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Guide for the Management of Outbreaks of *Clostridium difficile*–Associated Diarrhea (CDAD) in Hospitals

COMITÉ SUR LES INFECTIONS NOSOCOMIALES DU QUÉBEC

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Summary

General Checklist for CDAD Outbreak Management	3
Procedures and Cleaning Checklist	11
Sample Information Document for Staff Members	13
Audit Checklist for Assessing Compliance with Additional Precautions	14

Introduction

Clostridium difficile is the leading cause of healthcare-associated infectious diarrhea in adults, affecting 0.3–2% of hospitalized patients[1, 2]. The epidemiology, pathogenesis, clinical manifestations, risk factors, diagnosis and management of cases of *Clostridium difficile*–associated diarrhea (CDAD) were the subject of a previous publication[3]. The incidence of CDAD varies widely across and within institutions.

In 2003, a marked increase was observed in the incidence, morbidity and mortality of CDAD in Québec[4]. Since 2004, considerable efforts have been made to control this infection. The mobilization of infection prevention and control professionals and the allocation of additional resources have made a difference, with CDAD rates falling to their lowest level in 2009-2010. Despite this significant improvement, CDAD outbreaks occur in most institutions from time to time.

In 2005, the Comité sur les infections nosocomiales du Québec (CINQ) [Québec healthcare-associated infections committee] wrote a guide to improve the management of CDAD patients in acute care settings and thus contain the spread of this bacterium in the absence of an outbreak[3]. Provincial guidelines concerning housekeeping measures for *C. difficile* were also issued in 2008[5]. In order to maintain quality of care and a safe environment for patients, staff and visitors, the CINQ took on the task of writing a document to improve the management of CDAD outbreaks in acute care hospitals. The preventive measures set out in this document are based on published evidence and on expert opinion. The tools presented will help optimize CDAD outbreak management to limit the spread of this pathogen.

Québec

It is intended for infection prevention and control specialists, physicians, epidemiologists, nurses, administrators and anyone else responsible for managing this type of outbreak.

Objectives

This guide is intended to assist acute care institutions in Québec to:

- Promptly identify outbreaks of nosocomial *Clostridium difficile*–associated diarrhea;
- Implement control measures to contain the spread of CDAD cases;
- Properly inform all stakeholders and managers involved in managing CDAD outbreaks so that they have a clear understanding of their roles;
- Promote the dissemination of information about the outbreak to facilitate resource mobilization.

Definition of a CDAD outbreak

There is no clear consensus on the criteria for defining a CDAD outbreak. In the guide published in 2005, *Prévention et contrôle de la diarrhée nosocomiale associée au* Clostridium difficile *au Québec* [Prevention and control of nosocomial Clostridium difficile–associated diarrhea in Québec], an outbreak is defined as an unusual increase in the number of CDAD cases in a given time period in a hospital centre or particular unit without, however, specifying the number of cases[3].

Each institution is responsible for establishing the existence of an outbreak and making the decision to implement an action plan to control it. CDAD outbreaks are usually detected by those responsible for the infection prevention and control program and the surveillance of CDAD in institutions.

The following definitions can be used to draft an institutional policy:

- Minor outbreak: Two (2) nosocomial CDAD cases with an epidemiological link (e.g., on the same unit) within 14 days;
- Major outbreak: Three (3) nosocomial CDAD cases with an epidemiological link (e.g., on the same unit) within 14 days, or occurrence of death or of another major complication in two (2) nosocomial CDAD cases within 14 days.

Steps involved in the management of a CDAD outbreak

A concerted effort on the part of multiple stakeholders is essential for controlling a CDAD outbreak. Every institution's situation is different and a given recommendation may not be universally applicable. The five main steps involved in outbreak management are as follows:

Step 1: Assess the situation

- Make a list of all confirmed or suspected cases of nosocomial CDAD. Check if there has been an increase in complication or mortality rates. Use this information to quickly prepare an overview of the situation.
- Make sure the outbreak is caused by *C. difficile*. Some viruses (e.g., noroviruses, rotaviruses) can cause outbreaks of gastroenteritis in hospitals. A viral gastroenteritis outbreak must be suspected if one or more of the following factors are present:
  - Nausea and vomiting in many affected individuals (usually absent in CDAD);
  - Sudden onset and occurrence of many cases simultaneously in a clearly defined geographical area;
  - Short duration of symptoms with improvement within 24–48 h;
  - No antibiotic use (or recent antibiotic use) in many cases.
  - Presence of many gastroenteritis cases in the community, including caregivers with gastroenteritis;
  - Negative laboratory test for *C. difficile*.[1]

[1] Some sensitive diagnostic tests are able to detect asymptomatic carriers, while other diagnostic tests are not very sensitive and can be negative in 40% of cases; clinical judgement is important when interpreting these results.

