nursing, such as:
- hand washing (not relying solely on alcohol gel as this does not kill the spores)
- wearing gloves and aprons, especially when dealing with bed pans
- Enhanced environmental cleaning where there are cases of Clostridium difficile disease. This reduces environmental contamination with the spores

What is the risk to healthcare workers and patients’ relatives?

Most patients with this condition will recently have received antibiotics. Therefore, hospital staff such as nurses, GPs and patients’ relatives are at little risk of catching the illness themselves.

However, should these people currently be receiving antibiotics then they are at some risk of infection. Everyone should be especially scrupulous in their hand washing.

Handwashing - If you are visiting patients in hospital, please ensure that you wash your hands, particularly on departure.
Introduction
This leaflet explains what Clostridium difficile is, how it develops and how it can cause infection. Clostridium difficile is the major cause of antibiotic-associated intestinal infections, such as diarrhoea and colitis. It mostly affects elderly patients who are already ill.

What is Clostridium difficile?
Clostridium difficile is a bacterium which causes diarrhoea. In most cases it causes a relatively mild illness. However, occasionally, and particularly in elderly patients, it may result in serious illness. Clostridium difficile does not grow in the presence of oxygen but produces spores that can survive for a long time in the environment. Its usual habitat is the large intestine, where there is very little oxygen.

What are the symptoms?
Clostridium difficile can cause diarrhoea. The diarrhoea may range from a mild disturbance to a very severe illness with ulceration and bleeding from the colon (colitis). Abdominal pain and fever may also occur. In serious cases it can cause perforation of the intestine leading to peritonitis. It can be fatal.

Generally, Clostridium difficile is only able to do this when the normal, healthy intestinal bacteria have been killed off by antibiotics. When not held back by the normal bacteria, it multiplies in the intestine. It produces two toxins (poisons) that damage the cells lining the intestine. The result is diarrhoea.

Who has Clostridium difficile?
Clostridium difficile can be found in low numbers in less than 5% of the healthy adult population. It is kept in check by the normal, ‘good’ bacterial population of the intestine. It is common in the intestines of babies and infants, but does not cause disease. This is because its toxins do not damage the immature intestinal cells of infants and babies.

Who gets Clostridium difficile?
Patients who have been treated with broad spectrum antibiotics (those that affect a wide range of bacteria, including intestinal bacteria) are at greatest risk of Clostridium difficile disease. Most of those affected are elderly patients with serious underlying illnesses.
Most infections occur in hospitals (including community hospitals) and nursing homes but they can also occur in the community.

How does it spread?
Some healthy people can be carriers of Clostridium difficile. However, in most cases the disease develops after cross infection from another patient, from healthcare staff or from a contaminated environment such as clothing and bedding.

A patient with Clostridium difficile diarrhoea excretes large numbers of the spores in their liquid faeces. These can contaminate the general environment around the patient’s bed, including surfaces, switches, equipment, the toilet areas, sluices, commodes or bed pan washers.

The spores can survive for a long time and be a source of hand-to-mouth infection for other people. If these people have also been given antibiotics, they are at risk of Clostridium difficile disease.

How is it diagnosed?
A sample of diarrhoea faeces is taken and tested for the presence of the Clostridium difficile toxins.

How can this infection be prevented?
There are three important components to the prevention and control of Clostridium difficile disease:

Prudent antibiotic prescribing to reduce the use of broad spectrum antibiotics