

Environmental Services Management of C. difficile Spores and other Multi-Drug Resistant Organisms Best Practice

Standard, consistent cleaning and disinfecting practices are important in preventative approaches to managing patients with C. difficile spores (Multi-Drug Resistant Organisms (MDROs)). Providing cleaning and disinfecting assists in preventing cross-transmission of resistant microorganisms to patient, staff or visitors and to other surfaces that may come in contact with patients, staff or visitors. Training and education of Environmental Services staff on the management of C. difficile spores (MDRO) cross-transmission is critical to reducing the possibility of further C. difficile spore transmissions. Remember the basic rules of breaking the chain of infection and its application to C. difficile spores (MDRO) management.

C. difficile spores have been recovered from bed rails, telephones, call lights, light switches, flush handles, faucet handles, doorknobs, chairs, wheelchairs, over-the-bed tables and computer keyboards. Any place that a patient, staff or visitor touches can be contaminated with C. difficile spores and transported to all of the above and more. Hand washing is one of the major processes in controlling C. difficile spores (MDROs). The next major step is cleaning and disinfecting high touch areas throughout the facility. Cleaning and disinfecting these areas only once per 24-hours is no longer acceptable in managing the transmission of C. difficile spores within a healthcare facility.

Frequent application of disinfectant to high contact surface areas is extremely important. It does no good to have the chemical in the bottle and not on the surfaces of the facility. The biggest contribution that environmental services staff can provide in the management of C. difficile spores (MDROs) is the frequency of cleaning and disinfecting of high contact surface areas.

Disinfectants

Hospital-grade disinfectants approved by the Environmental Protection Agency (EPA) are recommended. Few commercial products meet these requirements for killing C. difficile spores. The following is an example of the proper documentation and chemical efficacy required for MDRO management for the Environmental Services Department.

EPA-registered, hospital-grade disinfectant cleaner:

- Kills the C. difficile spores with a 99.9999 percent log reduction
- Kills HIV-1, MRSA, VRE, Herpes Simplex I and II and other ESKAPE pathogens.
- Rinse-free
- Can be dispensed into buckets
- Can be used with course sprayer or pour top bottles.

What is the difference between Vegetative state and C. difficile spores?

Before disinfecting the surface, it's important to have some insight into what is being cleaned and disinfected. One of the most common questions asked is, "What is the difference between C. difficile spores and vegetative state?"

This question was answered during a presentation at the annual scientific meeting of the Society of Healthcare Epidemiology of America (SHEA) in April 2006. The vegetative state is the active growth phase of the organism. A spore is a thick-walled resting cell produced by the organism to protect itself from unfavorable environmental conditions. When C. difficile in the vegetative state is challenged, but not killed, the bacterium forms a spore. C. difficile vegetative cells can survive up to 24 hours and spores up to 5 months.

As stated in the SHEA position paper, C. difficile is present in feces and the major reservoirs of C. difficile infected patients (both symptomatic and asymptomatic), and items or surfaces contaminated with feces. C. difficile spores are transferred to patients primarily via the hands of healthcare personnel who have direct contact with infected patients or who have touched a contaminated surface or item. Documented cases of Clostridium Difficile Associated Disease (CDAD) have been linked to a contaminated commode chair, a nursery baby bath and contaminated electronic rectal thermometer handles.

What environmental disinfectants are effective against C. difficile?

Few studies have examined the use of chemical disinfectants for inactivation and/or removal of C. difficile spores. There are few well-controlled studies investigating cleaning and disinfection methods. Quaternary ammonium compounds and phenols are not effective in killing spores and are only effective against C. difficile in the vegetative state. Since some strains of C. difficile may display increased levels of spore production when exposed to non-based Hydrogen Peroxide and Peroxyacetic cleaning agents and spores are more resistant than vegetative cells to surface disinfectants, some have recommended the use of hypochlorite (bleach) for disinfection of rooms of patients with CDAD and for routine disinfecting in units with high C. difficile rates. While this has been a standard practice prior to the introduction of Hydrogen Peroxide and Peroxyacetic cleaning agents, the use of bleach on surface has become costly over time due to the damage caused to facility surfaces.

