

Protocol for the Prevention and Management of *Clostridium difficile*.

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Executive Summary

Clostridium difficile is a major cause of antibiotic-associated diarrhoea. The organism forms spores which are very hardy; these are shed in large numbers by infected patients and can persist in the environment for a long time. Other patients may then ingest the spores, usually via contamination of the hands. Most cases are treatable, but some cases lead to toxic megacolon and bowel perforation, necessitating colectomy and deaths may occur as a result.

This protocol provides information on infection prevention and control precautions for Clostridium difficile. It includes information on prevention of transmission, the transfer and discharge of infected patients and the management of outbreaks of Clostridium difficile.

Scope

This protocol applies to all staff (temporary or permanent) working in any of the locations registered by St George's Healthcare NHS Trust with the Care Quality Commission (CQC), to provide its regulated activities. Locations are not necessarily geographically based or determined. Therefore the term locations does not just refer to Trust buildings; it is the term used by the CQC to describe the hub of operations for a service or range of services and so includes all activities being performed in the course of performing one's role.

This includes volunteers, contractors, students and/or trainees.

This protocol is an appendix to the Infection Control Policy. Refer to the Infection Control Policy for information on the criteria, responsibilities and systems required to prevent and control Healthcare Associated Infections (HCAs).

Protocol for the Prevention and Management of *Clostridium difficile*

1. Introduction

Clostridium difficile is a major cause of antibiotic-associated diarrhoea and of diarrhoea in hospitals. The organism forms spores which are very hardy and can persist in the environment for a long time; these are shed in large numbers by infected patients. Other patients may then go on to ingest the spore, particularly if their hands are contaminated. Most cases are treatable, but some cases lead to toxic megacolon and bowel perforation, necessitating colectomy, and deaths may occur as a result.

Certain strains, such as type 027, may be associated with a higher risk of serious outcomes. Those most at risk of disease are older patients and those who have had a recent course of antibiotics.

Cases are estimated to increase length of stay by 21 days, or to cost £4000-£10,000. These cases can be reduced by diligent adherence to 5 key interventions:

- **prudent antibiotic prescribing**
- **correct hand hygiene for patients and staff**
- **enhanced environmental cleaning**
- **personal protective equipment**
- **isolation of patients.**

1.1. Diagnosis of *C. difficile* Infection

C. difficile infection (CDI) is a clinical diagnosis, but laboratory confirmation should be used to guide therapy and management as there are many causes for healthcare associated diarrhoea.

Patients who are otherwise healthy may have carriage of *C. difficile*. If these patients develop diarrhoea for other causes the *C. difficile* may be detected as a “bystander”. For this reason laboratory diagnostics differentiate between detecting toxin that indicates disease and detecting organism by culture or PCR that may represent carriage.

Testing methods are as follows.

- 1) Stool samples are screened with a GDH test; this detects the *C. difficile*-specific enzyme glutamate dehydrogenase antigen (GDH). If the GDH test is negative the stool is negative and there is no evidence of *C. difficile*.
- 2) If the GDH is positive then a toxin test is performed. If this is positive then there is evidence of *C. difficile* infection. These patients require treatment for CDI and isolation to prevent cross infection. If the toxin test is negative then a PCR (Polymerase Chain Reaction) is performed
- 3) If the toxin test is negative (and the GDH test is positive) a PCR is performed. If the PCR is negative the stool is negative and there is no evidence of *C. difficile*. If the PCR is positive there is evidence of potential carriage (or “potential excretor”). This means though the diarrhoea may not have been caused by *C. difficile* there is an infection control risk and these patients should be isolated to prevent cross-infections though they may not require specific therapy.

This means there are 3 possible laboratory results.

Result	interpretation	action
GDH -ve	1) <i>C. difficile</i> negative	No evidence of CDI – look for other causes of diarrhoea
GDH +ve/ tox +ve	2) <i>C. difficile</i> infection	Treat CDI, infection control measures
GDH +ve/ tox -ve/ PCR +ve	3) Potential <i>C. difficile</i> carriage/ (“potential excretor”)	No evidence of CDI – look for other causes of diarrhoea. Do not necessarily need to treat CDI, but take infection control measures.
GDH +ve/ tox -ve/ PCR -ve	4) <i>C. difficile</i> negative	No evidence of CDI – look for other causes of diarrhoea

2. General Measures to Reduce the Risk

2.1. Antibiotic Control

The hazards of antibiotic use must be recognised: these should only be prescribed when there is firm evidence of sepsis/infection, (or prophylaxis is indicated) and the narrowest spectrum possible should be used; they should be reviewed frequently and discontinued when no longer necessary.

- Cephalosporins and ciprofloxacin seem to carry a particular risk of *C. difficile* illness and should only be used when necessary, as per antibiotic protocols.
- Surgical prophylaxis should not be confused with treatment of infection, and should not be prolonged beyond the time of surgery – in most situations a maximum of 1 day is appropriate.
- Antibiotics for acute admissions are often started in a situation of diagnostic uncertainty by staff not familiar with the patient. Post-take consultant ward rounds should scrutinise antibiotic prescriptions carefully and change/stop therapy as appropriate.

