

# CLOSTRIDIUM DIFFICILE (TOXIGENIC): INFECTION CONTROL PATIENT MANAGEMENT - CHW POLICY®

## DOCUMENT SUMMARY/KEY POINTS

- Restricted use of certain “high risk” antibiotics, particularly broad spectrum cephalosporins and quinolones, is an important preventative measure at both an individual and unit level.
- Any child with toxigenic *C. difficile* should be nursed on the ward which is most appropriate for their medical needs.
- All children with toxigenic *C. difficile* **MUST** be nursed in a single room or cohorted with other children with toxigenic *C. difficile* in a dedicated room with en-suite toilet and bathroom facilities. Only cohort after consultation with Infection Control.
- Hand Hygiene and glove use is essential to prevent and contain *C. difficile* transmission
- Only *unformed stool specimens* should be submitted to pathology for *C. difficile* testing.
- Microbiologist or Infection Control Practitioner will notify the Director of Clinical Operations of identification of any known toxigenic *C. difficile* clusters. The Director of Clinical Operations is responsible to notify the Chief Executive.
- Education of staff, parents and carers is important

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

<b>Approved by:</b>	SCHN Policy, Procedure and Guideline Committee	
<b>Date Effective:</b>	1 <sup>st</sup> March 2015	<b>Review Period:</b> 3 years
<b>Team Leader:</b>	Clinical Nurse Consultant	<b>Area/Dept:</b> Infection Control

## CHANGE SUMMARY

- Mode of Transmission section moved from page 5 to page 6.
- Pathology Specimens and Diagnosis section:
  - Third dot point - words have been rearranged to highlight PCR testing is performed to confirm diagnosis.
  - Added section Other Pathology Specimens – Blood Collection
- Patient Placement section: removed 2 paragraphs and combined them under a new section of duration of isolation requirements. Note: duration changed from 48hrs to 72 hrs.
- Room Cleaning section: daily cleaning is with a neutral detergent; discharge cleaning is a 2-stage cleaning process.
- Linen section, Family and Volunteer section, and Eating Utensils section: additional information added.
- New sections: Hospital Volunteers, Waste Management and General Maintenance.

## READ ACKNOWLEDGEMENT

- Medical Staff in clinical areas should read and acknowledge this document.
- Nursing staff in clinical areas should be aware of this document.

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## Introduction

Toxigenic *Clostridium difficile* (*C. difficile*) is one of the most common causes of healthcare-associated diarrhoea, particularly in adult settings. It is associated with patient-to-patient and environment-to-patient transmission, amplified by the use of certain antimicrobial classes such as broad spectrum cephalosporins, quinolones, carbapenems, and clindamycin. In the Northern Hemisphere a hyper-virulent *C. difficile* strain ("North American Pulsotype 1 / PCR ribotype 027") has been circulating for some years, with a high mortality rate and serious complications such as colectomy in many affected patients. Recently this strain has been identified in Australia, but it is unclear how widespread its local dissemination has been to date.

*C. difficile* strains are only pathogenic if they produce an enterotoxin (Toxin A) and/or a cytotoxin (Toxin B) ("toxigenic strains"). Non-toxigenic strains may be part of the normal bowel commensal flora. The situation is even more complex in children less than one year old, where even toxin-producing strains may be carried without causing disease. For this reason, detection of toxigenic *C. difficile* in young children should prompt exclusion of other causes of diarrhoea, and careful consideration of whether it does have any pathogenic role. Even in older children and adults, asymptomatic carriage of toxin-producing strains may occasionally occur.

Treatment of toxigenic *C. difficile* infection is effective and is recommended in symptomatic patients, including younger children with significant colitis where no other cause is evident. Metronidazole is the drug of choice for mild-moderate disease, or oral Vancomycin for severe disease. Routine re-testing of stool as a "test of cure" after successful treatment is not recommended, as antigen excretion may persist for several weeks after successful therapy. Withdrawal of precipitating antibiotics, if clinically appropriate, will hasten resolution of the condition.

## What is *Clostridium difficile*?

*C. difficile* is a spore-forming, gram-positive anaerobic bacillus that may produce one or both of two toxins, Toxin A and Toxin B. When the organism causes intestinal infection it may cause severe diarrhoea and other life threatening intestinal conditions, such as pseudomembranous colitis, extreme inflammation and distension of the colon ("toxic megacolon") and sepsis. It is frequently associated with previous antibiotic use and is most commonly contracted by the elderly in nursing homes and other healthcare institutions. The clinical manifestations of *C. difficile* range from asymptomatic colonisation to severe disease.

The production of spores by *C. difficile* has significant infection control implications. These hardy environmental forms may persist for many months and are resistant to drying and most antiseptics. Studies have shown that around patients with *C. difficile* diarrhoea, environmental contamination with *C. difficile* bacilli and spores is heavy and widespread.