Step 2: Determine if a CDAD outbreak exists

Determine if an outbreak exists based on the available epidemiological data.

Step 3: Create a crisis management team

Once the outbreak has been confirmed, the IPC team should assess the need to rapidly create a crisis management team for the CDAD outbreak and determine who will be part of the unit. The crisis management team will coordinate the outbreak investigation and control. A person who will be responsible for logistics (e.g., meeting planning and administrative support) must be designated. Other documents may be consulted to obtain further information on the creation and operation of this type of management team [6].

Step 4: Implement appropriate prevention and control measures

Multiple measures must be implemented simultaneously. They can be classified into eleven broad categories. The items in each category are described in detail in the following pages.

1. Hand hygiene.
2. Assessment and reinforcement of additional precautions.
3. Environmental cleaning of rooms with CDAD patients.
4. Environmental cleaning of rooms without CDAD patients and common areas.
5. Human waste management.
6. Source control.
7. Diagnosis.
8. Appropriate drug use.
9. Management of visitors.
10. Communication and surveillance.
11. Logistical aspects of CDAD outbreak management.

Step 5: Declare the end of the outbreak and write a report

There are no universally accepted criteria for declaring the end of a CDAD outbreak. A CDAD outbreak is usually considered to be over when nosocomial CDAD rates return to “appropriate” levels for the affected facility, department or unit.

Once the outbreak is over, it is important to write a report for staff and physicians as well as the departments and agencies concerned. The purpose of the report is to review the course and management of the outbreak (e.g., date of onset, number of cases, measures implemented, date the outbreak was declared over) and make recommendations to prevent outbreaks in the future.

General checklist for CDAD outbreak management

Levels of CDAD prevention and control measures

The recommendations in this document are divided into three categories:

- **Level 1 (basic measures):** includes all the general measures that ALL facilities must apply during any outbreak;
- **Level 2 (intensified measures):** includes all the measures that may be taken when the incidence of CDAD remains unacceptable despite the implementation and observance of Group 1 measures. This level includes measures that can be implemented temporarily to control a CDAD outbreak;
- **Level 3 (exceptional measures):** includes measures that can be introduced exceptionally during a refractory outbreak.

Preventive measures		Description	Level of intensity of measure	References and related documents
1. Hand hygiene				
	1.1	Promote hand hygiene as part of routine practices.	1	Refs [3, 7, 8]
	1.2	Ensure hands are washed with soap (regular or antiseptic) after glove removal. If sinks are not available, recommend the use of an alcohol-based hand rub (ABHR) followed by handwashing as soon as possible.	1	Ref. [3] Appendix 4
	1.3	Ensure there is an adequate number of easily accessible staff-dedicated sinks at the door of the room.	1	Ref. [3]
	1.4	Clearly identify the sink that is nearest to the room of a patient with CDAD.	1	Ref. [7]
	1.5	Ensure hand hygiene products (ABHR, soap, paper towels) are continually restocked.	1	
	1.6	Perform hand hygiene audits (hand rubbing and handwashing) on affected units.	2	Ref. [7]
	1.7	Involve healthcare workers in audits.	3	
	1.8	Instruct patients to wash their hands after using the toilet.	2	Ref. [3]
2. Additional precautions				
Signage	2.1	Post signs to inform staff and visitors about recommended precautions.	1	Ref. [3]
Empirical isolation	2.2	Ensure patients with diarrhea are placed on additional “CDAD” precautions as soon as symptoms appear.	1	Refs [3, 8]
Accomodation and cohorting	2.3	Place patients diagnosed with CDAD in single rooms (preferred accomodation) with dedicated toilet facilities OR a dedicated commode chair OR disposable bedpans.	1	Refs [3, 8]
	2.4.	Do not place a patient with CDAD in the same room as a patient who does not have the infection.	1	Ref. [8]
	2.5	Consider cohorting patients with CDAD if single rooms are not available.	1	Ref. [3]
	2.6	Cohort patients with CDAD geographically (dedicated unit or at one end of a unit). The cohort must be separated by a physical barrier (partition or door) and near a sink.	2	
Personal protective equipment (PPE)	2.7	Ensure that adequate supplies of gowns, gloves, waste receptacles and laundry bags are accessible at all times at the entrance to the rooms of patients placed on additional precautions for CDAD.	1	Ref. [3] Appendix 2
Gloves	2.8	Ensure gloves are put on BEFORE entering the room of a patient with CDAD.	1	Refs [3, 8] Appendix 4
	2.9	Ensure gloves are removed correctly when exiting the patient zone and that hands are washed after glove removal.	1	Refs [3, 8] Appendix 4
	2.10	Ensure gloves are not worn if there are no indications for doing so.	1	Ref. [7]
Long-sleeved gowns	2.11	Ensure a long-sleeved gown is always put on before entering the room of a patient with CDAD.	1	Ref. [3] Appendix 4
	2.12	Ensure hooks are provided so that white coats can be taken off before a long-sleeved gown is put on.	1	Ref. [3]
Removal of personal protective equipment (PPE)	2.13	Ensure the safe removal of PPE.	3	Ref. [3] Information poster in ref. [3]

