Management of patients with *Clostridium difficile* infection (CDI)

1. **Purpose**

This Guideline provides recommendations regarding best practice for the management of adult patients with *Clostridium difficile* infection (CDI).

2. **Scope**

This guideline provides information for all employees, contractors and consultants within the HHSs and Divisions and commercialised business units within the Queensland public health system.

3. **Related documents**

Authorising Policy and Standard/s:

- NSQHS Standard 3 – Preventing and Controlling Healthcare Associated Infections

Procedures, Guidelines and Protocols:

- Australian guidelines for the prevention and control of infection in healthcare
- Guideline for the management of outbreaks of communicable disease in health facilities
- Guideline for surveillance of healthcare associated infection
- Hand hygiene guideline
- Queensland Health environmental cleaning guidelines

4. **Guideline for the management of patients with *Clostridium difficile* infection (CDI)**

**Diagnosis**

It is recommended that clinicians suspect and test for CDI in all hospitalised adult patients with diarrhoea, and in all patients who present with diarrhoea in association with antibiotic or immunosuppressive therapy.\(^1,^2\)

The following measures should be in place to facilitate early diagnosis:

- Stool specimens should be obtained from patients in or admitted to healthcare settings as soon as possible after the onset of diarrhoea.
- Routine screening of patients and testing of stool specimens from asymptomatic patients is not recommended.\(^3\)
- All specimens should be kept refrigerated until testing can be done. Specimens kept unrefrigerated for periods greater than two hours should be discarded and
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- If the first test is negative but there is a strong suspicion of CDI, consult with a microbiologist as further testing may be necessary.
- Laboratory testing for *Clostridium difficile* toxins should only be performed on diarrhoeal stool specimens (defined as a faecal specimen that conforms to the shape of its container or corresponds to Bristol stool chart types 5-7).(3-5)
- If the following are identified, CDI should be suspected:
  - pseudomembranous colitis seen during endoscopic examination or surgery
  - pseudomembranous colitis seen during histopathological examination
- If pseudomembranous colitis is seen during sigmoidoscopy, colonoscopy, surgery or colonic histopathology a faecal specimen should be sent for CDI testing.(4, 5)
- Notify the laboratory of any wards/units that are experiencing a period of increased prevalence of diarrhoea.
- It is not recommended to test for CDI in children under two years of age. Children are commonly asymptomatic carriers of *Clostridium difficile*. Only test in this age group if significant clinical suspicion of CDI.(2, 4, 6)

**Isolation**

Direct and indirect contact is the main route for transmission of *Clostridium difficile*. The primary mode of transmission of *Clostridium difficile* is via the faecal-oral route.(2, 4, 6-8)

Surfaces, devices and equipment (e.g. commodes, toilets) that become contaminated with faeces may serve as a reservoir for *Clostridium difficile* spores. These spores are then predominantly transmitted by the hands of healthcare providers who have touched the contaminated surface or environment.(6)

It is recommended that transmission based contact precautions be implemented for all patients with confirmed or suspected CDI.(2-6, 9)

- Single room placement with a dedicated ensuite,(9) or
- Cohort with other CDI patients based on microbiological confirmation of cause of diarrhoea.(10) If cohorting is necessary, multi-resistant organism status should also be considered.
- If there are a limited number of single rooms, it is recommended that patients with faecal incontinence should take priority
- Each patient should have dedicated toileting facilities (private bathroom or individual commode chair). Patients using commode chairs or who are bedbound should use dedicated or single use bed pans.(4)
  - Bed pans should be reprocessed in accordance with the process outlined in the section on Environmental Cleaning.
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- Dedicated patient-care equipment should be utilised where possible. In instances where this is not possible, equipment should be cleaned in accordance with the section on Environmental Cleaning.\(^9\)

- Transmission based contact precaution signage should be utilised to identify the isolation room and include the necessary precautions to be adopted.\(^\text{2-5}\)

**Duration of transmission based precautions**

It is recommended that:

- Transmission based contact precautions should commence as soon as patients develop clinically significant diarrhoea or CDI is suspected.

- Rooms containing patients isolated for CDI should be clearly signed.

- Transmission based contact precautions should remain in place until at least 48 hours after diarrhoea has ceased and the patient is passing formed stools.\(^\text{2, 7}\)

- Transmission based contact precautions should be re-instituted immediately if diarrhoea recurs. Retesting for *Clostridium difficile* is not necessary.