Because, person-to-person contact (via hands) is the main way this organism is spread between patients, hand washing, barrier precautions, and meticulous environmental cleaning of fecally contaminated surfaces (e.g. commodes, bathroom) for all patients is required to prevent spread of C. difficile. Low-level disinfectants such as quats do not kill spores. However, the cleaning process using low-level disinfectants removes not only soil but also reduces the number of microorganisms on the surface.

Recommendations to prevent transmission of C. difficile?

Regardless of the disinfectant used, successful environmental control of C. difficile requires a collaborative approach between environmental services, infection control and nursing services. Surfaces likely to become contaminated with feces and high-hand contact surfaces need to be identified, the cleaning process defined (when and how), accountability for cleaning established (who) and compliance monitored.

The CDC recommends that surfaces should be kept clean and body substance spills should be promptly cleaned up as outlined in the Guideline for Environmental Infection Control (www.cdc.gov). Hospital cleaning products can be used for routine cleaning. Hydrogen peroxide with peroxyacetic acid disinfectants such as Sanotracin has been used with success for surface disinfection in those patient-care areas where surveillance indicates ongoing transmission of C. difficile.

Note: At present, there are few EPA-registered products with specific claims for inactivating C. difficile spores. Sanotracin RTU/ Sanotracin is one of two products on the market to Kill C. difficile spores without using bleach. Don't be confused by the number of registered products that have claims against C. difficile in the vegetative state. The vegetative cells are killed by low-level disinfectants. The spores must be killed with a high level disinfectant such as the Sanotracin line of products.

Disinfecting Environmental Surfaces

Recommendation:

Create separate environmental service cart(s) for cleaning and disinfecting MDRO patient rooms. There should only be enough equipment and supplies to clean and disinfect one area at a time. The cart should be cleaned and disinfected before moving to the next area that is contaminated by a MDRO. This cart should be labeled, if possible, on the door of the cart with "MDRO use only."

Recommendation:

Provide environmental service specialized training for the management of MDROs. The staff that receives this training should work closely with Infection Control Practitioner and nursing staff. These staff members, while on duty, should be provided with some type of communication so that the Infection Control Practitioner or nurse management can reach them.

Recommendation:

When cleaning and disinfecting a patient's room or bathroom that is contaminated with C. difficile spores use Sanotracin RTU and follow these practices:

1. Wear proper PPE
2. Ensure proper ventilation
3. Ensure patient safety
4. Ensure staff and visitor safety
5. Use disposable items when possible
6. Disinfect all equipment after use
7. Allow proper dwell time
8. Wash hands using approved healthcare facility procedures
9. Because Sanotracin RTU and Sanotracin doesn't leave behind residue there is no need to rinse the surface. Follow the manufacturer's instructions on the bottle label.

Cleaning Process for Occupied and Discharge Patient Rooms contaminated with C. difficile spores (MDRO)

Note: Place environmental service cart outside of patient room. Make sure that the cart doesn't block the corridor

- Use proper PPE
- Place a wet floor sign at the entrance of the patient room
- Use proper dwell times as stated on the manufacturer's label
- High dusting vents and ledges using a high duster. This procedure will be performed using the "Wet Method and at discharge" In some cases using wet met microfiber reduces dust particles from becoming airborne.
- Clean sink using Sanotracin RTU Disinfectant Cleaner and a Green microfiber cloth.
- Refill towel and soap? dispensers
- Carefully remove soiled linen and place in the proper linen bag
- Clean entire patient bed using Sanotracin RTU Disinfectant Cleaner and a Red microfiber cloth.
- Clean over the bed table and night stand using Sanotracin RTU Disinfectant Cleaner and a Green microfiber cloth.
- Clean and disinfect counter top using Sanotracin RTU Disinfectant Cleaner and a Green microfiber cloth.
- Clean and disinfect phones, cords, call buttons and TV remotes controls using Sanotracin RTU Disinfectant Cleaner and a Green microfiber cloth
- Remove litter
- Remove medical waste
- Empty trash receptacles
- Clean and disinfect trash receptacles using a wet Green cloth with Sanotracin RTU Disinfectant Cleaner
- Remove and replace sharps containers

- Spot walls using Triple S Neutral Disinfectant Cleaner and a **Green** microfiber cloth.
- Clean high touch areas such as switches and handles using Sanotracin RTU Disinfectant Cleaner and a **Green** microfiber cloth.
- Dust mop floors using a dry **Green** Microfiber dry pad or vacuum.

