

**State of Kuwait  
Ministry of Health  
Infection Control Directorate**

# **Environmental Cleaning and Disinfection Policy**

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## **1. Introduction:**

It is considered that the environment has a relatively small role in the transmission of infection. However, accumulation of dust, dirt and liquid residues will increase infection risks and must be reduced to the minimum. This can be achieved by effective and efficient cleaning methods and schedules and by using good design features in buildings, fittings and fixtures to maintain a clean and healthy environment in health-care settings.

It is important to note that disinfection alone kills some micro-organisms, but does not leave surfaces completely free of contamination. Disinfection is only effective if the surface is thoroughly cleaned with detergent solution beforehand. In most situations, thorough cleaning with a solution of detergent and water is adequate prior to disinfection.

## **2. General Principles of Cleaning and Disinfecting Strategies for Environmental Surfaces in Patient-Care Areas**

- Select hospital registered disinfectants, and use them in accordance with the manufacturer's instructions.
- Do not use high-level disinfectants/liquid chemical sterilants for disinfection of any environmental surfaces.
- Keep housekeeping surfaces (e.g., floors, walls, and tabletops) visibly clean on a regular basis and clean up spills promptly.
  - Clean and disinfect the environment in patient-care areas when uncertainty exists regarding:
    - the nature of the soil on these surfaces [e.g., blood or body fluid contamination versus routine dust or dirt
    - the presence or absence of multi-drug resistant organisms on such surfaces.
  - Detergent and water are adequate for cleaning surfaces in nonpatient-care areas (e.g., administrative offices).
  - Clean and disinfect high-touch surfaces (e.g., doorknobs, bed rails, light switches, and surfaces in and around toilets in patients' rooms) on a more frequent schedule than minimal touch housekeeping surfaces.
  - Avoid large-surface cleaning methods that produce mists or aerosols or disperse dust in patient-care areas.
- Follow proper procedures for effective use of mops, towels, and solutions.
  - Prepare cleaning solutions daily or as needed, and replace with fresh solution frequently according Ministry protocols.
  - Change the mop head at the beginning of the day and also as required by local policy, or after cleaning up large spills of blood or other body substances.
  - Clean mops after use and allow to dry before reuse (e.g., launder and dry at least daily) or use single-use, disposable mop heads.

-Use appropriate dusting methods for patient-care areas designated for immunocompromised patients (e.g. hemopoietic stem cell transplant (HSCT) patients) as follows:

- Wet-dust horizontal surfaces daily by cleaning followed by disinfection
- Avoid dusting methods that disperse dust (e.g., feather-dusting)

- When performing low- or intermediate-level disinfection of environmental surfaces in nurseries and neonatal units, avoid unnecessary exposure of neonates to disinfectant residues on environmental surfaces by using a registered disinfectants in accordance with manufacturers' instructions and safety advisories.

### **3. Cleaning Schedule in Health Care Setting:**

Cleaning schedule should be based on the following:

- The location within the facility.
- Type of surface to be cleaned.
- Type of soil present.
- Tasks or procedures being performed.

This may be achieved by classifying areas into one of four functional areas.(Table 1)

#### **1. Very high risk area**

In very high risk functional areas cleaning standards require the highest level of intensity and frequency of cleaning.

#### **2. High risk area**

Cleaning standards in high risk areas are maintained by frequent scheduled cleaning and a capacity to "spot" clean.

#### **3. Moderate risk area:**

Cleaning standards in moderate risk areas are important for both hygiene and aesthetic reasons and are maintained by routine scheduled cleaning with some capacity to spot clean in between.

#### **4. Low/minimal risk area:**

Cleaning standards in low risk areas are important for aesthetics and, to a lesser extent, hygiene and are maintained by cleaning on a routine basis with capacity to spot clean in between scheduled cleaning.

**In the event of an outbreak of a transmissible disease or infection, eg gastroenteritis or a multi-resistant organism, the affected ward should be re-categorized from moderate risk to very high risk for the period of the outbreak.(Table 1)**

**Table1: Classification of functional areas according to the risk associated with inadequate cleaning**

Very high risk	High risk	Moderate risk	Low/minimal risk
<ul style="list-style-type: none"> <li>■ Operating Theatres</li> <li>■ Intensive Care Unit</li> <li>■ Level 2 and 3 nurseries</li> <li>■ Special needs areas, eg patients who are immunosuppressed, Haemodialysis units and areas used for insertion of central venous catheters</li> <li>■ Ward involved in an outbreak of a transmissible disease or infection</li> </ul>	<ul style="list-style-type: none"> <li>■ Emergency Department</li> <li>■ Central Sterilizing Service Department (CSSD) and sterile supply areas</li> <li>■ Microbiology laboratories</li> </ul>	<ul style="list-style-type: none"> <li>■ General ward</li> <li>■ Level 1 nursery</li> <li>■ Kitchens</li> <li>■ Cafeteria</li> <li>■ Laboratories</li> <li>■ Medical imaging (unless performing invasive procedures)</li> <li>■ Public thoroughfares</li> <li>■ Outpatient clinics</li> <li>■ Pathology</li> <li>■ Pharmacy</li> <li>■ Procedure rooms</li> <li>■ Treatment rooms</li> <li>■ Waiting rooms</li> <li>■ Mortuary area</li> <li>■ Ambulance</li> </ul>	<ul style="list-style-type: none"> <li>■ Administrative areas</li> <li>■ Non-sterile supply</li> <li>■ Record storage and archives</li> <li>■ Engineering workshop</li> <li>■ Plant rooms</li> <li>■ External surrounds</li> </ul>

