

## ***Clostridium difficile***

### **Key Points**

**Clinicians should consider the following protocol (SIGHT) when assessing a case of diarrhoea:**

**Suspect that a case may be infective when there is no clear alternative cause of diarrhoea**

**Isolate the patient in a single room, consulting with the Infection Prevention Control team**

**Gloves and aprons must be used for all contacts with the patient and their environment**

**Hand washing with soap and water before and after each contact with the patient and the patients environment**

**Test the stool for toxin immediately**

### **Summary**

The most important aspects of *Clostridium difficile* (*C. difficile*) are:

1. Isolation of infected patients
2. Hand washing with soap and water
3. Personal protective equipment (gloves and aprons)
4. Prudent antibiotic prescribing
5. Enhanced environmental cleaning
6. Staff education and training

### **Introduction**

#### **Background**

*Clostridium difficile* (*C. difficile*) is a spore-forming anaerobic bacterium acquired by the ingestion of spores. Spores may be ingested following contact with a contaminated environment, other patients or from the hands of staff. *C. difficile* is the major cause of antibiotic associated diarrhoea and colitis: healthcare associated infections that mostly affect elderly patients with other underlying diseases. *C. difficile* disease is associated with the use of antibiotics which may result in disruption of the “normal bowel flora”.

*C. difficile* acquisition may result in asymptomatic carriage, loose stools or profuse diarrhoea which can result in life-threatening pseudo-membranous colitis. *C. difficile* infections are most common in people over the age of 65 years but any age group may be susceptible.

Large outbreaks of *C. difficile* with significant mortality have been documented in healthcare facilities. Robust management to prevent secondary spread is essential.

Confirmation of infection is by the detection of *C. difficile* toxin in the stool samples of a symptomatic patient. Epidemiological typing will be considered by the Infection Prevention Control Team (IPCT) where cases are not resolving, are particularly severe or in an outbreak situation.

### **Ribotype 027**

In 2006, a single hypervirulent clone of *C. difficile*, PCR ribotype 027, emerged in Canada then in the USA and Europe. It has subsequently been identified in large outbreaks in England and Northern Ireland. This strain is considered to be more virulent than other strains and produces higher levels of toxins. The course of infection is more severe and results in more complications. It is associated with a higher risk of relapse and mortality.

This type of infection should therefore be suspected where cases are particularly severe, are not resolving or where clusters of cases occur.

***In these instances it is essential to contact your IPCT for further advice.***

## **Definitions**

Infection with *C. difficile* is diagnosed by detection of toxins A & B in the faeces of a symptomatic patient.

The spectrum of clinical disease ranges from mild to life threatening. These are classified as follows:

### **Mild disease**

- $\leq 3$  episodes of diarrhoea (Type 5 to 7 - Bristol Stool chart) per 24 hour period and a normal WCC.

### **Moderate disease**

- 3 to 5 episodes of diarrhoea (Type 5 to 7 - Bristol Stool chart) per 24 hour period and a raised WCC, but still less than 20,000/ mm<sup>3</sup> (20 x 10<sup>9</sup>/L).

### Severe disease

- The number of episodes of diarrhoea (Type 5 to 7 - Bristol Stool chart) is considered to be a less reliable indicator of severe disease.
- WCC >20,000 ( $20 \times 10^9/L$ ) or a temperature of > 38.5°C or acute rising serum creatinine (e.g. >50% increase above baseline) or evidence of severe colitis (abdominal or radiological signs).

### Complicated disease

- Hypotension, partial ileus or CT evidence of severe disease.

### Life threatening disease

- Complete ileus or toxic megacolon.

### Groups at Risk for *C. difficile* Infection (CDI)

- a. Patients 65 years or older
- b. Severe underlying disease
- c. Non surgical gastrointestinal procedures
- d. Presence of nasogastric tube
- e. Anti-ulcer medications
- f. Stay on ICU
- g. Prolonged duration of hospital stay
- h. Prolonged course of antibiotics
- i. Administration of multiple antibiotics or multiple courses of antibiotics

### Sampling

- Diarrhoeal samples which conform to the shape of the container (Bristol Stool Chart Type 5 to 7) are routinely tested for *C. difficile* toxins (CDT) in patients aged 65yrs and over. Stools from patients between the ages of 2 and 65 will be tested on request. Stools from children under 1 yr are not tested for this organism.

### Clearance and Repeat Specimens

- There is no need to send further specimens once *C. difficile* has been diagnosed unless:
- Symptoms persist despite treatment. A further test may be sent after 3-4 weeks.
- Symptoms resolve and then recur which may suggest a relapse which occurs in about 20-30% of patients. Sometimes this is due to acquisition of a new strain.
- Samples of non-diarrhoeal faeces are not tested for *C. difficile*.