Patient Bathroom

Note: Do not use any clothes that cleaned and disinfected the patient room in the bathroom or microfiber clothes used in the bathroom in the patients room.

- Change PPE from use in the patient room or bathroom prior to cleaning
- Use proper dwell times as stated on the manufacturers label
- Clean Mirrors using the **Blue** microfiber class and mirror cloth (Doors, Windows and Partitions)
- Clean Sink using Sanotracin RTU Disinfectant and a **Green** microfiber cloth.
- Clean Toilet with Sanotracin RTU Disinfectant Cleaner and a **Yellow** microfiber cloth. (Make sure the flush handle is cleaned and disinfected)
- Refill Towel, Tissue and Soap Dispensers
- Clean Counter Top using Sanotracin RTU Disinfectant Cleaner and a **Green** microfiber cloth.
- Clean Partition using Sanotracin RTU Disinfectant Cleaner and a **Green** microfiber cloth.
- Empty Trash receptacles and wipe down weekly using a wet **Green** cloth with Sanotracin RTU Disinfectant.
- Replace Trash Receptacle Liners
- Dust mop floors using a dry **Green** Microfiber dry pad or Vacuum.
- Mop Floors using Triple S Neutral Disinfectant Cleaner and a **Blue** microfiber wet pad.

Note: All used microfiber should be placed in waterproof bag and sent to laundry for proper washing.

Regular, routine cleaning and disinfecting of environmental surfaces and items is important in reducing cross-transmission of MDROs. The frequency of these activities should be based on input from Environmental Services, Infection Control and Nursing management.

“Wet” dusting with disinfecting solution is the best method for dusting all patient care areas. This process helps reduce the transmission of MDROs. This practice should be

taught to all environmental service staff. It also reduces the bio-load of the resistant organisms on equipment and surfaces. The recommended manufacturer's duration of the disinfecting solution on a surface and the use of microfiber cloths provide the best outcome for cleaning and disinfecting surfaces that are contaminated with MDROs'. It is never recommended to re-use microfiber cloth after it dries out or reintroduce the microfiber cloth into the clean disinfecting solution. By not reintroducing the microfiber cloth back into clean disinfecting solution, the proper chemical disinfectant strength can be maintained throughout the cleaning process. Increased frequency of cleaning and disinfecting application must be considered during an outbreak or cluster of MDRO cases. The environmental service specialist must clean and disinfect the areas using the same steps each time the application is performed. Using the same steps reduces the possibility of high touch areas being over looked and further assures the application was done correctly.

Restrooms and patient rooms infected or colonized by patients with a MDRO's should be cleaned and disinfected at least twice daily with Sanotracin RTU sporeicidal disinfectant. As with all areas that are contaminated with *C. difficile* spores (MDROs), the more cleaning and disinfecting that occurs, the less bio-load is on the surfaces.

Recommendation:

Consider the second cleaning and disinfecting application to be done by second shift discharge specialist.

Trash

No special precautions are necessary for MDRO trash. Proper PPE should be used at all times when trash is sorted or handled

Linen

Soiled linen should be contained/bagged at the location of use (patient area). No special precautions are necessary for MDRO patient's dirty linen, such as double bagging. Use waterproof bags to contain fluids to prevent/reduce contamination of the environment and staff. Do not sort or rinse soiled linens with body substances in patient care areas. Follow your healthcare facility's laundry policies and procedure. Healthcare facilities should follow local or state health department regulations for laundering. Linen handlers should wear PPE to prevent contamination from soiled linens. Wash or sanitize hands after glove use.

Patient Equipment

Any equipment used by patients with MDRO infections should be cleaned and disinfected before leaving the area. Examples include wheel chairs, I.V. poles, equipment carts and weight scales. Equipment from MDRO infected area should not be moved or used, until it has been thoroughly cleaned and disinfected.

Note: In some cases, patient equipment must be returned to Central Sterile Supply (CS). If this is the case, the equipment must be cleaned/disinfected and tagged before being sent to CS.

Definition of C. difficile Spore (MDRO) Outbreak

When a facility has an initial case of C. difficile, MRSA or VRE, it is an outbreak by definition. However, the common definition of an outbreak is: Several (e.g. 3 or more healthcare-associated infection [HAI] cases of MDRO which are epidemiologically associated by person, time or place), or a substantial increase in the number of cases in a facility. Each healthcare facility must decide the criteria to define an outbreak.