## Clinical Presentation

Children with toxigenic *C. difficile* infection can present with clinical symptoms such as

- Diarrhoea  
(at least three bowel movements per day for two or more days)
- Loss of appetite
- Nausea
- Fever
- Abdominal pain or tenderness

People in good health usually don't get *C. difficile* disease. Hospitalised patients are at increased risk, particularly if exposed to high-risk antibiotic classes for prolonged periods. Community-acquired *C. difficile* disease also occurs and is usually, but not always, associated with antibiotic therapy.

Toxigenic *C. difficile* may cause antibiotic-associated diarrhoea and pseudomembranous colitis. Risk factors are direct and indirect contact with an infected patient, broad spectrum antibiotic use (particularly quinolones and broad spectrum cephalosporins) and gastric acid suppression.

## Command and Control

Responsibility for implementation of this policy is the direct responsibility of appropriate clinical line managers caring for affected patients.

- The clinical line managers will consult with the Infection Control Team regarding appropriate patient placement and infection control procedures.
- If there is no policy on a particular issue or the policy needs updating then there needs to be further discussion between clinical line managers, Infection Control, Microbiology and the Director of Clinical Operations to develop a consensus agreement based on best evidence. If a dispute arises about policy it is to be referred to the Chief Executive for resolution.
- Toxigenic *C. difficile* infection is a mandatory indicator reported to NSW Health on a monthly basis. In addition, any clusters of gastroenteritis amongst patients in the Hospital shall be notified to the Public Health Unit. This notification is the responsibility of Infection Control.
- A Reportable Incident Brief (RIB) will be sent to NSW Department of Health on any potential media interests or problems. This is currently the responsibility of the Executive Assistant to the Chief Executive.
- The Microbiologist or Infection Control Practitioner will notify the Director of Clinical Operations of identification of any known toxigenic *C. difficile* clusters. The Director of Clinical Operations is responsible to notify the Chief Executive.
- A report on management of any new clusters of toxigenic *C. difficile* will be made to the next Infection Control Committee meeting.

**Monitoring and Reporting:** The Infection Control Committee includes monthly toxigenic *C. difficile* infection data in the quarterly Infection Control report to the hospital Executive via the Health Care Quality Committee.

## Mode of Transmission of *Clostridium difficile*

Transmission of *C. difficile* occurs primarily via the faecal-oral route, by ingestion of spores that are resistant to the acidity of the stomach. These spores then germinate in the small intestine.

The *C. difficile* bacteria are found in the faeces and can contaminate areas, materials or surfaces that come in contact with faeces. The bacteria produce toxins that can result in diseases. This bacterium has two forms – vegetative and spore form. The spores can live outside the body on inanimate surfaces for months. People can be infected by touching surfaces contaminated with faeces or spores.

## Pathology Specimens and Diagnosis of *C. difficile*

Only *unformed stool specimens* should be submitted for *C. difficile* testing. Although culture is the “gold standard”, and the only way to ascertain strain type, few NSW laboratories are currently performing this test. The CHW Microbiology Laboratory performs a combined immunoassay that detects Toxins A and B, the presence of which defines a pathogenic strain of the organism, and a shared (GDH) bacterial antigen. Culture and strain typing can be accessed at a reference laboratory on special request. In addition to fluid stool specimens on which *C. difficile* testing is specifically requested, the CHW Microbiology Laboratory also tests all fluid stools from inpatients from PICU/GNNC, transplant recipients, oncology patients, and other patients in whom a history is provided of recent/current antibiotic use.

The interpretation of the antigen/toxin assays is somewhat complex:

- If BOTH the organism antigen and the toxin result are positive, then the diagnosis of *C. difficile* infection is supported in the appropriate clinical context. In younger children this result may need further interpretation, as previously discussed.
- If NEITHER the antigen nor toxin results are positive, then the diagnosis of *C. difficile*-associated diarrhoea is unlikely.
- If only the organism antigen is positive, then the result may suggest carriage of a non-toxigenic (non-pathogenic) strain of *C. difficile*. PCR for toxin is then performed at a reference laboratory for confirmation. Early *C. difficile*-associated diarrhoea is not excluded, so repeat testing is suggested if diarrhoea persists and another cause is not identified.
- If only the toxin result is positive (uncommon), then the result supports the diagnosis of *C. difficile*-associated diarrhoea in the appropriate clinical context.

From an infection control point of view, “*C. difficile* precautions” are usually only required in patients positive for the toxins. These precautions may, in consultation with Infection Control, be electively instituted in high risk units for patients with severe diarrhoea who are positive for the organism antigen, while awaiting confirmatory testing.