### Guidance

#### Patient Management

- The clinical management of all symptomatic patients will be as outlined below.
- However if the number of cases increase or an outbreak is suspected, the infection prevention and control arrangements will vary according to the following classification:
- Sporadic cases: healthcare or community acquired
- Localised cluster of cases: 2 or more cases of healthcare acquired *C. difficile* in a defined area (i.e. ward) per week where cross infection is suspected. These may occur sporadically without indicating an outbreak.
- Outbreak: The expected level of *C. difficile* is exceeded for 2 weeks in a defined area.

OR

- More than 3 cases of hospital acquired infection per week for 2 consecutive weeks in a defined area.

#### Clinical Management

- Doctors should consider *Clostridium difficile* infection (CDI) as a diagnosis in its own right stratifying each confirmed case for severity (see definitions tab) and treat each patient.
- A daily review must include:
- Monitoring bowel function
- Monitoring fluid balance with appropriate fluid and electrolyte replacement
- Monitoring nutritional status
- STOP ANTIBIOTICS if possible
- Treatment options are dependent on clinical severity and include either: Metronidazole and/or Vancomycin. Familiarise yourself with your local antibiotic policy for *C. difficile*.
- Prolonged *C. difficile* diarrhoea (>4 weeks) should be managed with advice from a consultant microbiologist.
- Repeat faeces specimens for *C. difficile* toxin testing are not necessary within 3-4 weeks of diagnosis.
- Patients who develop diarrhoea following a symptom free period may have been re-infected or have relapsed. These patients must be isolated immediately. A faeces specimen should be sent for *C. difficile* toxin testing if it is more than 3-4 weeks since the previous positive toxin result.

### Sporadic Cases

- On suspicion or diagnosis of *C. difficile* infection the following infection control measures must be implemented:
- Immediate isolation of the patient in a single room. An en-suite bathroom is preferable. Patients who do not have access to en-suite facilities must have a dedicated commode for their personal use. Decontaminate the vacated bed space.
- Use Contact Precautions.
- Remember hand washing: The use of alcohol handrubs are not advised, as these are not effective in killing *C. difficile* spores.
- Patients should be provided with an information leaflet on *C. difficile*.
- Environmental cleaning to be carried out as detailed in section 6 below.
- A stool chart must be started and updated following every bowel action. Stool charts / fluid balance charts should record daily if a patient does or does not have their bowels open.
- Staff working on the ward must change their uniforms on a daily basis. Sufficient supplies of uniforms must be available. (Click here for the regional dress code)
- All linen should be managed as infected linen.
- All waste should be disposed off as clinical waste.
- Where possible patients should be allocated equipment that is single patient use/ disposable or equipment that can remain with them during their time in isolation.
- General equipment should be disposed of or decontaminated when the patient no longer needs isolated. This should occur immediately on removal from the isolation area.
- Where equipment is used on more than one patient it must be decontaminated between each patient use.
- The patient may be removed from isolation for *C. difficile* infection when a 'symptom free status' has been achieved. This is defined as: A minimum of 1 but preferably 2 consecutive type 1 to 4 stools and no Type 5, 6 or 7 stools in the preceding 72 hours. Patients with underlying bowel disorders who did not have semi-formed 'normal' stools prior to infection should be assessed by medical staff in consultation with the Infection Prevention Control team (IPCT) following two unsuccessful courses of antibiotic therapy. Please note that Toxin tests are not used as a "test of cure"!
- Patient transfers to other wards/departments must be kept to a minimum in order to prevent potential spread of infection. Should the patient require transfer for clinical reasons, the receiving ward/department must be informed of the patient's infection status prior to transfer to enable side room accommodation to be identified. The transfer of symptomatic patients to another hospital or healthcare facility should be avoided if possible. If it is necessary, the IPCT should be informed and the receiving hospital should be informed both verbally and in the written handover.
- GPs must be notified of their patients' *C. difficile* episode at discharge.
- Precautions for deceased patients are the same as those used when the patient was alive. Use of plastic body bags is not routinely required unless there is excessive leakage of blood or other body fluids.