Preventive measures		Description	Level of intensity of measure	References and related documents
Dedicated equipment	2.14	Ensure that dedicated equipment is available in the patient's room or at the point of care (e.g., stethoscope, thermometer, sphygmomanometer, commode chair).	1	Refs [3, 8] Appendix 2
	2.15	Only take essential equipment into the room.	1	Ref. [5]
	2.16	Preferably use disposable and single-use equipment (thermometers, blood pressure cuffs, kidney dishes, etc.).	1	Ref. [3]
	2.17	Do not take the patient's chart into the room.	1	Refs [3, 9]
Duration of additional precautions	2.18	**Precautions to continue for at least 72 h** after a return to formed stools.	1	Refs [3, 8]
	2.19	Consider extending the duration of additional precautions to **up to 10 days** following resolution of symptoms depending on the epidemiological situation.	2	Refs [3, 8]
	2.20	Consider extending isolation **until discharge** in case of a refractory outbreak, or on an individual basis for patients with a high risk of recurrence.	3	
	2.21	Additional precautions must be maintained and PPE worn until the room has been properly disinfected.	1	Ref. [8]
Recurrence of CDAD	2.22	Monitor the recurrence of symptoms after the end of treatment.	1	
Audit of additional precautions	2.23	Audit compliance with additional precautions on affected units (posters, gloves, gowns, handwashing, disinfection of equipment on exiting the room, etc.).	2	Appendix 4
3. Environmental cleaning – rooms with CDAD patients				
Cleaning of soiled items or surfaces	3.1	Clean any visibly soiled items or surfaces and wipe up body fluids as quickly as possible prior to disinfection.	1	Refs [3, 5]
Type of disinfectant	3.2	Choose a chlorine-based product with an adequate concentration (5 000 ppm). If a lower concentration is used (e.g., 1 600 ppm), it is necessary to respect the recommended contact time (generally 20 minutes).	1	Refs [3, 5] Table 4 in Ref. [3]
Contact time	3.3	Respect the dilutions and contact time recommended by the manufacturer to destroy bacterial spores. If a lower concentration is used, review the literature to determine the required contact time.	1	Refs [3, 5]
Frequency of disinfection	3.4	Clean the environments of patients with CDAD at least once a day (daily). Use a routine one-step germicidal detergent on all surfaces.	1	
	3.5	Consider increasing the frequency of daily environmental cleaning for patients with CDAD to **twice daily or three times daily at the most.**	2	
Number of cleaning steps	3.6	Clean high-touch surfaces in the room and washroom daily using a **1-step** sporicidal product with combined cleaning and disinfecting properties (a chlorine product, a commercially available chlorine product combined with a detergent or a commercially available hydrogen peroxide product combined with detergent). It must be a recognized and proven product. Homemade mixtures must not be used. It is important to respect the recommended concentrations and contact time. The product must have a Health Canada DIN number.	1	Ref. [5] Appendix 2 in Ref. [5] Ref. [10]
Disinfection procedure	3.7	Ensure that the disinfection protocol uses a systematic approach, with a list of clearly defined tasks, so that all contaminated surfaces are cleaned.	1	Ref. [3] Appendix 4

