

Clostridium Difficile Infection (CDI) Strategic Plan

BACKGROUND:

Clostridium difficile infection (CDI) continues to be an important cause of hospital associated diarrhea¹, morbidity and mortality in acute healthcare even being labelled as an urgent threat by the Centres for Disease Control².

Clostridium difficile can form spores, requiring specialized cleaning procedures to remove it, and prevent transmission of infection. Spread of *C. difficile* occurs due to inadequate hand hygiene and environmental cleaning; therefore, consistent hand hygiene and thorough cleaning of the patient environment is necessary for control.

It is ubiquitous in the environment and can colonize up to 5% of adults without the development of signs and symptoms of infections³.

The intent of this document is to outline what specific measures have been taken at Southlake Regional Health Centre to prevent nosocomial infections with *Clostridium difficile* at Southlake Regional Health Centre.

SECTION A: Prevention and Control Measures

1. Additional Precautions

Additional Precautions refers to infection prevention and control interventions to be **used in addition** to Routine Practices. Additional Precautions are designed for patients with suspected or confirmed to be infected or colonized with clinically significant organisms and diseases. The purpose of Additional Precautions is to protect patients, staff and visitors by interrupting transmission of infectious agents.

Additional Precautions include the use of barriers such as personal protective equipment (PPE) and additional environmental controls that are put in place for encounters with the patient or their immediate environment. Additional Precautions are based on the mode of transmission; in the case of *Clostridium difficile* it refers to Contact precautions.

¹ Provincial Infection Control Network of British Columbia. British Columbia *Clostridium difficile* (CDI) Toolkit and Clinical Management Algorithm, 2013.

<https://www.picnet.ca/wp-content/uploads/Toolkit-for-Management-of-CDI-in-Acute-Care-Settings-2013.pdf>

² Centers for Disease Control. Antibiotic Resistance Threats in the United States, 2013.

<http://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf>

³ Ontario Agency for Health Protection and Promotion, Provincial Infectious Diseases Advisory Committee. *Annex C – Testing, Surveillance and Management of Clostridium difficile*. Annexed to: Routine Practices and Additional Precautions in All Health Care Settings. Toronto, ON: Queen's Printer for Ontario; 2013.

Contact Precautions

Contact Precautions **in addition to** Routine Practices must be followed for specific patients known or suspected to be infected or colonized with clostridium difficile. This organism can be transmitted by direct contact with the patient (hand to skin contact that occurs when performing patient care activities that require touching the patient's skin) or indirect contact with contaminated environmental surfaces or patient care items in the patient's room.

2. Patient Placement

Patients with CDI must be placed in a single room with a dedicated washroom. To ensure that all private rooms throughout the organization are considered for CDI patients, placement of these patients will be determined in consultation with all appropriate stakeholders. Patients will first be considered for placement on the most appropriate unit based on admission diagnosis, followed by the next most appropriate unit and so on.

In the event that a patient is unable to ambulate to the washroom, a dedicated commode, using hygienic bags is utilized to limit/reduce environmental contamination. Waste management hygienic bags (such as, Zorbi™ or Hygie™) are available throughout the organization for cases such as these as well as for patients experiencing diarrhea for causes unrelated to CDI.

3. Hand Hygiene

In health care settings hand hygiene is the single most important way to prevent Health care Associated Infections (Appendix 1: Hand Hygiene Procedure).

Hand hygiene for patients with suspected or confirmed Clostridium difficile infection (CDI) must be meticulously observed with either soap and water or Alcohol Based Hand Rub (ABHR).

If a dedicated hand washing sink is immediately available, hands should be washed with soap and water after glove removal. In the event that a dedicated hand washing sink is NOT immediately available, hands should be cleaned using ABHR after glove removal.

Hand hygiene should NOT be performed at a patient's washroom sink as this may re-contaminate the health care provider's hands.

Hand Hygiene Audits

Southlake has 40 trained unit based Hand Hygiene (HH) Champions that complete hand hygiene audits on the units in which they work. They are encouraged to *Speak Up* and provide on the spot feedback when an opportunity for hand hygiene is missed and to provide on-going education to staff during the auditing process. Each in-patient unit completes a minimum of 80 audits per month so as to provide robust data set that is analyzed and utilized to determine areas for improvement and re-education. In addition to unit based champions, volunteers trained by the Infection Prevention and Control (IPAC) team and the Infection Control Practitioners (ICPs) conduct anonymous HH audits throughout the organization.