- Re-testing for *Clostridium difficile* is not necessary to determine the end of isolation and should not be done.\(^\text{2, 4, 6}\)

**Hand hygiene**

Hand hygiene should be performed with liquid soap and water after having contact with the patient or the environment,\(^\text{2, 4, 5, 8-11}\) as per the [CHRISP hand hygiene guideline]. *Clostridium difficile* spores are not killed by alcohol-based hand rub.\(^\text{11}\) The mechanical action of washing and scrubbing with soap and water will not kill *Clostridium difficile* spores but will physically remove the spores from the hands, reducing probability of transmission.\(^\text{8, 9}\)

**Personal protective equipment (PPE)**

**Gloves:**

- Clean non-sterile single use gloves should be donned by healthcare personnel prior to entering the patient’s environment and should be used for all contacts with patients and their surroundings.\(^\text{3, 6}\) This is to minimise the level of contamination of spores on the hands of clinicians when caring for patients with CDI.\(^\text{9}\)

  - Gloves should be changed between different care/treatment activities for the same patient and removed upon exiting the patient’s environment.\(^\text{2-4, 6}\) When gloves are changed/removed hand hygiene should be performed, as per the [CHRISP hand hygiene guideline].

**Aprons and gowns:**

- It is recommended that all staff caring for a patient with CDI ensure that arms are bare below the elbows (refer definitions).

- A single use apron should be donned prior to entering the patient room and removed prior to exiting the patient room.
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- Staff that will be performing patient care activities involving extensive patient contact should wear a single use gown (extensive patient contact is described as direct contact with the areas not covered by the apron, for example, contact with staff forearm). (2-4, 6)

- Aprons and gowns should be worn as single use items and be changed and hand hygiene performed between procedures or episodes of patient care. (10)

- Non-disposable gowns should be sent for laundering after each use. (2-4, 6)

**Visitors:**

- All visitors should perform hand hygiene prior to entering and after leaving the patient's room (3, 4)

- Visitors are not required to wear PPE unless they are involved in the patient’s care. They will be advised on the use of PPE if required

- Visitors should be instructed not to use the patient’s ensuite/toilet facilities, and to not visit other areas of the hospital after visiting a person with CDI. (2, 6)

**Environmental cleaning**

The environment is an important source of healthcare associated CDI. *Clostridium difficile* forms spores which can remain viable on surfaces for several weeks or months. Frequently touched objects in the patient environment such as toilets, bedrails and door handles can be heavily contaminated. (2, 4, 6, 8, 9, 12-15)

Following a review of the literature and on the advice of the CHRISP expert advisory group (CEAG) in September 2013, it is recommended that all cleaning of rooms and equipment of patients with *Clostridium difficile* is undertaken using detergent and 1000 ppm available chlorine solution or impregnated wipe. The process should involve either:

- a physical clean using a combined detergent and 1000ppm available chlorine solution or impregnated wipe (2-in-1 clean) i.e. a combined detergent/available chlorine solution or impregnated wipe could be used if this process involves mechanical/manual cleaning, or

- a physical clean using detergent followed by a chemical disinfectant (2-step clean) i.e. clean with detergent, then clean with 1000ppm available chlorine solution or impregnated wipe.

After the floor of the room has been mopped, the mop should be changed and bucket cleaned before use in any other area.

**Daily cleaning of patient’s room:**

Minimum frequencies for routine cleaning are outlined in the Queensland Health – Cleaning Services Operational Guidelines available at http://qheps.health.qld.gov.au/sosu/html/cleaning_home.htm. All patient surrounds and frequently touched surfaces (such as, bedrails, trolleys, bedside commodes, doorknobs, light switches, tap handles and ensuite facilities) should be cleaned daily as a minimum.
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**Patient care equipment:**

Patient-care devices (e.g. electronic thermometers, sphygmomanometers, glucometers, hoists, pat slides) may transmit *Clostridium difficile* if devices are shared between patients. To reduce the risk of transmission, disposable or patient dedicated equipment is preferred. Equipment that is unable to be dedicated should be cleaned and disinfected after use, allowed to dry and stored clean.

- Cleaning products containing quaternary ammonium compounds have poor activity against *Clostridium difficile* spores and therefore are not indicated for use in CDI.\(^{11,16,17}\)

**Discharge cleaning of inpatient rooms:**

Cleaning should not commence until all the patient’s personal effects have been removed from the room. Privacy curtains and window curtains if present should be removed for laundering prior to cleaning commencing.

The room and all patient care equipment remaining in the room should be physically cleaned and disinfected with chlorine. All furniture, patient equipment items, horizontal surfaces, frequently touched surfaces (e.g. light switches and call buttons) and bathroom/toilet/shower area should be thoroughly cleaned and disinfected with chlorine. All consumables that are unable to be cleaned should be discarded.

**Cleaning of ambulatory areas:**

All patient care equipment items that the patient comes into contact with should be cleaned with a combined detergent and 1000ppm available chlorine solution.

If patients with *Clostridium difficile* have used the waiting areas of renal dialysis and day therapy areas, these areas do not require cleaning in addition to the routine cleaning practices for the area.

