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## (1F) Environmental Cleaning and Disinfection in the Long-Term Care Setting

**Introduction:** The environment must be recognized as a critical source of contamination that plays a significant role in the spread of infection. The accumulation of dust, soil, and microbes on environmental surfaces is aesthetically displeasing and can create a potential reservoir for microorganisms. Contact with contaminated surfaces, especially by hands and resident care equipment, can easily result in healthcare-associated infections (HAIs). Effective and efficient cleaning and disinfection methods and schedules are essential to maintain clean, safe, and healthy environments for residents in long-term care facilities. Yet there has been significant documentation of lack of compliance with established guidelines for disinfection and sterilization at all levels of care. Failure to comply with scientifically-based guidelines has led to numerous outbreaks. When performed correctly, environmental cleaning and disinfection prevents the transmission of infectious pathogens to residents.

**Purpose:** To improve the practices and procedures of environmental cleaning and disinfection in the long-term care setting. To identify situations necessitating standard vs. heightened environmental cleaning and disinfection. This will reduce contamination of the environment and will prevent horizontal transmission of healthcare-associated infections and associated outbreaks.

**Scope of Practice:** Nursing staff (RNs, LPNs, Aides, etc.), Infection Preventionist, Ancillary staff (Dietary, Physical Therapy, etc.), Environmental Services, and Physicians (including Physician Extenders)

**Related Policy/Guidelines:** Surveillance and Prevention of *Clostridium difficile*; Standard and Transmission-Based Precautions; (also, reference your internal policies here)

### **Policies and Procedure:**

#### **I. Cleaning vs. Disinfection Terminology:**

- A. Cleaning** is the removal of visible dirt, dust, and soil (e.g., organic and inorganic material) from objects and surfaces. Cleaning involves the use of water with detergents or enzymatic products to remove soil manually or mechanically. Thorough cleaning is essential before disinfection can occur because inorganic and organic materials interfere with the effectiveness of the disinfection process. To clean effectively, it is necessary to scrub the surface or object to remove dirt.
- B. Disinfecting** eliminates many or all pathogenic microorganisms (except bacterial spores) on objects and surfaces. Disinfecting involves the use of chemical products that are regulated

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by the U.S. Environmental Protection Agency (EPA). Disinfectants have no effect on dirt, soil, or dust. Therefore, before disinfecting, surfaces and objects must be cleaned thoroughly. Several factors can affect, limit, or nullify the efficacy of disinfection, including:

1. Prior cleaning of the object
2. Organic and inorganic load present
3. Type and level of microbial contamination
4. Concentration of and exposure time to the disinfectant
5. Physical nature of the object (e.g., crevices, hinges, and lumens)
6. Presence of biofilms
7. Temperature and pH of the disinfection process

### **C. Environmental Surfaces:**

1. High touch surfaces need to be cleaned at least daily and more often when visibly soiled
  - a. Surfaces with a high degree of handling and high risk of contamination by infectious material such as bedrails, handrails, bed sheets, call buttons, resident chair, wheel chair, lifts, bed sheets, bed-side table, portable commodes, sink and faucets, toilet, tub/shower, telephones, TV controls, light switches, door knobs, windowsills, floors, etc.
  - b. Medical equipment such as electric thermometers, blood pressure cuffs, tube feedings, IVs, glucometers, etc.
2. Low touch surfaces need to be cleaned on a routine schedule and when visibly soiled
  - a. Surfaces with a low degree of handling and low risk of contamination by infectious material
  - b. Walls, curtains, lights, and ventilation grills
3. Horizontal surfaces need to be cleaned at least daily and more often when visibly soiled
  - a. Counters, tables, window ledges, furniture surfaces (ideally including personal resident furniture), shelves, etc.
4. Personal Resident Furniture:
  - a. Personal resident furniture also can be reservoirs for microbial organisms. Cleaning and disinfecting activities ideally should include these items. Families and residents, however, may oppose the application of disinfectants to their personal belongings. Upon admission, caution residents and family that all furniture brought into the long-term care facility (LTCF) could require disinfection with chemicals, which over time may result in damage to the item. Ask the resident and family for permission to disinfect the items in the event that it is necessary to do so. If they refuse permission, suggest they refrain from bringing personal furniture, especially furniture of high value.