4. Environmental Services

Shared Equipment

Patients on precautions are required to use disposable and/or dedicated patient care equipment that remains in their room for the duration of their stay. If equipment must be shared due to a lack of equipment available, it must be thoroughly cleaned and disinfected following the cleaning protocol for shared equipment.

Cleaning and Disinfection

Effective cleaning and disinfection of the environment is essential for the mitigating the risk of transmitting clostridium difficile infection. The environmental Services staff are an integral part of preventing the transmission of Clostridium difficile. Their responsibilities include:

- Posting the Additional Precautions Double Cleaning Log form outside of rooms where CDI is indicated on the daily list provided by the Infection Prevention and Control Department.
- Completing a DOUBLE daily clean – (once in the AM and once in the PM) using bleach, the hospital approved sporicidal product.
- Documenting that they have completed the cleans on the Double Cleaning Log form

In of March of 2015, four (4) Nocospray units were purchased to support enhanced disinfection of CDI rooms (and bathrooms) and patient care equipment following the completion of a manual clean. Nocospray is a dispersion technology that uses hydrogen peroxide vapor to disinfect the environment. It does NOT replace the need for manual cleaning which physically removes visible dirt, debris and proteinaceous matter such as fecal matter, blood and body fluids.

A cleaning list (Appendix 2) indicating all patient rooms requiring a daily double clean is sent daily from the infection Prevention and Control Team to Environmental and Support Services. This tool is an effective method of communicating the number of CDI cases requiring cleans and the number of cases and their location currently present in the building. At the end of each day, the list is de-identified by Environmental Services and shared with both the Management Team and the Administrative Management Committee (AMC). It provides the leadership team a summary of nosocomial CDI cases month to date and illustrates, in real time, if we are meeting QIP targets that were set for nosocomial CDI.

6. Treatment

Southlake's Standardized Order Set, "Suspected or Confirmed Clostridium difficile Associated Diarrhea Order Set" supports clinicians managing patients with CDI. (Link: <http://southlake/doc.aspx?id=10207>).

The order set outlines the specific course of treatment for mild to moderate, severe, and severe to complicated disease. The document also provides a list of medication classes that can contribute to worsening of Clostridium difficile symptoms. These include antibiotics, protein pump inhibitors, anti-diarrheals, stool softeners, laxatives and narcotics

ANTIMICROBIAL STEWARDSHIP (AMSP) (link: <http://southlake/Default.aspx?cid=8708&lang=1>)

The Antimicrobial Stewardship program's contribution to CDI is two-fold. Since January 2014, the AMSP has prospectively reviewed patients with current or history of CDI, either at Southlake, or external to our Hospital (when that information is shared). Patient review goals include avoiding recurrence or relapse of CDI, and promoting best practice in managing acute infections.

Where CDI has been identified, the AMSP pharmacists:

- review inpatients for signs or symptoms consistent with CDI,
- discuss cases with IPAC on a prospective basis,
- share information and suggestions with clinical pharmacists about drug choices, durations, and strategies for management of CDI,
- discuss complicated cases, and concerns with the ID physician.

