Best Practice Guidelines for the Prevention & Management of
_Clostridium difficile_ Infection
In Prehospital, Acute & Continuing Care

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Infection Prevention and Control Nova Scotia (IPCNS), Department of Health and Wellness
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1. Glossary of Terms

**Additional Precautions**: Precautions (i.e. Contact, Droplet, Airborne) that are applied, in addition to Routine Practices, when infection, caused by microorganisms transmitted by these routes, is suspected or diagnosed. They include the physical separation of infected or colonized patients/residents from other individuals and the use of barriers (e.g. gowns, gloves, masks) to prevent the transmission of the infectious agent from colonized or infected individuals to those who are susceptible to infection or may spread the infectious agent to others.

**Alcohol-based Hand Rub (ABHR)**: A liquid, gel or foam formulation of alcohol (e.g. ethanol, isopropanol) which is used to reduce the number of microorganisms on hands in clinical situations when the hands are not visibly soiled.

**Cleaning**: The physical removal of foreign (e.g. dust, soil) and/or organic material (e.g. blood, secretion, excretions) from items. Cleaning physically removes rather than kills microorganisms. It is accomplished with water, detergents and mechanical action.

**Cohorting**: The assignment of a geographical area such as a room or a patient care area to two or more patients who are either colonized or infected with the same microorganism. In some instances, staffing assignments may be restricted to the cohorted group of patients/residents.

**Contact Precautions**: The type of Additional Precautions used to reduce the risk of transmitting infectious agents via direct or indirect contact with an infectious person.

**Contamination**: The presence of an infectious agent on the hands or on a surface, such as clothing, gowns, gloves, bedding, toys, surgical instruments, patient/resident care equipment, dressings or other inanimate objects.

**Diarrhea**: Loose/watery bowel movements (conform to the shape of the container) and the bowel movements are unusual or different for the patient.

**Disinfection**: The inactivation of disease producing microorganisms. Disinfection does not destroy bacterial spores. Medical equipment /devices must be thoroughly cleaned before effective disinfection can take place.

**Endogenous flora**: Microbial flora occupying niche(s) that are in or on the body of the host.

**Exogenous flora**: Microbial flora normally existing externally to the body of the host.

**Hand Hygiene**: A general term referring to any action of hand cleaning. Hand hygiene relates to the removal of visible soil and removal or killing of transient microorganisms from the hands. Hand hygiene may be accomplished using soap and running water or an alcohol-based hand rub.
Healthcare-associated Infection: A term relating to an infection that is acquired during the delivery of health care.

Healthcare Worker (HCW): Individuals who provide health care or support services such as nurses, physicians, dentists, nurse practitioners, paramedics, allied health professionals, temporary workers from agencies, unregulated health care providers, students, volunteers and workers who provide support services (e.g. food, laundry, housekeeping).

High-Touch Surfaces: High-touch surfaces are those that have frequent contact with hands. Examples include doorknobs, call bells, bedrails, light switches, and wall areas around the toilet and edges of privacy curtains.

Hospital Grade Disinfectant: A disinfectant that has a drug identification number (DIN) from Health Canada indicating approval for use in Canadian hospitals.

Personal Protective Equipment (PPE): Clothing or equipment worn for personal protection against hazards.

NAP1 Strain: Refers to a hypervirulent epidemic strain of *C. difficile*, typed the NAP1/BI/027 strain.

Outbreak: An increase in the number of cases above the number normally occurring in a particular setting over a defined period of time.

Patient/Resident Environment: The immediate space around a patient/resident that may be touched by the patient and may also be touched by the healthcare worker when providing care. The patient environment includes equipment, medical devices, furniture (e.g. bed, chair, bedside table), telephone, curtains and personal belongings (e.g. clothes, books). In a multi-bed room, the patient/resident environment is the area inside the individual’s curtain. In an ambulatory setting, the patient/resident environment is the area that may come into contact with the patient within their cubicle.

Recurrence: Recurrence is the return of diarrhea and other symptoms of CDI after a symptom-free period. Recurrence occurs in about 30% of cases. This may be due to relapse of the initial infecting strain or due to reinfection with a new strain. Most recurrences present within one to three weeks after discontinuing antibiotic therapy, although recurrences can occur as late as two to three months later.

Routine Practices: The system of infection prevention and control practices to be used with all patients during all care to prevent and control transmission of microorganisms in all health care settings. Routine Practices are based on the premise that all patients/residents are potentially infectious, even when asymptomatic, and that the same safe standards of practice should be used routinely with all patients/residents to prevent exposure to blood, body fluids, secretions, excretions, mucous membranes, non-intact skin or soiled items and to prevent the spread of microorganisms.

Surveillance: The systematic ongoing collection, collation and analysis of data (e.g. infection rates) with timely dissemination of information to those who require it in order to take action.
**Terminal Cleaning**: The cleaning of a patient room or bed space following discharge or transfer, in order to remove contaminating microorganisms that might be acquired by subsequent occupants. Terminal cleaning methods vary, but usually include removing all detachable objects in the room. In some instances, terminal cleaning might be implemented once some types of Additional Precautions have been discontinued. In the prehospital setting, the term “deep clean” may be used. A deep clean refers to the thorough cleaning and disinfection process that occurs on a regular schedule and in instances where the transporting vehicle is grossly contaminated.
2. General Assumptions

Best practices in this document are based on the assumption that healthcare settings and organizations in Nova Scotia already have basic infection prevention and control measures in place. If this is not the case, healthcare settings will find it challenging to implement the practices recommended for preventing and managing *Clostridium difficile* infections. If healthcare settings do not have dedicated resources, they are encouraged to seek assistance from resources such as IPCNS at the Nova Scotia Department of Health & Wellness (DHW) and/or the Community and Hospital Infection Control Association Nova Scotia (CHICA NS).

Best practices are also based on the following assumptions and principles:


2. Healthcare settings devote adequate resources to infection prevention and control. Guidelines and practice standards recommend that healthcare facilities have trained Infection Control Practitioners (ICP) and resources to implement the Infection Prevention and Control (IPAC) program that are proportional to the size, complexity, case mix and estimated risk of the populations served by the health care facility. The minimum recommendations for staffing should not be based exclusively on bed numbers. Guidelines for the required ratio of ICPs to patient beds will vary according to the acuity and activity of the health care setting, geographic considerations (e.g. multiple sites), and the volume and complexity of the ICP’s work. PIDAC (2012a) *Best Practices for Infection Prevention and Control Programs in Ontario in All Health Care Settings* outlines specific recommendations for staffing ratios based on a variety of literature sources:
   a) a minimum ratio of 1.0 FTE ICP per 115 acute care beds;
   b) a minimum ratio of 1.0 FTE ICP per 100 occupied acute care beds if there are high risk activities (e.g., dialysis);
   c) it is recommended that an additional ratio of 1.0 FTE ICP per 30 intensive care beds be considered where ventilation and hemodynamic monitoring are routinely performed;
   d) 1.0 FTE ICP per 150 occupied long-term care beds where there are ventilated patients, patients with spinal cord injuries and dialysis or other high acuity activities; and
   e) 1.0 FTE ICP per 150-200 beds in other settings depending on acuity levels.

3. District Health Authorities/IWK Health Centre IPAC programs should include a physician with knowledge, expertise and training in infection prevention and control.
4. Acute care facilities within the District Health Authorities/IWK Health Centre comply with the regulations set forth under the Patient Safety Act in relation to public reporting and reporting to the DHW rates of healthcare-associated Clostridium difficile infection.

5. Healthcare settings have effective working relationships with their local Public Health Services. They maintain clear lines of communication, contact Public Health Services for information and advice as required, and fulfill their obligations to report notifiable diseases and conditions as per “It’s the Law: Reporting Notifiable Diseases and Conditions”. Link: http://www.gov.ns.ca/hpp/publications/06026_ItsTheLawPoster_En.pdf

6. Healthcare settings have programs in place that promote good hand hygiene practices and ensure adherence to guidelines for hand hygiene.

7. Healthcare settings devote adequate resources to environmental services/housekeeping that include written procedures for cleaning and disinfection of patient/resident rooms and equipment, education of new environmental services/housekeeping staff and continuing education for all staff, regular auditing and an ongoing review of procedures and policy.

8. ICPs or designate provide regular education (including orientation and continuing education) and support to help healthcare workers consistently implement appropriate infection prevention and control practices. Education programs shall be flexible enough to meet the diverse needs of the range of healthcare providers and other staff who work in the healthcare setting. Effective education programs emphasize:
   - The risks associated with infectious diseases and the benefits of case finding/surveillance.
   - The importance of proper and prudent use of antibiotics.
   - Hand hygiene including the use of alcohol-based hand rub and hand washing.
   - Principles and components of Routine Practices, including a point-of-care risk assessment, and Additional Precautions.
   - Assessment of the risk of infection transmission and the appropriate use of personal protective equipment (PPE), including safe application, removal, and disposal.
   - Appropriate cleaning and/or disinfection of healthcare equipment, supplies, surfaces, or items in the healthcare environment.
   - Individual staff responsibility for keeping patients/residents, themselves, and co-workers safe.

9. Healthcare settings regularly assess and evaluate the effectiveness of their IPAC education programs and their impact on practices, and use that information to refine their programs.

10. Healthcare settings promote collaboration and partnerships between professionals involved in occupational health nursing, occupational health and safety, engineering/maintenance, microbiology laboratory, environmental services and infection prevention and control in
implementing and maintaining appropriate infection prevention and control standards that protect workers.