### **Other Pathology Specimens – Blood Collection**

- Seal faecal specimen receptacles correctly, label specimen accurately and complete all relevant details on the request form.
- Place specimen and pathology form into a plastic biohazard specimen bag for transport.
- Hand Hygiene important after specimen is placed in the pathology specimen transport Lampson tube.
- Pathology blood collection personnel must comply with Contact and Standard Precautions when entering and leaving the room.
- Tourniquet is to be cleaned before use on any other patient (may be left in room for the duration of patient stay and then cleaned or discarded).

## **Infection Control Precautions and Patient Placement**

### **Patient Placement**

- Any child with toxigenic *C. difficile* should be nursed on the ward which is most appropriate for their medical needs.
- All children with toxigenic *C. difficile* **MUST** be nursed in a single room or cohorted with other children with toxigenic *C. difficile* in a dedicated room with en-suite toilet and bathroom facilities. Only cohort after consultation with infection control

**Contact precautions plus routine glove use must be used by all staff entering the child's room.**

**During patient-care activities where contamination of staff clothing is likely, staff must use a gown/apron.** (e.g. activities such as lifting, rolling, wound care, or toileting)

A child with toxigenic *C. difficile*-associated diarrhoea must have dedicated reusable patient care equipment wherever possible. *When dedicated equipment is not possible*, any equipment being used within the room should be thoroughly cleaned with a hypochlorite-based disinfectant before leaving the isolation room.

Staff must notify the Infection Control team if there are any other patients, parents or carers with symptoms of gastroenteritis.

### **Duration of isolation requirements**

- A child **with toxigenic *C. difficile*-associated diarrhoea** is to remain isolated until a normal stool consistency has been observed for 72 hours (i.e. formed/semi-formed stool) and exhibit no clinical symptoms.
- Children who are **colonised with toxigenic *C. difficile* and exhibit no symptoms** do not usually require treatment or isolation. Colonisation occurs most frequently in neonates and infants less than two years of age. These children are distinct from those with clinical symptoms.
- In the rare setting of a *sustained ward outbreak* of toxigenic *C. difficile*, Infection Control may instruct that asymptomatic carriers also be isolated.

## Infection Control Precautions

### ***Hand hygiene – All persons entering or leaving the room***

- Use alcohol hand rub before entering the child's room
- Don non sterile disposable gloves
- Change gloves if moving from a "dirty" task (such as wound dressing) to a "clean" task (e.g. medication administration)
- Before leaving the room remove gloves then wash hands with antiseptic wash and water.
- Use alcohol hand rub when outside the room before leaving the ward or attending another patient
- Toilets where body waste is being disposed should have the lid of the toilet closed before flushing to stop aerosols being generated.

### ***Patient Activity Outside Room***

- The child can use the outside areas in the hospital grounds.
- The child cannot visit the common food outlet areas.
- The child cannot visit the Starlight Room.
- The child cannot visit Ronald McDonald House.
- The child cannot attend the schoolroom.
- The child cannot visit other inpatients.
- Activities and school can be organised in the room.
- All other activities must be negotiated with Infection Control.

### ***Patient care equipment***

- As much as possible, the patient should have his/her own **dedicated equipment** (such as stethoscopes, sphygmomanometers, thermometers and pans). Other equipment that cannot be dedicated (i.e. it must be shared with other patients) must be cleaned upon leaving the room.
- Dedicated equipment should remain in the patient's room for the duration of the patients stay.
- **Cleaning equipment – to be performed at discharge or when the equipment is leaving the room:** All equipment must be wiped over with hypochlorite (0.5% sodium hypochlorite solution (5000 ppm) (i.e. 5 dichloroisocyanurate tablets dissolved in 1L of water) and then wiped over with a neutral detergent.
- All disposable items must be discarded.
- Bed pans and any other equipment that has been in contact with faeces must first be decontaminated of visible faecal matter. Then it needs to be wiped over with hypochlorite and then washed with a neutral detergent prior to use on another patient.
- Cleaning staff shall don PPE and adhere to hand hygiene practices.

**Room Cleaning**

- PPE, including non-sterile gloves and gowns/aprons, should be worn by people cleaning areas contaminated by faeces, or microscopic spores
- A daily clean is to be conducted with neutral detergent.
- The Discharge clean will be a two-step clean. First with a Hypochlorite (concentration) used by cleaning services staff and then with Neutral Detergent
- Curtains need to be changed between patients.

**Linen**

- All staff must perform hand hygiene immediately prior to accessing the ward's clean linen dispensary to prevent contaminating clean linen.
- If linen is removed from the clean linen dispensary it must not be replaced back onto the trolley, but be placed in to the used linen skip.
- PPE should be worn by staff when handling soiled linen from an infected patient, regardless of the child being in the bed or not.
- Used linen, whether visibly soiled or not, should not be shaken.
- Used linen should be bagged and tied at the point of generation. Care needs to be taken not to overfull the linen skip. It should not be filled more than  $\frac{3}{4}$  full so that it can be secured safely.
- The laundering of used linen should be consistent with Australian Standard AS 4146: Laundry Practice.