### Localised Cluster of Cases

- When a potential cluster of hospital acquired *C. difficile* infection has been detected. There will be a case review by the clinical team assisted by the Infection Prevention and Control team (IPCT).
- In addition to guidance provided for ‘sporadic cases’, the following measures will be implemented:
- IPCT to inform the Director of Infection Prevention Control, Executive Nurse Director, relevant divisional and clinical leads. This information will be cascaded to appropriate trust personnel according to location and requirements.
- Instigation of enhanced patient monitoring within the affected area by clinical staff and IPCT to identify potential further cases, with daily reporting of situation to the Director of Infection Prevention Control, Medical Director, Executive Nurse Director, Consultant in Communicable Disease Control (CCDC) and others as appropriate to your healthcare facility.
- Staff deployment to and from other areas must be controlled to ensure adequate staffing levels are present whilst minimising the risk of *C. difficile* transmission.
- Enhanced promotion of hand hygiene to raise awareness locally, with particular emphasis on the use of soap and water.
- Restriction of patient transfers or admissions to and from the affected ward/ bay to prevent spread of infection in other areas. This is necessary for 48 to 72 hours after the affected patient(s) have been isolated.
- Patients in the affected area who develop loose stools or diarrhoea must have faeces specimens sent for *C. difficile* toxin testing. All patients in the affected area must have stool charts/ fluid balance charts implemented.
- Typing of *C. difficile* isolates to be requested.
- Additional cleaning should be arranged using method highlighted in Section 6 below. This should focus on the near patient environment and particularly toilet areas. Cleaning teams should be included in discussions about enhanced cleaning to ensure continuity.





## Outbreaks

- The identification of more than 3 cases per week of hospital acquired infection, for 2 consecutive weeks in a defined area will initiate specific actions by the outbreak management team in order to manage the outbreak of *C. difficile*.
- In addition to guidance provided for localised clusters, the following additional measures will be implemented:
- The Chief Executive and Nursing and Medical Directors must be informed and an outbreak committee convened.
- Potential outbreaks to be reported to Public Health/CCDC.
- Outbreaks should be reported to the DHSSPSNI as a Serious Adverse Incident (SAI).
- Restriction on admissions to, and transfer from, all affected area(s).
- Resolution of the cluster/outbreak will be confirmed by the IPCT/outbreak committee.
- At the end of the outbreak a 'terminal' clean of the whole ward environment, including all patient equipment. A full curtain/bedscreen change is required. Soft furnishings that cannot be adequately decontaminated should be discarded.
- Patients may not be admitted to the ward until the 'terminal' clean is completed and the acceptable standards of cleanliness are met.
- A retrospective review of the outbreak management should be undertaken.

## Managerial Responsibilities

- Managers are responsible for ensuring staff are aware of this policy and comply with all aspects, with particular reference to:
- Prompt isolation of patients
- The timely taking of stool specimens
- Cleaning of the environment
- Antibiotic control
- Effective hand hygiene
- Managers are also responsible for ensuring staff have adequate supplies of equipment, particularly consumables to ensure compliance with this policy.
- If there is an outbreak, management will take responsibility for actions including ward closure on advice from the IPCT/ Outbreak Committee.

## Environmental Cleaning

- The room (and any associated patient equipment e.g. commode) must be cleaned thoroughly at least daily using neutral detergent and water, followed by a solution of chlorine releasing agent (1000ppm available chlorine) then rinsed with clean water. Alternatively an approved combined detergent/ chlorine (1000ppm available chlorine) product may be used.

- Any concerns in relation to the standard of environmental cleanliness must be reported immediately to allow prompt resolution of the problem.
- Any equipment in the isolation room should ideally be disposable or must be dedicated for that patient only. It should be thoroughly cleaned after use or when no longer required as described at 4.2 above. This includes equipment such as BP cuffs, moving and handling equipment, physiotherapy equipment etc.
- If it is essential that equipment is used on more than one patient it must be decontaminated between each patient use.
- Therapy mattresses/ beds must be decontaminated as per local policy.
- At the end of the outbreak or when the patient vacates an area a ‘terminal’ clean of the environment, including all patient equipment, must be carried out.
- A full curtain/ bedscreen change is required. Soft furnishings that cannot be adequately decontaminated should be discarded.
- The order of cleaning should be to remove curtains and any linen, clean high surfaces first and work down to the floor. *C. difficile* spores may persist in the environment so thorough removal of all dirt and dust is required.
- Alternative technologies to decontaminate the environment may be used as advised by the Infection Prevention Control Team.

#### Antibiotic Prescribing

- The appropriate use of antibiotics will reduce the selection pressure for colonisation and infection with *C.difficile*.
- Staff prescribing antibiotics should adhere to the trust antibiotic prescribing guidelines.
- There should be a daily review of the need to continue antibiotics in all patients.

## References

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