11. Healthcare settings have an established relationship between infection prevention and control and the microbiology laboratory to support the infection prevention and control program. This includes appropriate utilization of laboratory facilities, the ability to process screening specimens in a timely fashion, timely notification of results and laboratory support during outbreaks.

12. There is clear delineation of cleaning and disinfection responsibilities and practices among healthcare workers (i.e. environmental services, nursing staff, unit aides and other support staff) to ensure the safety and cleanliness of environmental surfaces and patient care equipment.

13. The prehospital care providers receive timely and appropriate information through the Emergency Health Services (EHS) Communication Centre (dispatch) communicable disease screening questions.

14. Healthcare settings have a process for evaluating Personal Protective Equipment (PPE) to ensure it meets quality standards where applicable.

15. Healthcare settings have access to ongoing infection prevention and control expertise and resources to offer advice, guidance to support staff, and resolve any uncertainty about the level of precautions required in a given situation. Infection prevention and control expertise includes IPCNS, CHICA-NS, Infectious Disease Physician trained in Infection Prevention & Control, and the District Health Authorities/IWK Health Centre ICPs.

16. Healthcare settings have established procedures for receiving and responding appropriately to all international, regional, and local health advisories. They also communicate health advisories promptly to all staff responsible for case finding/surveillance and provide regular updates. Current advisories are available from local Public Health Services, DHW, Health Canada and Public Health Agency of Canada websites, and IPCNS.
3. Introduction

Purpose and Goals

The goals of these guidelines are to minimize the impact of *Clostridium difficile* infection (CDI) on individuals and reduce the transmission of *Clostridium difficile* in all settings where care is provided.

The purpose of these guidelines is to provide direction to healthcare workers on the management of patients who have CDI. This document outlines infection prevention and control practices to:

- Assist healthcare providers in the management of patients and residents with CDI and outbreaks related to CDI, and
- Prevent the transmission of *C. difficile* to other patients and residents.

It is recognized that each facility/practice setting delivers a specific set of services and has unique challenges with physical layout and resources. Site specific policies and procedures are necessary to address these unique challenges in each practice area. These best practices guidelines do not replace site specific policies and procedures; rather should be integrated with existing infection prevention and control programs, policies and processes and used as part of a comprehensive effort to maintain accepted standards of infection prevention and control.

These guidelines are applicable to all patients and residents in acute care, continuing care (e.g. long-term care and other residential care facilities), and prehospital care.

Legislated *Clostridium difficile* Infection (CDI) Reporting Responsibilities in Nova Scotia

As of April 1, 2012, *Clostridium difficile* became a notifiable illness/disease in Nova Scotia under the Regulations of the *Health Protection Act*. As per standard operating procedures for all notifiable diseases, all cases of CDI will be reported to the district Public Health office. CDI cases must be reported to Public Health by the next business day. As per normal process, outbreaks and outbreak-associated cases of CDI are reported to local Public Health.

Healthcare-associated CDI rates are included in the mandatory reporting indicators as per the *Act to Improve Patient Safety and Health Systems Accountability (Patient Safety Act)*. All acute care hospitals are required to report the number of cases of healthcare-associated CDI cases and the rate as outlined within the provincial protocol. These district rates are publicly reported on the DHW website (http://novascotia.ca/dhw/qps/public_reporting.asp) and through the District Health Authority (DHA)/IWK Health Centre websites.
4. Background

What is Clostridium difficile?

*Clostridium difficile* is a Gram-positive, spore forming, anaerobic bacillus. It is widely distributed in the environment and colonizes up to 3-5% of healthy adults without causing symptoms (Bouza, 2005). Between 2% and 70% of infants may be asymptptomatically colonized with *C. difficile*. Rates of *C. difficile* colonization decrease with age, falling to about 6% at age two years, while in children older than two, colonization rates are similar to those in adults (approximately 3%) (APIC, 2008).

Disease-producing strains of *C. difficile* are characterized by their ability to produce two toxins: toxin A and toxin B. The most common symptom of CDI is diarrhea. It is almost never grossly bloody and ranges in consistency from soft unformed stools to watery or mucoid, and in frequency from 3 to 20 or more bowel movements per day. Other symptoms include abdominal pain and cramping (22% of patients) and fever (28% of patients). Some patients with severe CDI develop an ileus, and will therefore not have diarrhea, and may not have bowel movements at all. Laboratory findings include leukocytosis in up to 50% of patients (PEI Health, 2010).

In recent years, there has been an increase in the rates of CDI across Canada, with a number of outbreaks in many healthcare facilities in Quebec and Ontario. Some of these outbreaks have been due to a hypervirulent epidemic strain of *C. difficile*, the NAP1/BI/027 strain. Characteristics of this strain include the presence of a binary toxin; increased resistance to clindamycin and the fluoroquinolone class of antibiotics; and the increased potential for severe adverse events (PIDAC, 2013). While this strain of *C. difficile* causes more severe disease, the infection prevention and control practices for this strain are the same as for other strains of *C. difficile*.

How is Clostridium difficile spread?

*C. difficile* spores are resistant to destruction by many environmental conditions and agents, including a number of chemicals commonly used in disinfection. This enables *C. difficile* to survive for months in the environment (in healthcare facilities as well as community settings). It is then spread by transfer of spores directly from the contaminated environment to the patient or on the hands of healthcare workers who fail to follow good hand hygiene and gloving practices. It can be acquired in prehospital, facility and community settings. Proper control is achieved through the physical removal of the spores from hands and the environment through consistent hand hygiene and thorough cleaning and disinfection of the patient environment.
What are the risk factors for *Clostridium difficile* infection?

- recent antibiotic use is the most important risk factor for developing CDI. Almost any antibiotic can be associated with developing CDI, and it can occur after even one dose of antibiotic
- older age is the next most important risk factor for CDI
- bowel disease and surgery
- chemotherapy
- prolonged hospitalization
- non-surgical gastrointestinal procedures
- treatment with proton pump inhibitors; and,
- immunosuppressive therapy.

Risk factors that predispose people to develop more severe disease include:

- infection with the NAP1 strain of *C. difficile*
- increased age
- serious underlying illness or debilitation.

The rate of community-acquired CDI (CA‐CDI) appears to be rising among persons previously thought to be at low risk. Recent studies indicate that only two-thirds of CDI cases identified in the community are actually linked to recent antibiotic therapy and prior hospitalization. Since these classic risk factors are sometimes lacking in identified CA‐CDI cases, it may be prudent to test patients in the community with unexplained diarrhea for *C. difficile*.
5. Recommendations

A. Surveillance

*Clostridium difficile* is a notifiable disease as per regulations under the Regulations of the *Health Protection Act* and is listed under “It’s The Law: Reporting Notifiable Diseases and Conditions for Nova Scotia”. This means that all cases are reported to local Public Health.

Each facility should establish a mechanism/system for the early reporting of symptomatic patients to the organization’s Infection Control Practitioner (ICP) or delegate. A system should also be established for prompt notification of all patients testing positive for *C. difficile* to the ICP or delegate.

Surveillance should be conducted using accepted CDI case definitions (Table 1) and denominators to determine the organization’s baseline rate and monitor changes in the CDI rate. This information should be reviewed and analyzed on an ongoing basis to identify any clusters or outbreaks of CDI.

*Table 1. Case Definition for CDI for Surveillance and Reporting*

**Clostridium difficile Infections (CDI)**

A patient over the age of one year and;

- s/he has diarrhea or fever, abdominal pain and/or ileus, **AND** a laboratory confirmation of a positive toxin assay or positive PCR for *C. difficile*
- OR
- s/he has a diagnosis of pseudomembranes on sigmoidoscopy or colonscopy or histological/pathological diagnosis of CDI
- OR
- s/he is diagnosed with toxic megacolon (ADULT PATIENTS ONLY)

**Diarrhea is defined as one of the following:**

- 6 or more watery stools in a 36 hour period
- 3 or more unformed stools in a 24 hour period for at least 1 day and new or unusual for the patient (ADULT PATIENTS ONLY)

**Healthcare-associated CDI**

- Patient’s CDI symptoms occur in a hospital ≥ 72 hours after admission
- OR
- CDI is seen in a patient who had been hospitalized at your hospital and discharged within the previous 4 weeks.

(CNISP, 2012)
Only “Primary” cases will be included in surveillance. Primary cases can be defined as

- First episode of CDI experienced
- A new episode of CDI which occurs > 8 weeks after the first toxin-positive assay.

B. Laboratory Testing/Reporting

A variety of tests are available to identify *C. difficile* or its toxins in the stools of patients with diarrhea.