## **II. Cleaning and Disinfection Principles:**

### **A. Basic Principles:**

1. Cleaning ALWAYS precedes disinfection.
2. Cleaning means scrubbing the surface or object.

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3. To disinfect, use an EPA-approved disinfectant.
4. Clean and disinfect beginning with the least soiled areas and finishing with the most soiled areas.
  - a. Within the room AND within the facility.
  - b. Clean any room(s) requiring enhanced cleaning and disinfection last.
5. Clean and disinfect beginning with high surfaces and finishing with low surfaces.
6. When escalating to the next level of cleaning and disinfection, the procedures of that level are placed on top of (not *in place of*) the previous level's procedures.
  - a. Example) enhanced cleaning and disinfection procedures include ALL of the procedures for standard cleaning.
7. To clean and disinfect, follow the manufacturer's instructions regarding handling and use of the products, paying particular attention to:
  - a. How long the product must be left on the surface to be effective (contact time)
    - i. This means that the surface being disinfected must be in contact with the disinfectant (stay wet) for the duration of the contact time.
    - ii. Disinfectants commonly have a contact time of 10 minutes (although this varies, so read product labels carefully).
  - b. The appropriateness of the product for the surface.
  - c. Dilution requirements. If the product requires dilution with water before use, follow dilution instructions EXACTLY.
    - i. Increasing solution strength beyond the recommended level will NOT increase cleaning/disinfection results and may result in irritation to the eyes, lungs, and/or skin and may damage the surface being cleaned.
  - d. Precautions to be taken when mixing, diluting, or applying the product (such as wearing aprons and/or gloves and ensuring good ventilation).
    - i. Do NOT mix ammonia with bleach-based products as this creates toxic vapors.
  - e. Proper storage of the product
  - f. Shelf life of the product
    - i. Do NOT use products past their shelf life/expiration date.
8. The most effective method of cleaning and disinfection involves a bucket and cloth.
  - a. Place solution in a clean bucket/container and use a clean cloth. Do NOT return a dirty cloth to the bucket of clean disinfectant.
  - b. Wash and disinfect buckets/containers regularly and inspect for cracks.
9. If wipes are used to disinfect, pay attention to the contact time.
  - a. This involves knowing the surface area each wipe can cover and still maintain contact time.
10. Prepare cleaning solutions daily or as needed and replace with fresh solution.
  - a. After 3 rooms
  - b. After disinfecting an isolation room
11. Launder reusable mop heads and cloths, discard disposable mop heads and cloths.
  - a. Daily
  - b. After cleaning up large spills of blood and/or body fluids
  - c. After cleaning an isolation room

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12. Minimize air and dust turbulence when cleaning.
  - a. Keep vacuums in good repair and use HEPA filters if possible
  - b. Damp dust when appropriate
13. Do not use disinfectant fogging.

### **B. Cleaning and Disinfection Schedule:**

The environmental services supervisor will maintain a schedule of cleaning and disinfection tasks and the employee(s) responsible for these tasks. Periodic evaluation should be completed to ensure competency of the environmental staff.

### **C. Levels of Cleaning and Disinfection:**

1. Standard
2. Enhanced
3. Outbreak Containment

## **III. Standard Cleaning and Disinfection Procedures:**

### **A. Cleaning Procedures:**

1. Keep housekeeping surfaces visibly clean on a regular basis and clean spills promptly.
2. Clean surfaces and objects BEFORE disinfecting.
3. To clean nonporous surfaces, scrub surfaces with a detergent to mechanically remove dirt and dust.
4. Clean horizontal surfaces daily, as needed when spills or soiling occurs, and after resident discharge.
  - a. Tabletops, window ledges, bedside stands, counters, sinks, tubs, shower floors, toilet seats, floors, resident furniture
5. Clean high-touch surfaces at least once daily and more often as needed.
  - a. Surfaces with a high degree of handling and high risk of contamination by infectious material such as bedrails, handrails, bed sheets, call buttons, resident chair, wheel chair, lifts, bed sheets, bed-side table, portable commodes, sink and faucets, toilet, tub/shower, telephones, TV controls, light switches, door knobs, windowsills, floors, etc.
  - b. Medical equipment such as electric thermometers, blood pressure cuffs, tube feedings, IVs, glucometers, etc.
6. Clean low-touch surfaces on a routine basis and as needed.
  - a. Clean walls, curtains, blinds when dust/soil is visible.
7. Carpeted surfaces:
  - a. Vacuum all carpets daily and as needed to maintain a safe, clean, and comfortable environment.
  - b. Clean all carpets as needed (steam clean if soiled).
  - c. Do not use carpeting in areas of heavy soiling or spillage.

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### 8. Other Surfaces:

- a. Dust daily to remove particles from the air and surfaces in the resident area. It is recommended to damp dust to decrease the movement of respiratory microorganisms such as *Aspergillus*.

### **B. Disinfection Procedures:**

- a. To disinfect, follow all manufacturer's recommendations regarding dilution, contact time, and appropriate environmental conditions.
  - a. Disinfect only AFTER surfaces and objects have been cleaned. If this is NOT done, the surface will NOT be adequately disinfected.
  - b. Use a clean cloth saturated with a properly diluted disinfecting solution and work from clean to dirty (e.g., bedside tables to bedrails to bathroom). Change cleaning solution, mop, and cloths after cleaning is finished for the day. Either discard cleaning items or launder/disinfect when finished.
2. Disinfect horizontal surfaces daily, as needed when spills or soiling occurs, and after resident discharge.
  - a. Tabletops, window ledges, bedside stands, counters, sinks, tubs, shower floors, toilet seats, floors, resident furniture
3. Disinfect high touch surfaces at least once daily and more often as needed.
  - a. Surfaces with a high degree of handling and high risk of contamination by infectious material such as bedrails, handrails, bed sheets, call buttons, resident chair, wheel chair, lifts, bed sheets, bed-side table, portable commodes, sink and faucets, toilet, tub/shower, telephones, TV controls, light switches, door knobs, windowsills, floors, etc.
  - b. Medical equipment such as electric thermometers, blood pressure cuffs, tube feedings, IVs, glucometers, etc.
4. Disinfect low touch surfaces on a routine basis and as needed.
  - a. Clean walls, curtains, blinds when dust/soil is visible.