Preventive measures		Description	Level of intensity of measure	References and related documents
	3.8	Start the procedure in the room and finish in the washroom.	1	Ref. [5]
	3.9	During 3-step disinfection, change gloves after each step (cleaning, rinsing, disinfection).	1	Ref. [5]
	3.10	Preferably use microfibre cloths. Never dip the cloth in the solution more than once.	1	
	3.11	Check chairs, pillows and mattresses to ensure they are intact. Follow the institution's procedure for the repair or replacement of damaged material or equipment.	1	
	3.12	Ensure that surfaces are free of any sticky residue (adhesives, adhesive bandages, plasters) that could prevent proper decontamination.	1	
	3.13	Avoid cross-contamination of patient care areas (e.g., by using different-coloured cloths for the room and washroom).	1	
	3.14	Discard water that was used for disinfection immediately after use in an appropriate room; put the cloths and mop in a plastic bag and send them to the laundry.	1	Ref. [3] Table 5 in Ref. [3]
	3.15	Perform hand hygiene with soap and water and change gloves between rooms.	1	Ref. [5]
Disinfection of reusable mobile equipment	3.16	Make sure reusable material and equipment is properly disinfected with a chlorine solution on exiting the room.	1	Refs [3, 5, 8] Appendix 4 Procedure in Appendix 2 in Ref. [5]
	3.17	Consider using chlorine wipes to disinfect small devices; ensure that the proper amounts of product and contact time are respected.	2	Ref. [11]
	3.18	Preferably disinfect equipment inside the room before taking it out. If equipment must be cleaned outside the room, make sure it is properly identified for sporicidal disinfection and transported safely.		
Cleaning on patient discharge or when additional precautions are discontinued	3.19	Perform **three-step** terminal sporicidal disinfection using a chlorine product on all accessible room surfaces (furniture, floor, patient's bed, etc.). A hydrogen peroxide product with proven sporicidal activity may be used if chlorine is contraindicated. If a "detergent + sporocide" combination product or hydrogen peroxide product is used, a 2-step procedure is acceptable (i.e., the rinsing step can be skipped).	1	Refs [3, 5] Table 5 in Ref. [3] Appendix 2 in Ref. [5]
	3.20	Change privacy curtains.	1	Refs [3, 5] Table 5 in Ref. [3] Appendix 2 in Ref. [5]
	3.21	Change linen.	1	
	3.22	Discard any material or equipment that was taken into the patient's room and that cannot be disinfected.	1	Refs [3, 5] Table 5 in Ref. [3] Appendix 2 in Ref. [5]
	3.23	Ensure that disinfection has been completed before removing the isolation precaution sign	1	

Preventive measures		Description	Level of intensity of measure	References and related documents
Allocation of tasks and grey zones	3.24	Ensure that the individuals responsible for the cleaning and disinfection of all surfaces and equipment are clearly identified for every work shift.	1	Ref. [5]
	3.25	Ensure that internal procedures clearly identify the people responsible for cleaning and disinfection, determine the frequency of cleaning and disinfection and the products to be used.	1	
Human resources	3.26	Ensure there are adequate numbers of housekeeping staff and orderlies to meet needs, 7 days a week, 24 hours a day.	1	Ref. [5]
	3.27	Ensure that a person trained in the disinfection of rooms with patients placed on additional precautions is available on site **at all times**.	2	Ref. [5]
	3.28	Allow sufficient time for cleaning and disinfection procedures to be carried out fully and properly.	1	Ref. [5]
	3.29	Consider establishing a team dedicated solely to the cleaning and disinfection of rooms with CDAD patients.	3	
Staff training	3.30	Ensure that housekeeping staff are trained in the specific cleaning procedures for surfaces in CDAD cases.	1	Ref. [3]
	3.31	Ensure that orderlies and nurses aides are given basic training on the disinfection of patient care equipment.	1	
Audits and quality assessment	3.32	Adopt a program to document activities (log) performed by housekeeping staff and orderlies to ensure that interventions can be tracked.	1	Ref. [5]
	3.33	Ensure that disinfection protocols and procedures are up to date.	1	Ref. [3]
	3.34	Adopt a housekeeping quality control program that complies with the Ministère de la Santé et des Services sociaux's program (MSSS) [Ministry of health and social services], including visual inspections, fluorescent markers or ATP testing.	1	Ref. [6]
	3.35	Consider using fluorescent markers periodically on items considered essential.	2	
	3.36	Label as "disinfected" equipment that has been properly disinfected.	3	
Checklist	3.37	Consider using a checklist to ensure that all surfaces have been treated.	2	Ref. [8]
4. Environmental cleaning – rooms without CDAD patients and common areas				
Cleaning frequency	4.1	Clean high-touch surfaces and common areas once a day.	1	
	4.2	Consider increasing the cleaning frequency of high-touch surfaces and common areas to twice daily.	2	
Type of cleaning product	4.3	Consider the universal use of a sporicidal product during an outbreak for rooms of patients without CDAD.	2	
Soiled utilities	4.4	Determine the cleaning and disinfection procedures (products and frequency) for dirty utilities based on the contamination risk.	1	Ref. [5]
	4.5	Provide separate areas for clean and soiled material to prevent cross-contamination.	1	
Cleaning technique	4.6	Preferably use microfibre cloths.	1	Ref. [5]
	4.7	Ensure that cloths are soaked with sufficient disinfectant (e.g., by dipping them in the bucket). Never dip the cloth in the solution more than once.	1	Ref. [5]
	4.8	Consider using a "sporicidal" disinfectant throughout the unit and common areas and on patient care equipment on a systematic basis.	2	Ref. [5]
	4.9	Change all of the unit's curtains.	2	