Laboratory diagnosis of CDI includes the following methods:

- Glutamate dehydrogenase test (“*C. difficile* antigen test”) is sometimes used to screen stools to indicate if the microorganism is present. It does not indicate if the strain is toxin-producing, so is followed up with a test to detect toxin if the antigen test is positive.
- Toxin detection by enzyme-linked immunoassay (EIA)*
- Cytotoxicity neutralization assay using tissue culture*
- Nucleic acid amplification techniques (including real-time PCR assay)
- Histological examination of the colon.*

*Tests available from Nova Scotia hospital laboratories

1. A protocol and provisions for testing for CDI should be established.
2. Stool specimen collection for testing for *C. difficile* or its toxins is indicated as soon as possible after the onset of acute diarrhea.
3. Only liquid specimens, “taking the shape of the container” (Stool Consistency= Bristol Stool Scale Type 7, refer to Appendix A) should be submitted, sent in a dry sterile container and transported at 4°C Celsius.
   a. *C. difficile* toxin is unstable and can degrade within 2 hours if the specimen is left at room temperature.
   b. Testing for *C. difficile* should not be done on formed stool.
4. When test methods of lower sensitivity are performed, (e.g. EIAs), a single negative test for patients/residents with acute diarrhea should not be relied on to rule out *C. difficile*. If the first test is negative, a second test may be indicated.
5. Testing for *C. difficile* cytotoxin should not be done in children under the age of 1 year, as it is considered normal flora in this age group.
6. If increases in CDI rates are observed, it is important to ensure they are not an artifact of increased case detection resulting from the adoption of new test methods.
7. Laboratories should note that positive *C. difficile* results are notifiable to Public Health Services. Laboratories should have a process to ensure all positive *C. difficile* results are reported to the attending physician, and the Infection Prevention and Control Practitioner or designate at the facility. Positive results should be reported promptly.
Repeat Testing:
1. Repeat testing as a “test of cure” is not indicated and should not be done. Cytotoxin may persist in stool for weeks and is not helpful in determining duration of treatment or required infection control precautions. (Refer to Duration of Precautions).
2. Testing for C. difficile cytotoxin may be repeated if symptoms do not resolve despite treatment or to diagnose a relapse of CDI following a period of time where symptoms were absent.

C. Duration of Precautions

Precautions for CDI should only be discontinued as outlined as per facility/organizational policy. Consultation with the ICP or designate is recommended prior to discontinuation of precautions.

The following criteria are used when discontinuing precautions for CDI:

a) Patient with suspected CDI:
   i) Patients/residents on Contact Precautions for suspected CDI may have the precautions discontinued when appropriate testing is conducted and result(s) are negative and an alternate diagnosis is likely (Refer to Laboratory Testing/Reporting). Contact Precautions should be maintained until such evaluation has taken place or until CDI or other infectious cause for diarrhea is ruled out.
   ii) If CDI is still suspected, the clinician should evaluate the patient/resident and consider other diagnostic modalities (e.g., colonoscopy/sigmoidoscopy).

b) Patient with confirmed CDI:
   i) Contact Precautions may be discontinued when the patient has had at least 48 hours without symptoms of diarrhea (e.g., formed or normal stool for the individual).
   ii) Re-testing for C. difficile cytotoxin is not necessary to determine when precautions may be discontinued.
   iii) Contact Precautions should not be discontinued until the room/bed space has received effective environmental cleaning for CDI (Refer to Environmental Cleaning).
D. Infection Prevention and Control Measures

i) Initiation of Contact Precautions

Routine Practices are used for every patient regardless of disease status. In addition to Routine Practices and point-of-care risk assessment (Appendix B), Contact Precautions should be initiated for any patient in whom CDI is suspected at the onset of symptoms, even before CDI test results are available. Contact Precautions should be initiated as soon as CDI is suspected.

Contact Precautions are initiated when:

a) There is a suspected or confirmed case of CDI;

b) There is diarrhea with risk factors for CDI;

c) There is toxic megacolon and pseudomembranous colitis even in the absence of a positive test result for *C. difficile*.

While the majority of patients with CDI have diarrhea, severe cases of CDI may exhibit presentations that do not include diarrhea, such as toxic megacolon or pseudomembranous colitis, where the patient may have no bowel movements at all.

As *C. difficile* or its spores can survive for months in the environment, HCWs should anticipate that contact with any object in a room or bedspace of a patient with CDI may result in self-contamination with *C. difficile* or its spores.

ii) Personal Protective Equipment

Contact Precautions require the use of personal protective equipment (PPE), specifically gloves and a long-sleeved gown. Refer to your district/facility or organizational policy for Contact Precautions for CDI. The *Continuum of Care Comparison Chart for Additional Precautions and Practices for C. difficile* (Appendix C) summarizes the PPE requirements based on the healthcare setting.

**Acute care settings**

PPE for Contact Precautions should be provided outside the room, cubicle or designated bedspace (or when available, in the anteroom) of the patient suspected or confirmed to have CDI. Healthcare workers, families and visitors should use the following PPE for patients suspected or confirmed to have CDI:

a. Gloves
   - Good quality vinyl gloves are generally sufficient for most tasks. Gloves that fit snugly around the wrist are preferred for use with a gown because they will cover the gown cuff and provide a better barrier for the arms, wrists and hands;
- Gloves are worn to enter the patient’s room, cubicle or designated bedspace during the care of the patient and for contact with the patient’s environment;
- Gloves are removed and discarded into a no-touch waste receptacle and hand hygiene performed upon exiting the patient’s room, cubicle or designated bedspace.

b. Gowns
- Gowns used as PPE should be cuffed and long-sleeved, and offer full coverage of the body front, from neck to mid-thigh or below.
- A gown is worn if it is anticipated that clothing or forearms will be in direct contact with the patient or with environmental surfaces or objects in the patient care environment;
- If a gown is to be worn it should be put on before entering the room, cubicle or designated bedspace. The gown should be removed and discarded into a no-touch receptacle immediately after the indication for use and hand hygiene should be performed before leaving the patient’s environment.

The same PPE is not to be worn for more than one patient. If caring for more than one patient in a shared room, PPE is changed and hand hygiene performed between contacts with each patient/bedspace in the same room.

Long-term care settings
PPE for Contact Precautions should be provided outside the room or designated bedspace of the resident suspected or confirmed to have CDI. Healthcare workers, families and visitors should use the following PPE for residents suspected or confirmed to have CDI and include the following:

a. Gloves
- Good quality vinyl gloves are generally sufficient for most tasks. Gloves that fit snugly around the wrist are preferred for use with a gown because they will cover the gown cuff and provide a better barrier for the arms, wrists and hands;
- Gloves are worn if direct personal care contact with the resident is necessary, if direct contact with frequently touched environmental surfaces is anticipated, if handling contaminated objects/equipment, or if handling soiled linen;
- Gloves should be removed and discarded into a no-touch waste receptacle and hand hygiene performed upon exiting the resident’s room or designated bedspace.

b. Gowns
- Gowns used as PPE should be cuffed and long-sleeved, and offer full coverage of the body front, from neck to mid-thigh or below;
- A gown should be worn if it is anticipated that clothing or forearms will be in direct contact with the resident or with environmental surfaces or objects in the resident’s environment;
- If a gown is to be worn it should be put on before entering the room or designated bedspace. The gown should be removed and discarded into a no-touch receptacle immediately after the
indication for use and hand hygiene should be performed before leaving the resident’s environment.

The same PPE is not to be worn for more than one resident. If caring for more than one resident in a shared room, PPE is changed and hand hygiene performed between contacts with each resident/bedspace in the same room.

Prehospital Care
PPE for Contact Precautions should be provided for EHS personnel outside the room or designated bedspace of the patient/resident suspected or confirmed to have CDI, and easily accessible within the vehicle.

a. Gloves
- Good quality vinyl gloves are generally sufficient for most tasks. Gloves that fit snugly around the wrist are preferred for use with a gown because they will cover the gown cuff and provide a better barrier for the arms, wrists and hands;
- Gloves are worn upon entry to the patient/resident room or bedspace to prepare or assist patient/resident and HCWs with transport;
- Gloves should be removed and discarded into a no-touch waste receptacle and hand hygiene performed upon exiting the resident’s room or designated bedspace.

c. Gowns
- Gowns used as PPE should be cuffed and long-sleeved, and offer full coverage of the body front, from neck to mid-thigh or below.
- A gown should be worn if it is anticipated that clothing or forearms will be in direct contact with the patient/resident or with environmental surfaces or objects in the environment while preparing or assisting with transport
- If a gown is to be worn it should be put on before entering the room or designated bedspace. The gown should be removed and discarded into a no-touch receptacle immediately after the indication for use and hand hygiene should be performed before leaving the resident’s environment.

Note: Additional information regarding the appropriate PPE for prehospital care staff during transport of patient with CDI can be found in the section Patient/Resident Transfer.

Masks and Face protection are worn as per Routine Practices.
**Putting on and taking off PPE:**

HCWs must remove their PPE in a manner that minimizes the risk of self-contamination. HCWs should be trained on the sequence for PPE removal. It may be helpful for HCWs to have visual tools placed at the point of PPE removal. Refer to Appendix D for sample posters.

A) **Sequence for Putting on PPE for Contact Precautions:**
   1) Perform Hand Hygiene
   2) Put on Gown
   3) Put on Mask (as per Routine Practices)
   4) Put on Protective eyewear (as per Routine Practices)
   5) Put on Gloves

B) **Sequence for Removing PPE for Contact Precautions:**
   1) Remove Gloves
   2) Remove Gown
   3) Perform Hand Hygiene
   4) Remove Eye Protection (if worn as per Routine Practices)
   5) Remove Mask (if worn as per Routine Practices)
   6) Perform Hand Hygiene

**iii) Hand Hygiene**

Effective hand hygiene is essential to limit the spread of *C. difficile*. While performing hand hygiene with soap and water may be theoretically beneficial while caring for patient/residents with CDI, dedicated staff hand hygiene sinks may not be readily available.