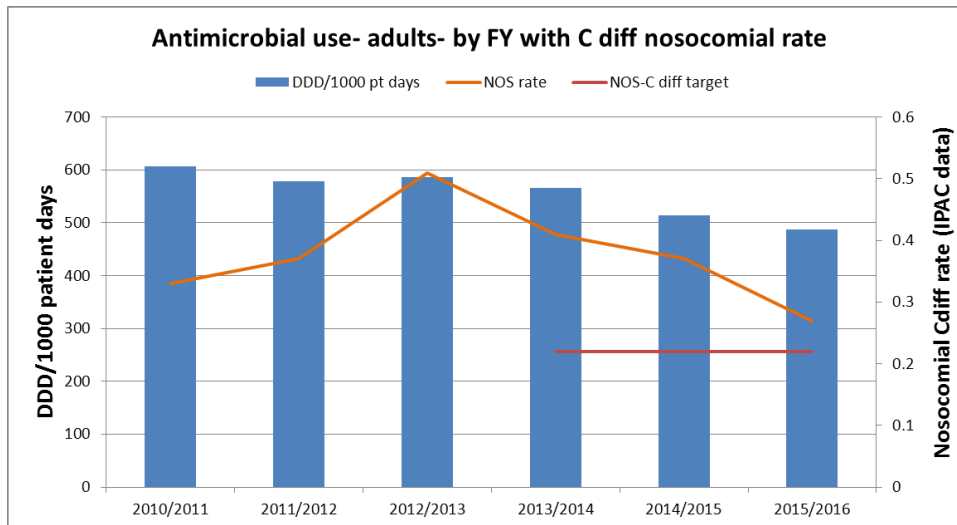
The second strategy to decrease nosocomial CDI has been to lead Prospective Audit and Feedback rounds (PAF) regularly on selected patients. Selection has been based on units with higher antimicrobial usage. As CDI is associated with antimicrobial usage, decreasing unnecessary antimicrobial exposure should decrease rates of CDI.

Prospective Audit and Feedback (PAF) is a key activity to promote appropriate antimicrobial usage⁴. The AMSP Team, comprised of the ID/AMSP physician and AMSP Pharmacist meet and discuss patients as identified by group (see table). After initial discussion, the Team moves to the patient care units identified, to review the cases with the clinical pharmacist, nursing staff, IPAC practitioners, and MRPs (as available).

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Prospective Audit and Feedback	Critical Care areas (ICU, CCU, CVICU)	MA3, SUR/SSC	No PAF	Critical Care areas (ICU, CCU, CVICU)	MED-6, SUR/SSC

Since its inception, there has been both a steady decline in the rate of antimicrobial usage (calculated through Defined Daily Dose (DDD)/1000 patient days) and nosocomial CDI rates.

⁴Dellit TH, Owens RC, McGowan JE et al. Infectious Diseases Society of American and the Society for Healthcare Epidemiology of America guidelines for developing an institutional program to enhance antimicrobial stewardship. *Clinical Infectious Diseases* 2007; 44: 159-77. http://www.idsociety.org/uploadedFiles/IDSA/Guidelines-Patient_Care/PDF_Library/Antimicrobial%20Stewardship.pdf (accessed November 25, 2015)



7. Education

- On-going education is provided to staff regarding the importance of patient management. CDI policy and associated resources is located here: [CDI Policy and Resources](#)
- Patients who test positive for CDI are provided with a CDI information sheet which can be found at the following link on the intranet: [CDI Patient Information Sheet](#)

SECTION B: Surveillance and Detecting CDI

1. Testing for Diagnosis

Testing for C. difficile is completed onsite at Southlake Regional Health Centre using Polymerase Chain Reaction (PCR) technology. Results can be available within four hours.

- Testing for C. difficile toxin should ONLY be performed:
 - On diarrheal (unformed) stool (see Bristol Chart Type 6 or 7 – Appendix 3)
 - Testing for *C. difficile* will not be carried out on formed stools.

AND

- Patient has had three or more episodes of diarrhea within a 24 hour period*.

***Diarrhea is defined as: loose/ watery stool (i.e., if the stool were to be poured into a container, it would conform to the shape of the container)**

2. *Diagnosis*

A patient who has tested positive for Clostridium difficile toxin does not equate to having an infection- it is not uncommon for patients to test positive for the toxin but not have meet the case definition of infection. Patients testing positive for toxin without signs and symptoms of CDI may be colonized.

A case of Clostridium difficile infection is defined by a set of criteria outlined below:

Case Definition of Clostridium difficile Infection (CDI)

a) Laboratory confirmation of C. difficile together with **diarrhea***

OR

b) Visualization of pseudomembranes on sigmoidoscopy or colonoscopy

OR

c) Histological/ pathological diagnosis of pseudomembranous colitis

OR

d) Diagnosis of toxic megacolon

AND

the bowel movements are unusual or different for the client/patient/resident

AND

there is no other recognized aetiology for the diarrhea (e.g., laxative use)

* For the purpose of defining a case of CDI, there should be three or more episodes of diarrhea within a 24-hour period. Contact Precautions should be initiated at onset of diarrhea, without waiting for further episodes.