**Family and Visitors**

- Must request nurse assistance to get food, beverages or feeding bottles from the Ward Kitchen for their child.
- If the parent needs to purchase meals themselves the parent can go to the providers in the hospital and either eat in an area isolated from people, for example – the outdoor areas, or eat in their child's room.
- Any linen required by the patient or the parent must be provided by the nursing staff. Parents of symptomatic children are not to access the clean linen dispensary on the ward.
- Visitors should be restricted to immediate family or carers only until 72 hours after symptoms resolve.
- Family and visitors should be instructed on the requirements for hand washing while their child is symptomatic.
- Family and visitors with a history of vomiting and diarrhoea at home should not visit patients until at least 72 hours after their last episode of vomiting or diarrhoea.

**Hospital Volunteers**

- General visiting by hospital volunteers needs to be postponed until the patient has been symptom free for 72 hours.
- There are some circumstances in which volunteer assistance is acceptable. In this case the volunteer needs to comply with the same requirements for hand hygiene and PPE usage as staff.
- Ward Grandparent Volunteers. can continue to work with their symptomatic child but need to comply with the same requirements for hand hygiene and PPE usage as parents.
- Book Bunker lending should be postponed until the child or the symptomatic parent/carer has been symptom free for 72 hours.
- Visitors organised by the Public Relations Department to the wards must not visit a symptomatic patient. This also must be postponed until the patient or the symptomatic parent/carer has been symptom free for 72 hours.

**Eating Utensils**

- Meal trays and eating utensils/plates and cups are to be collected from the room by staff with care. They can be placed in the Food Services trolley to be taken down to the Food Services department so they can be washed as per Food Services policy.
- After carefully placing the used meal tray on the trolley staff need to be mindful to perform hand hygiene with antiseptic wash and water in case of spore contaminants on the tray.

**Waste Management**

- General waste from a symptomatic *C. difficile* patient's room is to be placed appropriately in to the general waste receptacle. It is not to be over filled. When there is the requirement for a larger general waste bin to cope with the use of disposable gowns contact the cleaning services supervisor so that a size appropriate general waste bin can be obtained. After general working hours if the bin reached  $\frac{3}{4}$  full contact the after-hours cleaning supervisor so that appropriate action can be taken.

**General Maintenance**

- Routine maintenance needs to be post phoned until the patient has been symptom free for 72 hours.
- Urgent maintenance can proceed with appropriate PPE wear and hand hygiene while the patient is in the acute stage of the illness.
- Contact the Infection Prevention & Control team for advice if required.

## Antimicrobial Stewardship

In a clinical area where transmission of toxigenic *C. difficile* appears to be occurring, prudent use of broad spectrum antimicrobials is required. Normal antimicrobial stewardship practices must be reinforced, and compliance ensured. High risk antimicrobial classes include the quinolones, broad spectrum cephalosporins, and carbapenems. Historically, the lincosamides (clindamycin and lincomycin) have been implicated as well, but this association has not been observed in some more recent studies.

## Transporting Children to Other Wards and Departments

If children with *C. difficile* need tests performed in other departments or they need to be transferred, the receiving ward or department MUST be notified of their about their isolation requirements.

## Discharge of Patient from Hospital

Discussion should take place before discharge to ensure the patient and family is fully informed about *C. difficile*. The patient should be requested to alert staff of their recent toxigenic *C. difficile* infection if admitted to a health care facility in the near future. Children cannot be immediately discharged to Ronald MacDonald House until 72 hours have passed without vomiting or diarrhoea, other housing arrangements must be organised until this time.

## Staff Management

- Minimise as much as possible the circulation of staff between affected and unaffected areas<sup>1</sup>. Where possible, designated staff should care for affected patients.
- Although *C. difficile* rarely causes disease in previously well Healthcare Workers, staff with gastrointestinal symptoms should leave work immediately and not return to work until 72 hours after their last episode of vomiting or diarrhoea<sup>4</sup>. Those affected staff should seek medical advice immediately.
- Food handlers with gastroenteritis should be excluded from food preparation until at least 72 hours after their symptoms have stopped<sup>4</sup>.

## Staff Education

- Infection Control will provide education on request
- NSW Department of Health Fact sheets available:  
[http://www.health.nsw.gov.au/resources/quality/clostridium\\_difficile\\_pdf.asp](http://www.health.nsw.gov.au/resources/quality/clostridium_difficile_pdf.asp)

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