Hand hygiene should be performed frequently with the following considerations:

1) Hand hygiene should be performed frequently using effective techniques as per the Four Moments of Hand Hygiene (Canadian Patient Safety Institute). Link: [http://www.handhygiene.ca/English/Documents/Tools%20and%20Templates/Your%204%20Moments%20for%20Hand%20Hygiene%20(Poster).pdf](http://www.handhygiene.ca/English/Documents/Tools%20and%20Templates/Your%204%20Moments%20for%20Hand%20Hygiene%20(Poster).pdf)
2) Hand washing with liquid soap and water should be performed at the point-of-care and at a designated staff hand washing sink. If a designated staff hand washing sink is not available at the point-of-care, alcohol based hand rub (ABHR) should be used and hand hygiene with liquid soap and water should be performed as soon as a staff hand washing sink is available.
3) Hand wipes (impregnated with plain soap, antimicrobials, or alcohol) may be used as an alternative to liquid soap and water when a designated staff hand washing sink is not immediately available (e.g. prehospital care, ambulance), or when the hand washing sink is unsuitable (e.g. contaminated sink, no running water, no soap) under the following conditions:
   i. When hands are not visibly soiled; and
ii. When hands are visible soiled. ABHR should be used after the use of hand wipes, and hands should be washed with liquid soap and water once a suitable staff hand washing sink is available.

4) Hand hygiene should be performed at a designated staff hand washing sink and not carried out at a patient/resident sink as this will re-contaminate the HCWs hands.

5) Education should be provided to the patient/resident on the need and procedure to be used for hand hygiene; patients/residents who are unable to perform hand hygiene independently should be assisted by the healthcare worker or a family member/friend.

iv) Accommodation

Acute care settings
1. Patients with suspected or confirmed CDI should be placed in a single room with dedicated toileting facilities, either a private washroom or a dedicated commode and a designated patient sink.
2. The door to the patient room may remain open.
3. Contact Precautions Signage should be visibly displayed at the entrance to the patient’s room, cubicle or designated bedspace (See Appendix E for sample Contact Precautions signage).
4. When single rooms are limited:
   • Patients who are faecally incontinent and soiling the environment should have priority for single rooms.
   • A point-of-care risk assessment should be performed to determine patient placement and/or suitability for cohorting.
5. If a single room is not available, patients with laboratory-confirmed CDI may be cohorted; however each patient should have a designated toilet or commode assigned.
6. In a shared room:
   • A dedicated toilet or commode chair should be dedicated to each patient/resident with diarrhea.
   • Roommates should be selected on their ability and their visitors’ ability to comply with the necessary precautions.
   • Personal protective equipment should be easily accessible.
   • A laundry hamper and waste receptacle should be placed as close to the patient/resident’s bedspace as possible for discarding of PPE following use.
   • ICP or designate should be consulted when cohorting is considered.
7. If cohorting of patients with confirmed diagnosis of CDI is not available and a cubicle or designated bedspace is used in a shared room, privacy curtains should be drawn between beds at all times, and a designated commode provided.

Long-term care settings
1. A point-of-care risk assessment (Appendix B) should be done to determine resident placement and removal from a shared room, the potential of infection risks to other residents in the room,
the presence of risk factors that increase the likelihood of transmission and the potential psychological impact on the symptomatic resident. The ICP or delegate should be consulted.

2. In a shared room:
   - A resident suspected or confirmed to have CDI should not share a toilet or commode with another resident.
   - A dedicated toilet or commode should be assigned to each individual resident with diarrhea.
   - Privacy curtains should be drawn between beds at all times, if feasible.

3. The door to the resident’s room may remain open.

4. Contact Precautions signage should be placed at the entrance to the resident’s room or designated bedscape.

**v) Handling Linen, Dishes and Cutlery**

1. No special precautions are required for linen. Routine practices are sufficient and include the following:
   a. Soiled linen should be handled in the same way for all patients, regardless of their infection status.
   b. Soiled linen should be placed in a no-touch receptacle at the point of use.
   c. Soiled linen should be handled with a minimum of agitation to avoid contamination of air, surfaces and persons.
   d. Soiled linen should be sorted outside of the patient care areas and
   e. Heavily soiled linen should be rolled or folded to contain the heaviest soil in the centre of the bundle. Solid fecal matter that can be removed with a gloved hand and toilet tissue should be placed into a bedpan or toilet for flushing.

2. No special precautions are required for dishes or cutlery; routine practices are sufficient.
   a. In areas where dietary staff distribute trays, they may enter the patient/resident room wearing a clean pair of gloves, place the tray in the room and then remove the gloves and dispose of them in the waste receptacle at doorway in the room before leaving, and perform hand hygiene.
   b. Dietary staff can pick up trays from a patient/resident’s room wearing a clean pair of gloves, bring the tray outside the room, place the tray on the cart and then remove the gloves and dispose of them in the nearest waste can. Perform hand hygiene. No other activities are to be performed by the dietary staff when in the patient/resident room. If the patient requires assistance, a nurse is to be notified.
v) Patient Flow/Activities

1. The symptomatic patient/resident suspected or confirmed to have CDI should be allowed out of the room only as indicated in the care plan or for medical reasons.
2. The patient/resident suspected or confirmed to have CDI should be provided with clean clothes and should perform hand hygiene, with supervision/assistance as necessary, before leaving the room.
3. Instructions/assistance with hand hygiene should be provided to patients suspected or confirmed to have CDI after using the toilet facilities and prior to leaving their room.
4. If diarrhea cannot be contained and/or if hand hygiene compliance is inadequate, patients/residents suspected or confirmed to have CDI should be restricted to their room until:
   a. Diarrhea has resolved; or
   b. Diarrhea can be contained; or
   c. Hand hygiene compliance is adequate.
5. In long-term care facilities, participation in group activities should be restricted when diarrhea cannot be contained and adherence to hand hygiene is not possible.

vi) Patient/Resident Transfer

Suspected or confirmed CDI does not preclude a patient/resident from being transferred within the healthcare system when medically appropriate (e.g. essential diagnostics and therapeutic tests/treatment) provided that the receiving unit/department/facility is able to comply with requirements for accommodation and Contact Precautions. Otherwise, transfers should be minimized. When booking an ambulance for any purpose for a patient/resident with known or suspected CDI, notification of the diagnosis should be done at the time of booking, prior to the transfer.

a) Transfers to Other Hospitals or Healthcare Facilities

1. When considering the transfer of any patient with CDI to another facility, discharge planning and communication must begin in time to ensure proper communications and arrangements for the transfer have been made.
2. It is the responsibility of the transferring team to inform the receiving facility of the CDI diagnosis in advance to allow for appropriate placement of the patient.
3. The transferring service, receiving unit, or facility should be advised of the necessary precautions for the patient being transported;
4. A request to have the patient promptly seen to minimize time in waiting areas should be considered;
5. The patient should be provided with clean clothes and bedding as necessary, diarrhea should be contained (i.e., with incontinent products) as necessary, and instruction/assistance with performing hand hygiene should be provided.
b) Transfers to Long-Term Care

1. When considering the transfer of any patient/resident with CDI to a long-term facility, discharge planning and communication must begin in time to ensure proper communications and arrangements for the transfer have been made.
2. It is the responsibility of the transferring team to inform the receiving facility of the patient/residents diagnosis in advance to allow for appropriate placement of the patient.
3. The transferring service, receiving unit, or facility should be advised of the necessary precautions for the patient being transported;
4. The patient should be provided with clean clothes and bedding as necessary, diarrhea should be contained (i.e., with incontinent products) as necessary, and instruction/assistance with performing hand hygiene should be provided.

c) Patient Transfer of Care to Emergency Health Services (EHS):

If the patient/resident is being transported by an ambulance the following procedure should take place by the EHS personnel:

1. Don appropriate PPE prior to entering the patient/resident room. EHS personnel should refrain from touching or using any unnecessary equipment.
2. Once the patient is transferred to the stretcher, the patient should be wrapped sufficiently (cocooned if possible) and educated on not to reach or touch items/equipment while they are being transported. This will help mitigate patient injury and prevent microorganism transmission.
3. Patient belongings should be bagged.
4. The parts of the stretcher that were touched during the bed transfer (i.e. hand rails, head of stretcher, foot of stretcher and raising/lowering mechanism) and any equipment touched up to that point, are cleaned and disinfected prior to leaving the patient/resident environment.
5. EHS personnel shall dispose of all PPE as they are leaving the patient/resident room. Hand hygiene shall be performed immediately after the PPE is properly disposed.
6. PPE shall not be worn through the healthcare facility while transferring the patient on the stretcher to the ambulance.
7. Appropriate PPE should be worn within the patient compartment of the vehicle during transport.
8. The paramedic/first responder responsible for operating the vehicle should discard any unnecessary PPE and perform hand hygiene prior to entering the cab to drive in order to avoid inadvertent contamination of this area.
9. EHS staff will follow Routine Practices and Contact Precautions at the receiving facility.
10. The transport personnel will remove and dispose of their PPE and perform hand hygiene prior to transporting patients into the healthcare facility.
11. The transport EHS personnel should put on clean personal protective equipment, if necessary, to handle the patient during transport and at the transport destination.
12. All equipment and horizontal surfaces that may have become contaminated should be cleaned and disinfected.
13. Any used linen should be handled as per Routine Practices.
viii) Management of Patient/Resident Care Equipment

1. Dedicated equipment (e.g., wheelchairs, blood pressure cuffs, thermometers) should be provided for each suspected or confirmed patient/resident with suspected or confirmed CDI.
2. In the event that reusable non-critical equipment is shared, thorough cleaning and disinfection must occur before use on or with another patient/resident.
3. A disinfectant product with sporidical claim should be used provided it is approved for use on the patient care equipment item by the manufacturer.
4. Unused supplies from the rooms of patients with CDI that cannot be cleaned and disinfected should be discarded.
5. Temperatures should not be taken rectally. Rectal thermometers have been linked with the spread of CDI.
6. All equipment and supplies should be stored in a manner that prevents use for/by other patients until it is appropriately cleaned and disinfected. Organizations should ensure that a system for clearly identifying clean vs. soiled items is in place and is communicated to all HCWs.
7. Toys, electronic games, personal effects should be dedicated to the use of the patient/resident with suspected or confirmed CDI. If appropriate for reuse by another patient, it is cleaned and disinfected prior to reuse.

xi) Environmental Cleaning & Disinfection

Effective cleaning and disinfection of the environment around patients who have CDI is essential in limiting the acquisition and spread of *C. difficile*. It is the manual effort of scrubbing that is most effective at spore removal. After cleaning with your facility’s usual detergent solution, disinfect all surfaces using a sporidical product.