Preventive measures		Description	Level of intensity of measure	References and related documents
5. Human waste management				
General	5.1	Human wastes should be handled in such a way as to limit the spread of *C. difficile*.	1	
	5.2	Ensure the number and appearance of stools are properly documented.	1	
	5.3	Ensure a dedicated toilet is available for each patient with CDAD (avoid sharing). If a dedicated toilet is not available, use a dedicated commode chair.	1	
Bedpans and bedpan liners	5.4	Preferably use single-use bedpans or bedpan liners rather than reusable bedpans.	1	Refs [3, 9, 11]
	5.5	To prevent splashes, do not empty excreta.	1	
	5.6	Clean and disinfect reusable bedpans, bedpan liner and disposable bedpan racks and commode chairs at least once a day for the same patient (e.g., premoistened wipe).	1	Ref. [5]
	5.7	Do not use arm-mounted spray nozzles to clean reusable bedpans.	1	Ref. [5]
	5.8	Disinfect bedpans using a chlorine solution (freshly prepared 1:10 bleach [5 000 ppm]) after cleaning with a detergent before reusing it for another patient.	1	Ref. [3]
Macerators and bedpan washers	5.9	Ensure macerator and bedpan washer surfaces are cleaned daily with a sporicidal solution.	1	
Ostomy bags	5.10	Do not reuse ostomy bags.	1	
6. Source control				
Skin decontamination	6.1.	Reinforce daily hygiene for patients with CDAD.	1	
	6.2	Consider a daily shower or bath with a chlorhexidine-containing solution.	3	Ref. [12]
	6.3	Change the bed linens of patients with CDAD daily.	1	
Transport and movement	6.4	Limit the movement of symptomatic patients outside of their rooms.	1	
	6.5	Ensure that transport staff use a safe transportation technique that does not contaminate the environment.	1	Ref. [3]
	6.6	Disinfect all high-touch surfaces on the stretcher or wheelchair (including surfaces covered by linen) in a single step procedure using a chlorine-based product or a hydrogen peroxide product with sporicidal activity.	1	
	6.7	Put patient records in a transport bag to prevent contamination.	1	
7. Diagnosis				
Diagnostic tests	7.1	Ensure that the laboratory test is reliable and is performed quickly.	1	Refs [3, 8] Appendix 1 in Ref. [3]
	7.2	Ensure that laboratory tests are available at all times, including weekends and holidays.	1	Ref. [3, 8]
	7.3	Ensure that tests can be performed without the need of a medical prescription.	1	Ref. [8]
	7.4	Do not perform diagnostic tests on formed stools.	1	Refs [3, 8]
	7.5	Ensure the attending team (and the IPC team) is immediately informed of any positive results.	1	Ref. [8]
Strain typing	7.6	In the event of unusual mortality and morbidity: (1) consider testing and typing *C. difficile* strains; (2) review CDAD-attributable deaths.	3	