### **C. Terminal Cleaning and Disinfection Procedures (with resident discharges/transfers):**

1. Strip all items from the room (including bedside curtain).
2. Clean and disinfect all surfaces and objects
  - a. Bed frame, mattress, bedside stand, closet (inside and out), bed-side table, chairs, lights, walls, floors, and bathroom
    - i. This should include personal resident furniture.
  - b. To clean, scrub the surface to remove surface soil from contaminated items prior to disinfection.
  - c. To disinfect, use an EPA-approved detergent or germicide that is approved for health care settings. Follow manufacturer's recommendations regarding dilution, contact time, and appropriate environmental conditions.

#### **IV. Enhanced Cleaning and Disinfection:**

**A.** Enhanced cleaning and disinfection procedures are required when residents are present who have communicable infectious processes which have high environment contamination and can be transmitted to other residents, such as:

1. *Clostridium difficile*
2. Norovirus
3. Multi-drug resistant organisms
4. Influenza

If a resident has a communicable disease/infection that requires the use of Transmission-Based Precautions/Isolation per CDC guidelines then follow standard cleaning and disinfection procedures outlined above PLUS:

1. Clean rooms/areas requiring enhanced cleaning and disinfection AFTER all other rooms have received standard cleaning.
2. Environmental services staff MUST don PPE (glove and gowns; mask with norovirus, influenza) while cleaning the room and discard PPE after the room is cleaned.
3. Use a clean cloth saturated with a properly diluted disinfecting solution and work from clean to dirty (e.g., bedside tables to bedrails, to bathroom).
4. Use disposable mop heads and wipes whenever possible.
5. Change cleaning solution, mop, bucket, and cloths after cleaning each room. Either discard cleaning items or launder/disinfect when finished. Disinfect cleaning supplies that may have become contaminated (such as mop handles, spray bottles).
6. Make sure the disinfection product is an EPA-approved detergent or germicide that is approved for healthcare settings and has a label claim for the specific type of organism. Common hospital grade disinfectants (quaternary ammonium products) do not kill all organisms, for example *Clostridium difficile* and Norovirus.

#### **B. *Clostridium difficile* and Norovirus Cleaning and Disinfection:**

Follow standard and enhanced cleaning and disinfection procedures outlined above AND:

1. Use a sporicidal agent to disinfect surfaces. Currently, products with an adequate concentration of sodium hypochlorite (chlorine bleach) are the only approved EPA-registered disinfectants that are effective in killing *C. difficile* spores and norovirus.
  - a. When using bleach, use either pre-mixed solutions or solutions mixed on site. Pay attention to contact time from manufacturer. If mixing on-site, contact time for bleach is 10 minutes (the surface must remain wet for 10 minutes). Do NOT mix bleach solutions with ammonia-based products. This releases toxic vapors.
  - b. If mixing on site, use only chlorine bleach without a scent additive (this reduces the parts per million (ppm) of available chlorine.
    - i. Follow manufacturer instructions regarding handling and use, and take ALL precautions.
    - ii. Mix a 10% solution bleach and water (1 part bleach, 9 parts water).

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- iii. Mix in a well-ventilated area, avoiding direct contact with skin and eyes. Bleach solutions may irritate the skin, eyes, and respiratory system and must be handled with care to protect staff and residents.
- iv. Do NOT strengthen the concentration of the solution. It will NOT yield better disinfection results. Bleach is an extremely caustic agent and will damage surfaces over time if too concentrated.
- v. Mix bleach solutions DAILY. Bleach degrades after 24 hours, so using a solution past its shelf life will NOT yield appropriate disinfection results.

### **V. Cleaning and Disinfection During an Outbreak:**

- A. During an outbreak, immediate enhanced environmental procedures must be implemented house-wide (not just in resident rooms) to contain the spread of communicable diseases. Follow standard and enhanced cleaning and disinfection procedures outlined above AND:
  1. All resident rooms must be cleaned and disinfected with a sodium hypochlorite (chlorine bleach) solution, not just those who are ill.
  2. All common areas where residents and clinical staff frequent also must be cleaned and disinfected with a sodium hypochlorite (chlorine bleach) solution.
    - a. Activity rooms
    - b. Cafeteria or areas where residents and staff eat
    - c. Therapy areas
    - d. Nurses stations
    - e. Treatment rooms
  3. Increase the frequency of cleaning and disinfection of the facility.
    - a. Common areas within the facility increase to twice daily
    - b. High-touch surfaces in resident areas should be increased to three times a day.

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