The following disinfectants, appropriate for environmental cleaning, have been shown to be effective against *C. difficile* spores:

1. Hydrogen peroxide enhanced action formulation (4.5%)
2. Sodium hypochlorite (1,000-5,000 parts per million)
3. Peracetic acid (0.26%)

Choosing a Product: When choosing a sporidical product for the facility or organization, consideration should be given to ease of use and time requirements, the ability of the product to achieve the required wet-contact time (e.g. gel versus liquid formulations), its compatibility with equipment being cleaned, and cost.
### Table 1: Dilution of Household Bleach (Sodium Hypochlorite) to Achieve Desired Chlorine Levels

<table>
<thead>
<tr>
<th>Dilution*</th>
<th>Preparation</th>
<th>Level of available chlorine</th>
<th>Contact time for activation of <em>C. difficile</em> spores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:100</td>
<td>1 part bleach + 99 parts water</td>
<td>0.05%</td>
<td>500ppm N/A</td>
</tr>
<tr>
<td>1:50</td>
<td>1 part bleach + 49 parts water</td>
<td>0.1%</td>
<td>1,000ppm 30 minutes</td>
</tr>
<tr>
<td>1:10</td>
<td>1 part bleach + 9 parts water</td>
<td>0.5%</td>
<td>5,000ppm 10 minutes</td>
</tr>
</tbody>
</table>

** Dilution of household bleach containing 5% sodium hypochlorite with 50,000 parts per million (ppm) available chlorine

Always follow the manufacturer’s directions for use to ensure that disinfectants are properly prepared and applied, and that there is sufficient contact time on items/surfaces.

Decontamination, cleaning and disinfection of environmental surfaces must be thorough and incorporate the following:

- **a)** Prepare a checklist of surfaces and equipment that need to be cleaned and disinfected during an outbreak. Using a checklist promotes consistency in cleaning among staff, and helps identify opportunities for improvement.
- **b)** In keeping with the recommended practice of moving from clean to dirty for all cleaning, the rooms of patients without CDI should be cleaned first.
- **c)** For patients/residents with suspected or confirmed CDI, all high-touch surfaces and all items and surfaces within the patient’s reach must be cleaned and disinfected twice daily and when soiled. High touch surfaces can include bathrooms, light switches, light cords, hand/bed rails, bedside tables, wheelchair/ walker etc.
- **d)** De-clutter the patient/resident room to facilitate cleaning and disinfection.
- **e)** A pre-cleaning step to remove visible soiling/organic material is completed prior to using a sporicidal product. If using a QUAT product for cleaning, through rinsing before applying a hydrogen peroxide enhanced action formulation agent is required.
- **f)** Always work from clean items/surfaces to dirty ones.
- **g)** Successful cleaning and disinfection requires manual scrubbing followed by application of the disinfectant to the surface for the **appropriate wet-contact time**. Achieving the recommended wet-contact time may be a challenge on some surfaces given the viscosity of some disinfectant products (gel versus liquid formulation). Sporicidal kill will only be achieved by the appropriate wet-contact time.
- **h)** **Do not use spray bottles to apply disinfectants.** All cleaning and disinfectant solutions must be applied directly to the cloth. Saturating several clean cloths in a pail of solution and using one at
a time is the safest way to clean and disinfect. After use, reusable cloths must go directly into the laundry.

i) Disposable wipes can be used for cleaning and disinfection of smaller surface areas only to ensure the wet-contact time is achieved. Once used, wipes are placed in the regular waste receptacle.

j) Cloths and mop heads must not be double-dipped and must be changed after use in the patient’s/resident’s room. This practice reduces contamination of clean cloths, mops and the disinfectant solution, and prevents transferring bacteria to other rooms and equipment.

k) Housekeeping staff shall adhere to Contact Precautions.

Communication Processes: Ensure clear communication with housekeeping/environmental services with respect to cleaning protocols for *C. difficile*.

- Consider developing a checklist for housekeeping/environmental services that provides clear expectations of cleaning and disinfection processes.
- Ensure a process for notification and scheduling of *C. difficile* cleaning of a specific patient room/isolation area is established.
- An audit tool should be used to monitor the cleaning and disinfection of areas where CDI is present.

Environmental Cleaning upon Discontinuation of Precautions: A discharge/terminal cleaning should be done upon discontinuation of precautions, transfer of the patient/resident to another room, or discharge from the healthcare facility. In cases where precautions are being discontinued (refer to *Duration of Precautions*), patients/residents could be temporarily removed from the room while terminal cleaning is done. The patient/resident should be bathed and dressed in clean bed-clothes or personal clothing before re-admission to the room.

The following additional procedures may be incorporated into your organization’s discharge/terminal cleaning and disinfection procedure for CDI:

a) Contact precautions should remain in effect until discharge cleaning has taken place.

b) All privacy, shower and window curtains, which undergo frequent handling, should be taken down and sent for laundering.

c) All disposable items including paper towels, toilet paper, glove boxes and dedicated toilet brushes should be discarded.

d) Clean and disinfect all dedicated equipment in the patient’s room upon discharge or transfer.

Environmental Cleaning and Disinfection of Emergency Vehicles: Services should have clear, evidence-informed policies and procedures detailing the indications for cleaning and disinfection of emergency transport vehicles paying particular attention to frequency, processes, and materials in the event a vehicle is contaminated with *C. difficile*.
1. A risk assessment should occur after the completion of a transfer of a patient who has suspected or confirmed CDI to determine the need to complete a terminal cleaning or “deep clean” of the vehicle.
2. When a terminal cleaning/deep clean has been deemed necessary, a sporicidal product must be used.
3. PPE is worn during the process of cleaning and disinfection.
4. Cleaning should occur from cleanest to dirtiest areas. These areas may vary depending on the type of call and the degree of contamination in the treatment area.

*Deep Clean* refers to the thorough cleaning and disinfection process that occurs on a regular schedule and in instances whereby the vehicle is grossly contaminated. A deep clean includes the following:

A) *Driver’s compartment*
   - Removal of all equipment from the front of the vehicle
   - Clean and vacuum floor,
   - Clean and disinfect all interior surfaces, including walls, doors, radio equipment, dash and windows.

B) *Patient compartment*
   - Remove stretchers, clean and disinfect including mattress and belts; check for wear or damage
   - Remove wall suction, clean and disinfect area (if applicable)
   - Remove contents of cupboards and shelves; clean and disinfect all surfaces
   - Clean, disinfect and dry all hard surface items before returning to cupboard or shelf; inspect for damage and expiration dates; repair/replace as needed
   - Sweep, vacuum, clean and disinfect floor
   - Clean and disinfect chairs, bench seats, seat belts
   - Clean and disinfect all interior surfaces, including ceiling and walls and remove scuff marks
   - Check interior lighting
   - Empty, clean and disinfect waste containers
   - Clean interior windows

C) *Equipment storage compartment*
   - Remove all equipment and sweep out compartment
   - Clean and disinfect compartment and restock
Disposal of Fecal Matter

The safe disposal of fecal matter is of critical importance in preventing contamination of the worker’s hands, clothing, and the health care environment. HCWs must wear appropriate PPE during the disposal process.

When bedpans and commodes are required:

1. Handle bedpans and commodes in such a way as to avoid contamination of the environment with C. difficile spores.
2. Do not empty bedpans/commodes into sinks or toilets. Cover the bedpan or commode pan/bucket for transport to the soiled utility room. Solidifiers may be used to minimize risk of spills.
3. Do not clean bedpans manually.
4. Bedpans or commode pan/buckets should be emptied into a hopper or, if available, use a flusher/disinfector or macerator system.
5. Do not use spray wands for cleaning bedpans and commode/buckets.
6. If a bedside commode is being used, dedicate it to the patient and clean and disinfect it twice daily and when soiled.
7. If applicable, flusher or washer/disinfectors should be installed, and maintained according to the manufacturer’s directions. To ensure that the equipment is operating properly, preventive maintenance and verification of the machine’s operational parameters should be performed regularly. The manufacturer should be contacted to determine if adjustments can be made to the flusher/disinfector to achieve conditions that will effectively eliminate spores.
8. Use of hygienic bags may be considered for patients with CDI or in the event of an outbreak.
9. If used, dedicate toilet bowl brush to one specific toilet and do not reuse. Disposable toilet bowl brushes should be considered.
10. When precautions are discontinued, clean and disinfect or sterilize the commodes and bedpans using a sporicidal agent (refer to Environmental Cleaning & Disinfection) before use by another patient.

Education of Patients, Families and Visitors

1. Visitors should receive verbal or written information/education from the patient/resident’s healthcare worker on precautions required to prevent transmission of C. difficile. (Refer to Appendix F for a sample information sheet for Patients, Resident and Family Information about Clostridium difficile).
2. Families and visitors who are participating in direct patient/resident care should be instructed healthcare worker by the about the indications for appropriate use of PPE.
3. Families and visitors who assist with patient/resident care should use the same PPE as HCWs. This may not be necessary for parents carrying out usual care of young children.
Visitor Management

1. Visitors should be instructed to speak to nursing staff before entering the room, cubicle or designated bedspace of a patient with suspected or confirmed CDI to evaluate the risk to the health of the visitor and the ability to comply with precautions.