Preventive measures		Description	Level of intensity of measure	References and related documents
8. Appropriate use of medication				
Antibiotics	8.1	Ensure there is an ongoing antibiotic stewardship program that is both quantitative (consumption assessment) and qualitative (assessment of the prescribing rationale). At a minimum, monitor clindamycin, fluoroquinolones and 2nd- and 3rd-generation cephalosporins.	1	Refs [3, 8] Appendices 3 and 4 in Ref. [3] Appendix 4.7 in Ref. [8]
	8.2	Allocate sufficient professional resources to antibiotic stewardship (pharmacists and physicians).	1	
	8.3	Increase monitoring of appropriate antibiotic use on outbreak units.	2	
PPIs	8.4	Avoid the inappropriate use of proton pump inhibitors. Use them only for recognized indications.	1	Ref. [3]
Treatment	8.5	At a local level, ensure that the type and dosage of the antibiotic used to treat confirmed or suspected CDAD cases are based on clinical severity criteria.	2	
9. Visitors				
	9.1	Ensure that visitors are informed of the risk of transmission and that they comply with the healthcare staff's indications.	1	Refs [3, 8] Information document in Ref. [3]
	9.2	Ensure that visitors wash their hands when they leave the room, even if they wore gloves.	1	Ref. [3]
10. Communication and surveillance				
Communication	10.1	Notify the manager of the affected sector and the healthcare staff involved.	1	
Number of infection prevention and control (IPC) professionals	10.2	Ensure there are adequate numbers of trained infection prevention and control professionals.	1	Ref. [3]
	10.3	Consider adding human resources during an outbreak to implement additional precautions, train employees and perform audits and epidemiological surveillance.	2	Ref. [3]
	10.4	Ensure there is a trained infection prevention and control physician on site.	1	Ref. [3]
	10.5	Ensure that only symptomatic patients (diarrhea, megacolon, etc.) are identified as nosocomial CDAD cases in the surveillance program.	1	Ref. [3]
	10.6	Disseminate surveillance results to the partners involved, including the calculation and report of infection incidence rates.	1	Ref. [3]
Staff training	10.7	Train healthcare staff to recognize patients with CDAD earlier during an outbreak and to comply with the prescribed prevention measures. Different training methods may be necessary (email, formal or informal meetings, etc.).	1	Ref. [3] "Information au personnel" [Staff information" sheet] in the appendix to Ref. [3]
	10.8	plan basic training and continuing training for all regular and support staff.	1	Ref. [3]
	10.9	Plan audits or activities to update or refresh healthcare and housekeeping staff's (regular, temporary and support) knowledge during a major outbreak.	1	

Preventive measures		Description	Level of intensity of measure	References and related documents
11. Logistical aspects of CDAD outbreak management				
Outbreak management unit	11.1	Create an outbreak management team and maintain it until the outbreak is over.	1	Ref. [3]
	11.2	Ensure that the roles and responsibilities of each team member are clearly defined.	1	Ref. [8]
	11.3	Schedule regular meetings for the outbreak management team.	1	Ref. [8]
	11.4	Develop an organizational action plan and ensure follow-up.	1	Ref. [8]
Addition of healthcare staff	11.5	Ensure there are adequate numbers of healthcare staff (nurses, orderlies, housekeeping staff, etc.) to ensure safe care despite the outbreak and the rigorous application of the additional measures in place (24/7) during the outbreak.	1	
Communication	11.6	Notify the public health authorities about the outbreak situation and its main characteristics.	1	Ref. [8]
End of the outbreak	11.7	Prepare and distribute an outbreak report, including lessons learned and recommendations to prevent future outbreaks.	1	Ref. [8]

List of measures for which there is no consensus regarding their application for controlling a CDAD outbreak

- Use of dedicated healthcare staff for patients with CDAD.
- Use of chlorine solutions one day a week to prevent CDAD outbreaks.
- Management of material or equipment that must be taken into the patient's room but that cannot be disinfected or disposed of (e.g., vital signs record, medication profile) and that is required to ensure safe care.
- Screening and isolation of asymptomatic *C. difficile* carriers.
- Reduction of the environmental spore load during hospitalization if the patient's stay is extended (e.g., 3-step disinfection including the washroom and floors and simultaneous change of linen and curtains).
- Use of new terminal disinfection technologies (e.g., hydrogen peroxide vapour, water vapour, ultraviolet radiation).

List of measures that are not usually recommended for controlling a CDAD outbreak

- Closure of the affected unit (no admissions).
- Visitor restrictions.
- Screening once the treatment is over to assess the possibility of discontinuing isolation.
- Stricter dress code (lab coats, uniforms worn outside the institution).
- Closure of doors to patients' rooms.
- Environmental cultures[3].

Procedures and cleaning checklist

Checklist – CDAD management					
Procedures	**Yes**	**No**	**N/A**	**Person responsible**	**Comments**
Is the additional precautions sign visible at the entrance to the room?	☐	☐	☐		
Is the personal protective equipment easily accessible at the entrance to the room?	☐	☐	☐		
Is the soiled linen receptacle placed near the patient's bed?	☐	☐	☐		
Is the commode chair in the patient's environment if the patient does not have dedicated toileting facilities?	☐	☐	☐		
Procedures	**Yes**	**No**	**N/A**	**Person responsible**	**Comments**
Are gloves always changed before switching from a contaminated action to a clean action?	☐	☐	☐		
Is the following equipment, which is required by the patient, dedicated?					
Patient lift	☐	☐	☐		
Thermometer	☐	☐	☐		
Blood pressure cuff	☐	☐	☐		
Glucometer	☐	☐	☐		
Stethoscopes	☐	☐	☐		
Other (indicate here)	☐	☐	☐		
Is the equipment always disinfected in accordance with standards when it is taken out of the room?	☐	☐	☐		
Are additional precautions always applied and complied with during patient transport?	☐	☐	☐		
After patient transport, is the equipment always disinfected?					
Wheelchair	☐	☐	☐		
Stretcher	☐	☐	☐		
Plastic sleeve for the patient's record	☐	☐	☐		
Other (indicate here)	☐	☐	☐		
Cleaning of equipment during hospitalization	**Yes**	**No**	**N/A**	**Person responsible**	**Comments**
Is the fabric of the patient lift cleaned before use by another patient?	☐	☐	☐		
Are small devices properly cleaned before use by another patient, including:					
High toilet seat	☐	☐	☐		
Wheelchair	☐	☐	☐		
Monitor	☐	☐	☐		
IV pole	☐	☐	☐		
Stethoscope	☐	☐	☐		
Sphygmomanometer	☐	☐	☐		
Pulse oximeter	☐	☐	☐		
Bladder scanner	☐	☐	☐		
Pump	☐	☐	☐		
Mini infpatient	☐	☐	☐		
Other (indicate)	☐	☐	☐		