2.2. Environmental and Hand Hygiene

- As the spores can persist in the environment basic ward hygiene is important in limiting spread – especially hygiene in bathrooms and with commodes/bedpans. Commodes and bedpan holders must be cleaned with Chlor-clean after every use. All patients on the ward should wash hands or use a detergent hand-wipe *before* meals and *after* using the toilet.

3. Dealing with Individual Cases

Clinicians (doctors and nurses) should apply the following mnemonic protocol (SIGHT) when managing suspected potentially infectious diarrhoea:

S	Suspect that a case may be infective where there is no clear alternative cause for diarrhoea
I	Isolate the patient and consult with the infection control team (ICT) while determining the cause of the diarrhoea
G	Gloves and aprons must be used for all contacts with the patient and their environment
H	Hand washing with soap and water should be carried out before and after each contact with the patient and the patient's environment
T	Test the stool for toxin, by sending a specimen immediately

- New onset of diarrhoea: patients should be isolated in single rooms or nursed with gloves & aprons on the open ward as soon as possible – do not wait for a definitive diagnosis. Remember to display “Gloves & Apron” or “Source Isolation” sign, as appropriate.
- A prompt clinical review should be undertaken by the medical team caring for the patient and the likely cause of the patient’s diarrhoea established (see Trust guidelines for the management of diarrhoea).
- When indicated following medical review, send a stool sample to Microbiology for *C difficile* GDH and toxin assay (see above).
- Patients with *C. difficile* diarrhoea or potential carriers (“potential excretors”) must be isolated in a single room, have a dedicated commode or toilet and must not share toilet facilities with non-*C. difficile* patients. They must have dedicated, preferably single-use, equipment, e.g. BP cuffs, sphygmomanometer etc.
- Once stools are formed for 48 hours, patients are no longer deemed infectious.
- After removal of patient from a bay to a side-room, clean the affected bay or side-room. Take curtains down, clean the area and non-electrical equipment with Chlor-clean and electrical equipment with detergent wipes. Put up clean curtains in the affected bay.
- Daily cleaning of isolation room with Chlor-clean.

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- Hand-washing with soap & water after contact with patient or environment (alcohol gel is ineffective at killing *C.difficile* spores); Gloves and plastic aprons to be worn when caring for *C.difficile* patients.
- Senior staff on the ward to enforce strict adherence to isolation precautions.

Medical staff to manage CDI and start therapy as appropriate. Review antibiotics and stop/change as appropriate (can discuss with Microbiology). Therapy should not be delayed whilst awaiting test results. Refer to treatment guidelines: **Management of Clostridium Difficile Infection (CDI)** available on the antibiotic prescribing page on the trust intranet. To access these scroll to the bottom of the Trust intranet homepage and select "Antibiotic Prescribing" from the quick links section.

4. Outbreaks – Recognition and Control

Two or more cases acquired in a ward within two weeks may constitute an outbreak

All measures as above in 'Individual Cases' to be applied; in addition:

- **Isolate/Cohort Nurse Patients** with diarrhoea (once stools are formed for 48 hours, patients are no longer deemed infectious). Set up isolation bays and block beds. These may have to be mixed-sex: the need to control spread of the infection has to be balanced against the desirability of same-sex bays. Isolation bays should have a separate commode or dedicated toilet.
- **Antibiotic Control:** Ward sister to inform junior doctors, ward pharmacist and attending consultants of the outbreak and the need to review antibiotic use. Antibiotic prescriptions should be reviewed daily by doctors and ward pharmacist; stop/review dates should be recorded, narrow spectrum agents preferred to broad spectrum agents, and antibiotics stopped/avoided whenever clinically justifiable.
- **Environmental Cleaning** to be intensified – daily use of Chlor-clean to the whole ward.
- **Outbreak Meeting** – to be convened, as necessary, usually by the Infection Control Team.

5. Discharge from Hospital

- Patients can be discharged from hospital if they are clinically well.
- If patients are discharged on treatment for CDI they should be advised to complete the course of medication.
- The GP should be informed the patient has had *C. difficile* infection.
- Patients should be advised to consult their GP if they have a relapse of symptoms.
- Patients should be advised of precautions to prevent spread of infection at home, such as frequent hand washing and given a copy of the Department of Health leaflet, **C DIFFICILE – now you are going home.**
- Community staff caring for patients with diarrhoea should wear gloves and aprons for contact with the patient and their environment. After contact gloves and aprons must be removed and disposed of. Hands **must** be washed with soap and water and dried thoroughly. Alcohol hand rub can be applied after washing.

6. Associated Documentation

Infection Control Policy

Hand Hygiene Policy

Communicable Infections: Control of Outbreaks Protocol

Protocol for the Isolation of patients

Discharge Policy

Transfer of Patients

Protocol for Reporting Healthcare Associated Infections (HCAI) to the Health Protection Agency.

Protocol for the Surveillance of Healthcare Associated Infections

Decontamination Policy

Antibiotic Prescribing Guidelines

Trust Guidelines for the Investigation and Management of Diarrhoea

7. References

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