2. All visitors should be educated by the appropriately trained staff about the importance of hand hygiene and how and when to properly carry this out. This should be done at the time of the visitor’s initial visit.

3. If a visitor is providing care for the patient/resident or having significant contact with the patient/resident’s immediate environment, PPE should be worn similar as for the HCWs. The visitor should receive instruction from the patient/resident’s health care worker on the correct use of the PPE.

4. Visitors should be restricted to visiting only one patient who is on contact precautions. If the visitors must visit more than one patient, the visitor should be instructed to remove the PPE between visits to different patients and perform hand hygiene before going to visit the next patient/resident.

5. Visitors should not use the patient/resident’s bathroom.

E. Patient Discharge

After discharge, patients with CDI pose minimal risk to other family members as person-to-person transmission within the home setting is uncommon. Additional precautions that are in place in the healthcare setting are not necessary once the patient is discharged to the community. Good personal hygiene and hand washing with soap and water is recommended for both individuals with CDI and their caregivers while the individual has diarrhea. Special attention should be paid to cleaning and disinfecting the bathroom used at home. An information sheet such as the one provided in Appendix F: Information Sheet: Patient, Resident and Family Information about Clostridium difficile outlines information for what to do at home.

F. Recurrence of Symptoms

Recurrence refers to the return of the symptoms of CDI after a symptom-free period. Recurrence of CDI occurs either due to relapse (i.e., endogenous persistence of the same strain of C. difficile) or re-infection (i.e. acquisition of a new strain of C. difficile from an exogenous source). Recurrence of CDI can occur in about 30% of cases. If diarrhea and/or symptoms of CDI recur within 8 weeks of the last infection, the case should be counted as a relapse.

If diarrhea recurs, the patient should be immediately placed on Contact Precautions and an appropriate medical assessment conducted to determine if a recurrence has occurred. This may include re-testing for C. difficile cytotoxin.
G. Outbreak Management

Institutions or facilities should have written policies and procedures for managing outbreaks. These policies should include mitigation strategies such as the formation of a multidisciplinary outbreak team, lines of communication, staff and patient education, review of environmental and equipment cleaning practices, review and audit of infection prevention and control strategies such as hand hygiene adherence monitoring.

a. Outbreaks are reported to local Public Health as per legislative requirements.

b. Efforts to identify the source of the outbreak should be done through a comprehensive investigation and review. Refer to Appendix H for a sample *C. difficile* outbreak line listing form.

b. Notification to the facility microbiology lab/provincial lab that an outbreak is suspected to ensure awareness of potential for increased number of specimens, need for increased turnaround time and immediate reporting of positive cases.

c. The multidisciplinary team with expertise in outbreak management should assist in determining the course of action for admissions, discharges, cancellations of service and internal and external communication.

d. Depending on the outbreak setting, Public Health Services, the Infectious Disease Physician, or Infection Control Practitioner or designate has the authority to declare the outbreak over.

e. An outbreak report, which includes lessons learned, shall be completed and submitted by the Outbreak team of the facility. The report should be shared with the facility senior leadership team, Infection Prevention and Control Committee, and the district Medical Officer of Health or designate at the Communicable Disease Control program at Public Health Services.

When there is evidence of continued transmission of *C. difficile* within a facility or when the incidence rate for *C. difficile* is higher than the facility’s baseline rate, the following heightened measures should be implemented:

a) Place signage at entrances to the affected unit(s) to direct families and visitors;

b) Place all patients/residents with acute diarrhea illness on contact precautions;

c) Report the outbreak to local Infection Prevention and Control personnel, and to public health officials as per provincial reporting requirements;

d) Decontaminate and clean rooms or designated bedspace of patients/residents suspected or confirmed to have CDI with a sporicidal agent (Refer to *Environmental Cleaning*);

e) Increasing the frequency of cleaning, including bathing and toileting facilities, recreational equipment, all horizontal surfaces in the patient/resident’s room or designated bedspace and, in particular, areas/items that are frequently touched (e.g., hand and bedrails, light cords, light switches, door handles, furniture, etc.), common areas, nursing stations, staff washrooms, etc., on the affected unit(s);

f) Cohort staff to patients/residents;

g) With associated high burden of illness, particularly with higher than expected attributable mortality, there may be a role, in consultation with Infectious Diseases/Microbiologist and/or
Public Health and Provincial Public Health Laboratory, to characterize the strain type and clonality of *C. difficile* isolates;

h) Perform audits on the affected unit/area. This may include auditing adherence to hand hygiene practices, PPE use by staff, cleaning/disinfecting shared non-critical equipment, and environmental cleaning;

i) Review the process for disposal of fecal matter (Refer to *Disposal of Fecal Matter*);

j) Consider closing affected unit(s) to admissions if initial control measures are ineffective in controlling the spread of *C. difficile*;

k) Reviewing antimicrobial prescribing practices including indications for prescribing and specific agents used. In some settings, it may be helpful to restrict the use of specific antimicrobial agents; and

l) Consulting provincial IPCNS or public health expertise in outbreak management for ongoing outbreak situations.

**Declaring an Outbreak Over:** Criteria for declaring an outbreak over should be determined collaboratively by the facility and local public health unit or Infection Prevention and Control Team as part of the Outbreak management team process.

Factors to consider in declaring an outbreak over include:

- Control measures have been implemented and validated through an audit process.
- There has been a return to unit/ward or facility baseline from normal CDI. For a facility wide outbreak, this should be a minimum period of one month.
- Reservoir of colonized patients or residents in the facility has been discharged.
- Facilities past experience with CDI outbreaks demonstrates ability to bring them under control.

**H. Guidance for Health Care Workers**

Healthcare workers (HCW), including when they are receiving antibiotics, are generally not at risk of acquiring CDI occupationally. HCWs should not work when experiencing diarrhea, unless there is a known underlying non-infectious cause. HCWs with diarrhea OR HCWs who have suspected or confirmed CDI may return to work once symptoms of diarrhea have resolved for 48 hours and do not need a negative stool sample. HCWs should be advised to continue with frequent hand hygiene and to complete antibiotics as prescribed.

i) **Education**

HCWs should receive education on *C. difficile*, including measures to control its spread and on their role in identifying and acting on new onset diarrhea. (Refer to Appendix G *Information Sheet: Clostridium difficile for Healthcare Workers*). Education should reinforce Routine Practices, point-of-care risk assessment, the use of Contact Precautions when caring for patients with suspected or confirmed CDI and safe work practices such as not consuming food or beverages in patient/resident care areas.
ii) **Hazard Assessment**

The *Nova Scotia Occupational Health and Safety Act* and applicable regulations set out the legal requirements that employers, you, and your co-workers must meet to protect the health and safety of both yourself and others. These are **minimum** requirements:

<table>
<thead>
<tr>
<th>Employers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under Section 13(1) (f) of the Occupational Health and Safety Act, every employer shall take every precaution that is reasonable in the circumstance to conduct the employers’ undertaking so that employees are not exposed to health and safety hazards as a result of the undertaking. For instance:</td>
</tr>
<tr>
<td>- Assess a work site and identify existing or potential hazards.</td>
</tr>
<tr>
<td>- Prepare a written and dated hazard assessment, including the methods used to control or eliminate the hazards identified. A properly completed checklist is acceptable for a written hazard assessment.</td>
</tr>
<tr>
<td>- Involve workers in hazard assessment.</td>
</tr>
<tr>
<td>- Make sure workers are informed of the hazards and the methods used to control the hazards.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under Section 17 (1) (a) of the Occupational Health and Safety Act, every employee, while at work, shall take every reasonable precaution in the circumstances to protect the employee’s own health and safety and that of others persons at or near the workplace.</td>
</tr>
</tbody>
</table>

It is the responsibility of each HCW to comply with additional precautions and use of PPE as outlined in the Occupational Health and Safety legislation. Hazard Assessment in healthcare settings can include a comprehensive assessment conducted with the joint occupational health and safety committee (JOHSC). The risk assessment will include a review of *C. difficile* in your facility and the measures to protect employees and patients/residents. The assessment should review availability of approved PPE, compliance with infection prevention and control practices and policies concerning *C. difficile*, including a current or organizational infrastructure-related assessment to identify issues which may pose infection prevention and control risks for the employee. This includes but is not limited to sink availability and locations, location of soiled utility rooms and practices for waste management/transport.
6. References


Prince Edward Island Department of Health and Wellness (2010). *Provincial infection prevention and control Clostridium difficile guideline*.


Public Health Agency of Canada (2012). *Routine practices and additional precautions for preventing the transmission of infection in healthcare settings*. Ottawa, ON.


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IPA CNS

Knowledge is Contagious

NOVA SCOTIA

Health and Wellness
Appendix A: Bristol Stool Chart

Reference: Heaton K.W. Reader in Medicine at the University of Bristol.
Appendix B: Point-of-Care Risk Assessment

Prior to any patient/resident/client interaction, all healthcare workers have a responsibility to always assess the infectious risk posed to themselves and to other patients/residents/clients, families, visitors, and healthcare workers. This risk assessment is based on professional judgment about the clinical situation and up-to-date information on how the specific healthcare organization has designed and implemented engineering and administrative controls, along with the availability and use of personal protective equipment.