Checklist – CDAD management					
Cleaning of surfaces	**Yes**	**No**	**N/A**	**Person responsible**	**Comments**
Are clean cloths and mops and freshly prepared disinfectant solutions used to clean the room?	☐	☐	☐		
Is the chlorine disinfectant solution prepared at the right concentration?	☐	☐	☐		
Cleaning of surfaces	**Yes**	**No**	**N/A**	**Person responsible**	**Comments**
Are cloths and mops sent to the laundry or disposed of after use?	☐	☐	☐		
Are the following high-touch surfaces cleaned and is the appropriate contact time respected?					
Mattress	☐	☐	☐		
Pillows	☐	☐	☐		
Blood pressure cuff	☐	☐	☐		
Bedrails and bed controls	☐	☐	☐		
Call bell	☐	☐	☐		
Emergency pull cord in the bathroom	☐	☐	☐		
Oxygen regulator	☐	☐	☐		
Biohazard container	☐	☐	☐		
Alcohol-based hand rub dispenser	☐	☐	☐		
Bedside table	☐	☐	☐		
Extra chairs	☐	☐	☐		
Stool	☐	☐	☐		
Interior of drawers	☐	☐	☐		
Clothes locker handle	☐	☐	☐		
Cleaning of surfaces	**Yes**	**No**	**N/A**	**Person responsible**	**Comments**
Television and television stand	☐	☐	☐		
Television control	☐	☐	☐		
Door handles	☐	☐	☐		
Light switches	☐	☐	☐		
Telephone (handset and cord)	☐	☐	☐		
Other (indicate)	☐	☐	☐		
Cleaning of surfaces on discharge or discontinuation of additional precautions	**Yes**	**No**	**N/A**	**Person responsible**	**Comments**
Are sheets always removed prior to disinfection?	☐	☐	☐		
Are the following items disposed of prior to disinfection of the room:					
Bar soap	☐	☐	☐		
Toilet paper	☐	☐	☐		
Box of gloves (in the patient's immediate environment)	☐	☐	☐		
Disposable patient care equipment	☐	☐	☐		
Are curtains taken down and cleaned?	☐	☐	☐		
Are the following used and soiled items always changed on patient discharge?					
Suction containers	☐	☐	☐		
Other (indicate)	☐	☐	☐		
Is the bathroom properly disinfected?	☐	☐	☐		

Sample information document for staff members

To all staff members

Clostridium difficile–associated diarrhea outbreak

We have a high number of patients with *C. difficile*–associated diarrhea (CDAD) in some units of the hospital. All staff members are requested to be particularly vigilant with respect to hand hygiene and the disinfection of medical equipment after use.

All staff members are responsible for becoming familiar with CDAD control policies and acting promptly if a patient develops diarrhea.

Please notify IPC of any new cases. The situation will be reassessed daily and you will be kept informed of any developments.

Information for health care workers – _Clostridium difficile_–associated diarrhea

Clostridium difficile is a bacterium that causes diarrhea in hospital. The illness most commonly affects patients who are being treated with or have recently been treated with antibiotics.

Clostridium difficile is transmitted from patient to patient by caregivers' hands or contaminated equipment. The infection can be treated with antibiotics. However, CDAD can lead to death in some cases.