**Bed pans:**

- Facilities should select one of the following options for the management of bed pans based on risk assessment and available resources:
  - CDI patient dedicated re-useable bed pans should be sterilized in the facility’s Central Sterilizing Department (CSD) before use with other patients.\(^{18}\) These bed pans should be washed in the ward washer/disinfector between uses and before transportation to CSD; or
  - Dedicated re-useable bed pans should be discarded when the patient is discharged or no longer considered infectious; or
  - Single-use bed pans should be utilised. If a macerator is not available in the clinical area the bed pan and contents should be disposed of into an appropriate waste receptacle.

**Antimicrobial stewardship**

*Clostridium difficile* infection and colonisation is almost always associated with and triggered by the use of antibiotics, especially if inappropriate, excessive or prolonged. However, cases have been associated even with the appropriate use of a single
perioperative antibiotic dose for surgical wound prophylaxis. Antimicrobial stewardship guidelines for prudent antibiotic prescribing to ensure appropriate use of antibiotics should be adhered to.\textsuperscript{(2, 5)} In general, beta-lactams (for example, cephalosporins or amoxicillin), lincosamides (clindamycin or lincomycin) and fluoroquinolones are regarded as antibiotics which provide highest risk for CDI. However, all antibiotic types have been implicated.\textsuperscript{(2, 4, 7)}

**Surveillance**

CDI is an important healthcare associated infection. Given its significance, healthcare facilities should have in place reliable surveillance programs to detect patients with CDI, identify outbreaks, monitor trends and evaluate interventions aimed at reducing incidence.\textsuperscript{(2, 6)}


**Managing increases in CDI and possible transmission**

It is recommended that all hospitals review surveillance data on a regular basis to see if there has been an increase in cases; or any transmission between cases. Smaller facilities that do not normally get any cases of CDI, should consider one case significant.

It is recommended that a clinical response plan be developed to review and identify deteriorations in systems causing an increase in cases, and implement appropriate interventions to ensure patient safety. An assessment of the risk should be performed.


**References**


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5. **Review**

This Guideline is due for review on: 05/11/2016

**Date of Last Review:** 05/11/2014

**Supersedes:** CHRISP guideline: *Clostridium difficile* infection (CDI)

6. **Business Area Contact**

Communicable Diseases and Infection Management (CDIM)

7. **Definitions of terms used in the policy and supporting documents**

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<tr>
<th>Term</th>
<th>Definition / Explanation / Details</th>
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<tr>
<td>Alcohol based hand rub</td>
<td>A TGA-registered alcohol-containing preparation designed for reducing the number of viable micro-organisms on the hands without the use or aid of running water and which is included on the ARTG as a medicinal product.</td>
<td>ACSQHC, 2010&lt;sup&gt;(10)&lt;/sup&gt;</td>
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<td>Bare below the elbows</td>
<td>The effectiveness of hand hygiene is improved when: skin is intact; nails are natural, short and unvarnished; hands and forearms are free of jewellery; and sleeves are above the elbow.</td>
<td>CHRISP, 2013&lt;sup&gt;(20)&lt;/sup&gt;</td>
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<td><em>Clostridium difficile</em></td>
<td>Is a Gram positive, anaerobic, spore forming, potentially toxigenic bacterium that is the most common infectious cause of healthcare-associated diarrhoea.</td>
<td>Stuart, et al., 2011&lt;sup&gt;(6)&lt;/sup&gt;</td>
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| CDI (*Clostridium difficile* Infection) case | A case of diarrhoea that meets the following criteria:  
- The stool sample yields a positive result in a laboratory assay for *C. difficile* toxin A and/or B, or  
- A toxin-producing *C. difficile* organism is detected in the stool sample by culture or other means. | ACSQHC, 2013<sup>(19)</sup> |
| Cohorting | Placing together in the same room patients who are infected with the same pathogen and are suitable roommates. | ACSQHC, 2010<sup>(10)</sup> |
| Detergent solution | A medical-grade detergent product (that is registered as a Class I Medical Device with the TGA and which is intended to be used in the cleaning of surfaces or other medical devices) diluted with water as per manufacturer’s instructions. | ACSQHC, 2010<sup>(10)</sup> |
8. Approval and Implementation

Policy Custodian:
Dr Sonya Bennett, Senior Director, Communicable Diseases Unit, Chief Health Officer Branch

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Dr Jeannette Young, Chief Health Officer, Chief Health Officer Branch

Approving Officer:
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Effective from: 05/11/2014

Version Control

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Diarrhoea
Stool that is loose enough to take the shape of a container used to sample it, or corresponding to Bristol stool chart types 5-7.

Debost, et al., 2014\(^{(5)}\)

Pseudomembranous colitis
Pseudomembranous colitis is infection of the large intestine (colon) with an overgrowth of Clostridium difficile bacteria.

Vorvick, et al., 2012\(^{(21)}\)