The point-of-care risk assessment is an activity performed by the healthcare worker before every patient/resident/client interaction, to:

1. Evaluate the likelihood of exposure to the infectious agent:
   - from a specific interaction (e.g., performing/assisting with aerosol-generating medical procedures, other clinical procedures/interaction, non-clinical interaction [admitting, teaching patients/residents/clients and families], transporting patients/residents/clients, direct face-to-face interaction with patients/residents/clients, etc.);
   - with a specific patient/resident/client (e.g., infants/young children, patients/residents/clients not capable of self-care / hand hygiene, have poor compliance with respiratory hygiene, copious respiratory secretions, frequent coughing/sneezing, diarrhea, etc.);
   - in a specific environment (e.g., single rooms, shared rooms/washrooms, hallway, assessment areas, emergency departments, public areas, therapeutic departments, diagnostic imaging departments, housekeeping, etc.);
   - under available conditions (e.g., air exchanges in a large waiting area or in an airborne infection isolation room, patient/resident/client waiting areas, etc.);

   **AND**

2. Choose the appropriate actions/personal protective equipment needed to minimize the risk of the patient/resident/client, healthcare worker, other staff, family, visitor, contractor, etc. of exposure to the infectious agent.

The point-of-care risk assessment is not a new concept, but one that is already performed regularly by healthcare workers many times a day for their safety and the safety of patients/residents/clients and others in the healthcare environment. For example, when a healthcare worker assesses a patient/resident/client and the situation to determine the possibility of blood or body fluid exposure or chooses appropriate personal protective equipment to care for a patient/resident/client with an infectious disease, these actions are both activities of a point-of-care risk assessment.

### Appendix C:

**Continuum of Care Comparison Chart for Additional Precautions for Clostridium difficile Infection (CDI)**

<table>
<thead>
<tr>
<th>Precautions for CDI by Setting</th>
<th>Hand Hygiene</th>
<th>Gloves</th>
<th>Gowns</th>
<th>Masks and face protection</th>
<th>Patient placement</th>
<th>Patient/Resident care equipment</th>
<th>Cleaning</th>
<th>Laundry</th>
<th>Garbage</th>
<th>Patient transport</th>
<th>Dietary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Care</strong></td>
<td><strong>Hand hygiene with soap and water</strong></td>
<td>Worn to enter the patient’s room, cubicle or bedspace</td>
<td>Worn if it is anticipated that clothing or forearms will be in direct contact with patient or patient’s environment</td>
<td>As per Routine Practices</td>
<td>Single room with dedicated toileting facilities preferred. Refer to guidelines if single room is not available. Consult Infection Prevention &amp; Control team if alternate arrangements need to be made.</td>
<td>Dedicate use of equipment for the patient when possible - If it is not dedicated, clean and disinfect equipment before and after use on another patient - When possible use single-use items - Minimize supplies in room as these supplies will be discarded upon patient discharge.</td>
<td>Cleaning and frequently touched areas twice daily with a disinfectant that will kill spores.</td>
<td>Handle laundry as per Routine Practices. - Gloves and gown should be worn and hand hygiene performed.</td>
<td>Double bagging not required. Garbage handled as per Routine Practices and in accordance with the Nova Scotia/ district/ hospital waste management protocols.</td>
<td>Notify area receiving patient of precautions. - Patient must perform hand hygiene.</td>
<td>Disposable dishes not required. - Trays will be treated as normal and placed on the cart to be brought to kitchen.</td>
</tr>
<tr>
<td><strong>Long-Term Care</strong></td>
<td><strong>Hand wash with soap and water</strong></td>
<td>Worn to enter the patient’s room, cubicle or bedspace</td>
<td>Worn if it is anticipated that clothing or forearms will be in direct contact with patient or patient’s environment</td>
<td>As per Routine Practices</td>
<td>Single room with dedicated toileting facilities preferred. Refer to guidelines if single room is not available. Consult Infection Prevention &amp; Control or designate if alternative arrangements need to be made</td>
<td>Dedicate use of equipment for the patient when possible - If it is not dedicated, clean and disinfect equipment before and after use on another patient with a disinfectant that will kill spores. - When possible use single-use items - Minimize supplies in room as these supplies will be discarded upon discontinuation of precautions.</td>
<td>Cleaning and frequently touched areas twice daily with a disinfectant that will kill spores</td>
<td>Handle laundry as per Routine Practices. - Gloves and gown should be worn and hand hygiene performed</td>
<td>Double bagging not required. Garbage handled as per Routine Practices and in accordance with the Nova Scotia/ district/ hospital waste management protocols</td>
<td>Notify area receiving patient of precautions. - Patient must perform hand hygiene.</td>
<td>Disposable dishes not required. - Trays will be treated as normal and placed on the cart to be brought to kitchen.</td>
</tr>
<tr>
<td><strong>Prehospital Care (e.g. EHS)</strong></td>
<td><strong>Clean hands with soap and water (preferred) or an ABHR if sink not readily available</strong></td>
<td>Worn when in contact with patient or patient environment</td>
<td>As per Routine Practices</td>
<td>Ambulance should not be shared with another patient/resident</td>
<td>Clean and disinfect all equipment between patients.</td>
<td>Conduct a risk assessment following transport of patient and if</td>
<td>Handle laundry as per Routine Practices. - Gloves and gown should be worn and hand hygiene performed</td>
<td>Double bagging</td>
<td>Garbage handled as per Routine Practices and in accordance with the</td>
<td>Notify area receiving patient of precautions.</td>
<td>If applicable, offer patient/resident hand hygiene assistance prior to eating or drinking.</td>
</tr>
</tbody>
</table>
and wash hands at next available sink. If hands are visibly soiled, and sink is unavailable, use pre-moistened hand wipes followed by ABHR.

| patient environment | applicable, perform deep clean as per protocol using a disinfectant that will kill spores. | be worn and hand hygiene performed. | Nova Scotia district/hospital waste management protocols not required. | drinking |
Appendix D: Sample Posters for Putting On and Removing Personal Protective Equipment

Recommended Steps for Putting On Personal Protective Equipment

1. Perform Hand Hygiene

2. Put on Gown
   Tie both neck and waist ties

3. Put on Mask/N95 Respirator
   Place mask over nose and under chin, secure ties, loops or straps
   Mould metal piece to your nose bridge
   For respirators, perform a seal-check
   Mask

4. Put on Protective Eyewear
   Put on eye protection
   Adjust to fit
   Face shield should fit over brow

5. Put on Gloves
   Put on gloves, taking care not to tear or puncture glove
   If a gown is worn, the glove fits over the gown’s cuff

Adapted from: Ontario Ministry of Health and Long-Term Care/Public Health Division/Provincial Infectious Diseases Advisory Committee, Toronto Canada, August 2009 (ISBN: 978-1-4249-9725-1) by Infection Prevention & Control Services, NWK Health Centre, September 2010.
Recommended Steps for Taking Off Personal Protective Equipment

1. Remove Gloves
   - Remove gloves using a glove-to-glove/skin-to-skin technique
   - Grasp outside edge near the wrist and peel away, rolling the glove inside-out
   - Reach under the second glove and peel away, discard immediately

2. Remove Gown
   - Remove gown in a manner that prevents contamination of clothing or skin
   - Starting at the neck ties, the outer, ‘contaminated’, side of the gown is pulled forward and turned inward, rolled off the arms into a bundle, discarded immediately

3. Perform Hand Hygiene

4. Remove Protective Eyewear
   - Remove eye protection by handling ear loops, sides or back only
   - Discard into waste receptacle or into appropriate container to be sent for reprocessing

5. Remove Mask/N95 Respirator
   - Untie bottom tie then top tie, or grasp straps or ear loops, pull forward off the head, bending forward to allow mask/respirator to fall away from the face
   - Discard immediately into waste receptacle
   - Mask
   - N95 Respirator

6. Perform Hand Hygiene

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Adapted from: Ontario Ministry of Health and Long-Term Care/Public Health Division/Provincial Infectious Diseases Advisory Committee; Toronto Canada, August 2009 (ISBN: 978-1-4249-9725-5) by Infection Prevention & Control Services, INW Health Centre, September 2010.
Appendix E: Sample Contact Precautions Signage

STOP

VISITORS: Talk to a staff person before going into this room

CONTACT PRECAUTIONS

- Staff – wear gloves for all activities in the patient’s room or bed space
- Long-sleeved gown required if skin or clothing will contact patient or patient environment
- Transport patient if necessary, contain drainage
- When possible, use dedicated equipment. Shared equipment to be disinfected before use with another patient

Capital Health

http://www.cdha.nshealth.ca
/infection-prevention-and-control

PreA12300.0712
The information in this brochure has been written to help you and your family learn about Clostridium difficile (C. difficile).

What is C. difficile?
C. difficile is one of the many types of bacteria that can be found in the environment and the bowel. C. difficile is the most common cause of infectious diarrhea in hospitals and long-term care homes.

The “good” bacteria in the bowel help keep C. difficile in check. When antibiotics are used to treat infections, they kill off “good” bacteria as well as “bad” bacteria. Without “good” bacteria keeping it in check, C. difficile grows, irritates the bowel and causes diarrhea. Some types of medications can also put you at risk of getting C. difficile. This can happen with medications you take at home or when you are in the hospital.

How is it spread?
When a person has C. difficile, the bacteria in the feces can contaminate surfaces like toilets, handles, bedpans or commode chairs. When touching these items, our hands can become contaminated. If we then touch our mouth without washing/wrapping our hands, we can become infected. Our soiled hands can also spread the bacteria to other surfaces. By always washing/cleaning your hands, you can greatly reduce your chances of picking up any bacteria, not just C. difficile.