Criteria for suspecting a case of CDAD

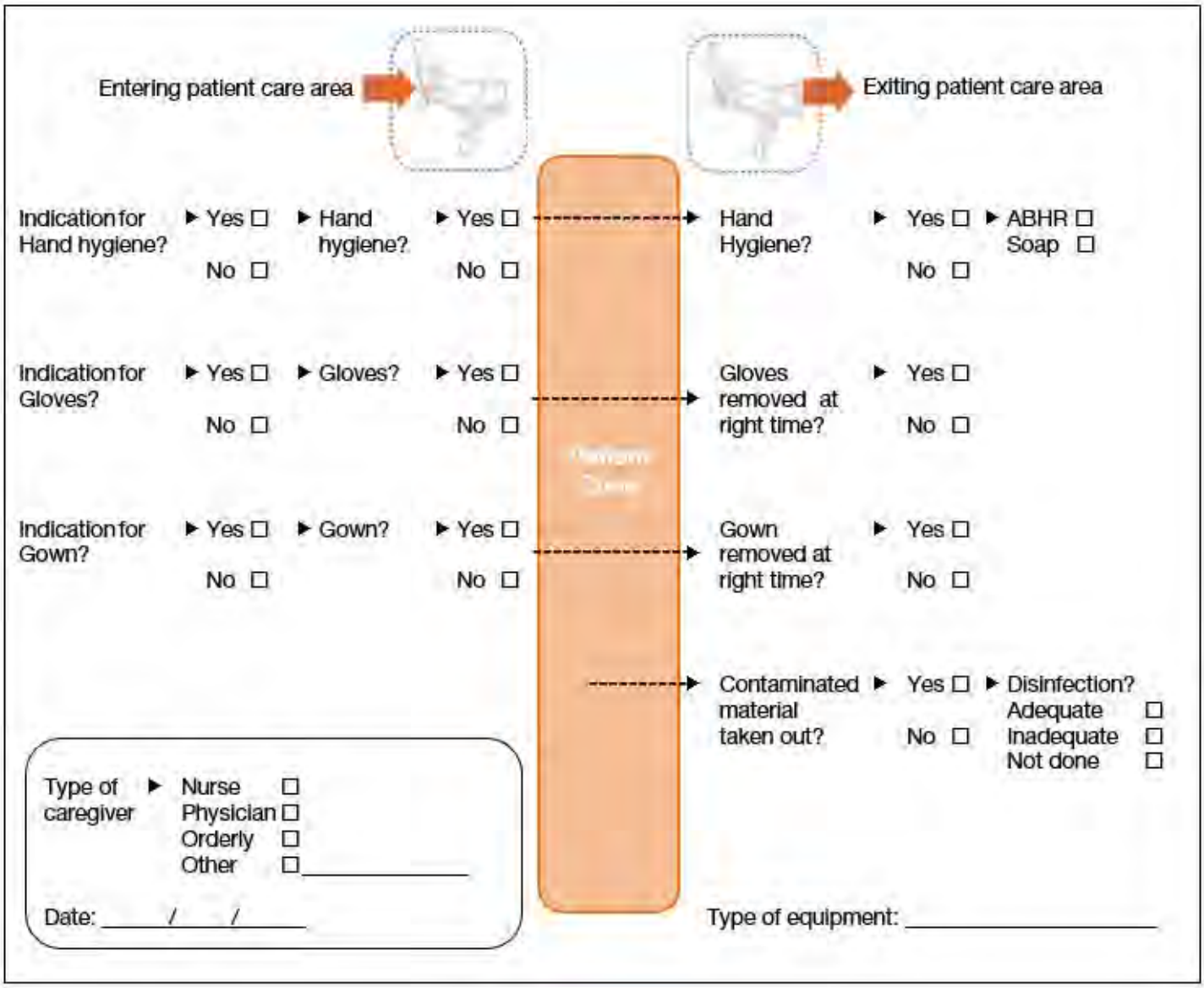
- Patient has more than 2 unformed (or watery) stools in less than 24 hours.
- Usually without any vomiting.

What you can do to control the outbreak

You can help control the outbreak as follows and thus minimize the spread of *C. difficile*:

- Wash your hands BEFORE and AFTER any contact with a patient or with an item near a patient:
  - Use an alcohol-based hand rub if the patient is not on "contact" isolation precautions;
  - If the patient is on "contact" isolation precautions for suspected *C. difficile infection*, you must wash your hands with soap and water after contact with the patient or his/her immediate environment (even if you wore gloves);
- Put information signs up at the entrance to affected patients' rooms;
- Follow the instructions for measures to be taken before contact with patients:
  - Wear gloves and a gown for any direct contact with a patient or his/her environment;
  - Disinfect patient care equipment after use.

Audit checklist for assessing compliance with additional precautions



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Guide for the Management of Outbreaks of *Clostridium difficile*–Associated Diarrhea (CDAD) in Hospitals

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