A thorough review of the patients' current and past medical history which includes (but is not limited to) a chart review and communication with other health care facilities that the patient may have recently visited/resided all help to determine whether it meets the case definition for infection and/or if it is an infection attributable to Southlake Regional Health Centre or to another institution.

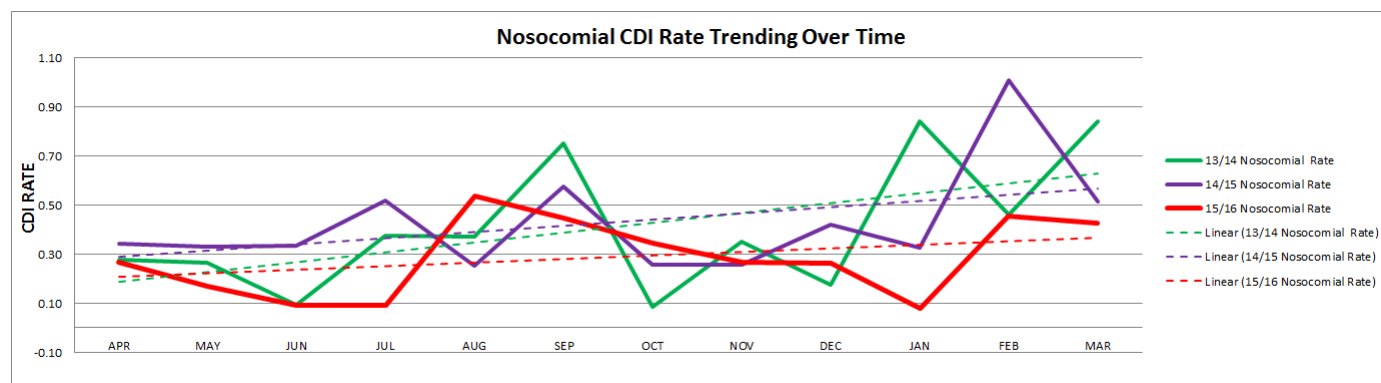
Case Definitions for Surveillance and Reporting

CDI is categorized into three (3) definitions as per the Ministry of health and Long Term Care (see Table 1).

TABLE 1. Case Definitions of *Clostridium difficile* Infection (CDI)⁵ (PIDAC)

CDI Case	Definition
CDI attributable to Southlake Regional Health Centre Nosocomial - SRHC	New cases of CDI (the patient has not had CDI in the past 8 weeks) where the symptoms of CDI were not present on admission such that the onset of symptoms is greater than 72 hours after admission OR the infection was present on admission but related to a previous admission to Southlake within the last four weeks.
CDI attributable to another healthcare facility Nosocomial – Other	The symptoms of CDI were present on admission OR with symptom onset less than 72 hours after admission AND the patient was exposed to any other health care facility (including LTC) within in the last 4 weeks.
CDI that is attributable to a source other than a health care facility or unknown/indeterminate source Positive On Admission (POA)	The symptoms of CDI were present on admission OR with symptom onset less than 72 hours after admission AND there was no exposure to any health care facility within the last 4 weeks OR the source of infection cannot be determined.
Relapse	The symptoms of CDI have recurred within two (2) months after the last infection.

Cases of CDI are reported internally and externally as rates. Rates of CDI are expressed as: *the number of CDI cases per 1000 patient days*. In Ontario in September 2008, CDI rates become a mandatory patient safety indicator reportable to the Ministry of Health and Long Term Care on a monthly basis. The following graph illustrates Southlake’s nosocomial CDI rates for the last 3 fiscal years.



Future Steps

The management and prevention of CDI is a corporate priority and as such we will continue to adjust and improve upon our current practices as deemed necessary. Current areas of future quality improvement initiatives include providing unit based IPAC Scorecards to in-patient units, further

⁵ Annex C: Testing, Surveillance and Management of *Clostridium difficile*, PIDAC. https://www.publichealthontario.ca/en/eRepository/PIDAC-IPC_Annex_C_Testing_SurveillanceManage_C_difficile_2013.pdf

development of the CDI Trigger Tool and the development of dedicated patient equipment auditing process by the Environmental Services Team.