Who is at risk of getting C. difficile?
Any patient taking antibiotics is at risk for getting C. difficile. The risk increases for people:
- over 65 years of age
- who have an underlying illness
- having gastrointestinal procedures
- who have been in hospital for a long time
- who have a weakened immune system

What are the symptoms of C. difficile?
Symptoms include:
- watery diarrhea (at least three bowel movements per day for two or more days)
- fever
- loss of appetite
- nausea
- abdominal pain/tenderness

Please note: If you’ve been having diarrhea at home and come to hospital, please let our staff know right away.

How is C. difficile treated?
C. difficile is generally treated with certain antibiotics. There are guidelines for treatment that doctors can follow. Most patients with C. difficile recover fully, but patients with underlying illnesses can become more ill and in some cases, may die.

Why am I on precautions?
All patients who have diarrhea are put on precautions; until tests show they do not have C. difficile. Precautions help limit the spread of C. difficile in patient care areas.

What are these precautions?
- You may be placed in a private room
- ALL health care staff and visitors going into your room MUST wear gowns and gloves to limit the spread of C. difficile
- ALL health care staff and visitors MUST wash/clean their hands with soap and water at a dedicated hand washing sink before and after the leave your room. If no sink is available, alcohol-based hand sanitizer can be used until they get to a dedicated hand washing sink. Staff and visitors SHOULD NOT use the patient’s sink. Patients should ask their health care providers to wash/clean their hands.
- A sign on your door tells staff and visitors what precautions they need to follow.

How long will I be on precautions?
The length of time a patient is on precautions varies from patient to patient. The Infection Prevention and Control team can discuss this with you.

Is it safe for my family to visit?
- Unless otherwise indicated, only immediate family or next of kin can visit and only 2 visitors at a time
- No one with an illness should visit
- No children under the age of 12 can visit
- Visitors must clean their hands before and after they visit
- Visitors must follow precautions

As long as they wash/clean their hands well, before and after visits with you, it’s unlikely that your family will get C. difficile.
AT HOME
What should I do when I go home? Remember, healthy people like your family and friends, who are not taking antibiotics are at very low risk of getting C. difficile.

Hand Hygiene
Wash your hands for at least 15 seconds:
♦ after using the toilet
♦ after touching dirty or contaminated surfaces
♦ before eating or preparing meals

Also remind other people in your home to wash their hands regularly. If your caregivers must handle feces or other body fluids they should wear gloves and wash their hands when they take the gloves off.

Cleaning the house: An all-purpose, bleach based household product/disinfectant should be used. Be sure to follow the instructions on the label and use good friction (rubbing) when cleaning a surface.

Toilets and bathrooms need extra attention. If feces have splashed onto a surface, it must be removed first, then disinfect the surface with a bleach based product/cleaner. If it is possible, use your own bathroom until your diarrhea stops.

Laundry: If clothes are soiled with feces, they should be washed separately after rinsing off the feces. Hot water and soap are helpful to remove the bacteria, and drying clothes in a dryer is also helpful.

Dishes: Regular cleaning of dishes, either in a sink with soap and hot water or in a dishwasher is fine. You shouldn’t share dishes or utensils.

Medicine: It is very important that you take all your medication as prescribed by your doctor, even if you feel better. Do not use any drugs from the drugstore that will stop your diarrhea (e.g. Imodium®). If the diarrhea does not stop, or comes back, contact your doctor.

Other Tips:
• Drink plenty of fluids to help prevent dehydration
• Friends and family should not visit if they are ill.
• Ask your health care providers to wash/clean their hands with soap and water before they see you.

If you have any other questions, please talk to our staff or your family doctor.

Information for Patients and their Families

Clostridium Difficile (C. difficile)

Infection Prevention and Control Department

Revised: August 2012
Appendix G: Information Sheet: *Clostridium difficile* for Healthcare Workers

**The Issue**
*Clostridium difficile*, commonly called *C. difficile*, is a bacterium that causes diarrhea and other serious intestinal conditions. It is the most common cause of infectious diarrhea in hospitalized patients in the industrialized world.

**Background**
*C. difficile* is one of the most common infections found in hospitals and long-term care facilities. *C. difficile* bacteria are found in feces. This microorganism is a spore-forming, Gram-positive, anaerobic bacillus that causes diarrhea and colitis in humans and in a number of animal species. Its spores can survive outside the human body for weeks to months on environmental surfaces and devices, including bedrails, commodes, thermometers, improperly sterilized endoscopes, bathing tubs, etc. People can become infected if they touch items or surfaces that are contaminated with fecal traces, and then touch their mouth.

Healthcare workers can spread the bacteria to other patients or contaminate surfaces through hand contact. The use of antibiotics increases the chances of developing *C. difficile* diarrhea because antibiotics alter the normal levels of good bacteria found in the intestines and colon. When there are fewer good bacteria, *C. difficile* can thrive and produce toxins that can cause an infection. These toxins then cause diarrhea and others symptoms of infection. In hospital and long-term care settings, the combination of a number of people receiving antibiotics and the presence of *C. difficile* can lead to frequent outbreaks.

**Transmission of *C. difficile***
Transmission of *C. difficile* occurs when the microorganism or its spores are ingested orally (fecal-oral route). This may occur because of direct contact, person to person spread on hands, or from the environment. Healthcare-associated transmission has been well documented, and outbreaks have been reported in both hospitals and long-term care facilities.

**Symptoms of *C. difficile* infection**
The symptoms of *C. difficile* infection include:

- watery diarrhea (at least three bowel movements per day for two or more days)
- fever
- loss of appetite
- nausea
- abdominal pain or tenderness
**Diagnosis of C. difficile**

Lab confirmation of a suspected case of *C. difficile* infection consists of a positive result of one of the following tests:

- endoscopy for colonic pseudomembranes
- stool culture for *C. difficile* with toxin production
- stool enzyme immunoassay for either Toxin A or Toxin B
- stool cytotoxicity assay positive for Toxin B

**Health Risks of C. difficile**

Healthy people are not usually vulnerable to *C. difficile*. Seniors and people who have other illnesses or conditions being treated with antibiotics and certain other stomach medications are at the greatest risk of infection.

Most commonly, the infection causes diarrhea, which can lead to serious complications including dehydration and colitis. The spectrum of clinical outcomes can range from asymptomatic colonization of the colon, to the more severe manifestations of *C. difficile* infection, such as pseudomembranous colitis, toxic megacolon, and colonic perforation. In rare cases, it can be fatal.

For people with mild symptoms, no treatment may be needed. The symptoms usually clear up once the patient stops using antibiotics. In severe cases, medication and even surgery may be needed.

**Minimizing Risk**

Hospitals and long-term care facilities appear to be the major reservoirs for *C. difficile*. The microorganism can be cultured from patient/residents with and without diarrhea, from the environment of infected patients/residents, from patient care equipment (e.g. bedpans, bedrails, bedside commodes, wheelchairs) and from the hands of healthcare workers caring for these patients/residents.

The spores from *C. difficile* can survive for weeks and months in the environment. Cleaning and disinfection protocols for *C. difficile* are very important in preventing the spread of infection.

Patients and residents with active diarrhea are much more infectious than those who are asymptomatic. Performing hand hygiene often is your best defense against *C. difficile*. Hand washing with liquid soap and water should be performed at the point-of-care and at a designated staff hand washing sink. If a designated staff hand washing sink is not available at the point-of-care, alcohol-based hand rub (ABHR) should be used and hand hygiene with liquid soap and water should be performed as soon as a staff hand washing sink is available.

Adapted from: Prince Edward Island Department of Health and Wellness (2010). Provincial infection prevention and control *Clostridium difficile* guideline.
### Appendix H: Sample *Clostridium difficile* Infection (CDI) Outbreak Line Listing Form

**Facility Name:** _______________________________

**Notification Date to Public Health (dd/mm/yy):** __________________

**Outbreak Number:** _______________________________

<table>
<thead>
<tr>
<th>Case #</th>
<th>Patient Name</th>
<th>Unique Patient Identifier (dd/mm/yy)</th>
<th>DOB (dd/mm/yy)</th>
<th>Unit/Floor/Room</th>
<th>Date of Admission (dd/mm/yy)</th>
<th>Case Identification</th>
<th>Risk Factors (Example: A &amp; D)</th>
<th>Symptoms &amp; Case Definition</th>
<th>Complications (Y/N)</th>
<th>Stool Specimens/Tissue Sample Status</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>Case Identification</td>
<td>Risk Factors (Example: A &amp; D)</td>
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<td>Complications (Y/N)</td>
<td>Stool Specimens/Tissue Sample Status</td>
<td>Status</td>
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<td></td>
<td>A. Antibiotic Usage</td>
<td>B. Bowel Surgery</td>
<td>C. Chemo/Immunosuppressive Tx</td>
<td>D. Prolonged Hospitalization</td>
<td>E. Increased Age</td>
<td>F. Underlying Illness</td>
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<td>G. Non-surgical gastrointestinal procedures (e.g. frequent enemas or NGs)</td>
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<td>H. Treatment with Proton Pump Inhibitors</td>
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<td></td>
<td>Onset date of symptoms (dd/mm/yy)</td>
<td>Initiation of Contact Precautions (dd/mm/yy)</td>
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<td>Symptoms (Y/N)</td>
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<td></td>
<td></td>
<td>Diarrhea/Bloody Diarrhea</td>
<td>Fever</td>
<td>Abdominal Cramps</td>
<td>Pseudomembranes</td>
<td>Toxic Megacolon</td>
<td>Hospitalization</td>
</tr>
</tbody>
</table>