#### 4. Cleaning methods

- Wet cleaning is recommended and drying is essential.
- High dusting:- All surfaces above shoulder height should be dusted with a damp mop to prevent dust from being dispersed.
  - Mops must never be shaken.
  - To prevent missing spots, work should proceed either clockwise or anti clockwise from the starting point.
  - While high dusting, observe for possible leaks in pipes; since it may provide a reservoir for fungal growths. If found, report for immediate repair.
- Walls, windows and doors including door handles should be spot cleaned when needed and cleaned completely on regular schedule daily.
- Periodically change and launder windows' curtains in clinical/ward areas every 3 months. Change and launder if visibly soiled or splashed with body fluid or after discharge of isolated patient with MRSA, Group A Strep, *Clostridium difficile* or following a viral gastroenteritis outbreak.
- For cubicle curtains, launder weekly and after patient discharge. Change and launder immediately if splashed with body fluid
- Horizontal surfaces including tables, beds, chairs, should be wiped with a clean cloth dampened with disinfectant in high and very high risk areas..
- Bathrooms should be cleaned daily, with special attention to toilet.

## 5. Cleaning Frequency

- **In patient rooms**
  - High dusting; spot cleaning of walls, windows, and doors, light fixtures, chairs , beds and floors should be performed daily and when the patient is discharged.
  - The same daily cleaning with disinfection should be done for rooms of patients on isolation precautions.
  - High touch surfaces (e.g., door knobs, bed rails, light switches should be cleaned and disinfected on a more frequent schedule.
  - When the infected patient is taken off isolation precaution or discharged, clean equipment should be used to provide thorough terminal cleaning.
  
- **Procedure rooms and operating rooms:**
  - Cleaning of horizontal surfaces, equipment, and furniture used for the procedure is necessary after each patient.
  - Procedure room should be cleaned with a detergent solution followed by disinfection as needed after each patient and at least daily.
  - In operating theatres (OT), end-of-case cleaning is only necessary to clean 1.5 meter perimeter around the operative site; the cleaning area should be extended if greater contamination has occurred.
  - After the last surgical procedure of the day or night, disinfect operating room floors with a registered hospital disinfectant.
  - Do not use mats with tacky surfaces at the entrance to operating rooms.
  - A clean mop head should be used for each case.
  - For terminal daily cleaning, all the equipment on the floor should be removed to allow cleaning of the entire floor area.

## 6. Cleaning Supplies /Equipment

### **Buckets:**

- Trolley with double separate buckets should be provided. Blue bucket for cleaning solution mixed with water and other red bucket for rinsing water.
- Water should be changed in between cleaning of :
  - General rooms.
  - Corridors.
  - Private room.
  - Treatment room, dressing room, store and linen room.
- Separate buckets should be provided for the cleaning of bathrooms and each isolation rooms.
- After cleaning, buckets should be emptied, cleaned and kept dry.

**Mops:**

- Enough mops with long handles should be provided for each location within the healthcare facility.
- Dedicate separate mops for corridors, general rooms, private rooms, treatment, dressing, store and linen room, bathrooms and isolation room and an extra mop in case of spillage of blood and body fluids.
- Outpatient and casualty should be provided with enough number of mops according to the number of rooms.
- In operation theatre,
  - o Tusky mop should be available for every 4m X4m of operation room.
  - o Other ordinary mops should be provided for other areas inside the theatre;
    - one for store.
    - one for recovery room.
    - one for changing room.
    - one for bathrooms.
- These mops should be detached and laundered and dried every shift
- Tusky mops should be washed after every single use and dried.

**Towels:**

- Used to clean the surfaces.
- Color coding should be followed :
  - Yellow for infectious materials and infected surfaces.
  - Red for bathrooms
  - Blue for general purpose.

**Personal protective equipment:**

- Gloves should be worn when performing any cleaning activity.
- In most situations, disposable gloves are preferable.
- Heavy duty gloves are recommended if the task has a high risk for percutaneous injury.
- When there is a potential for splashing or splattering, a fluid-resistant gown or apron, protective eyewear, and mask should be worn.

## **7. Disinfectants Used for The Environment in Health Care Settings**

**1.Chlorine and chlorine compounds:**

- ◆ It is fast acting and has a broad spectrum of antimicrobial activity.
- ◆ It is active against viruses. It is the disinfectant of choice for decontamination of blood and body fluids.(500 ppm for small spills-5000 ppm for large spills).
- ◆ It can be used for disinfection of hard surfaces .e.g., sinks and baths.
- ◆ Diluted solutions are unstable and should be freshly prepared daily.
- ◆ It is incompatible with cationic detergents.

## **2. Alcohols:**

- ◆ Alcohols in the concentrations of 70-90% can be used for disinfection of some hard surfaces but should be used only on physically clean surfaces.

## **3. Phenolics:**

- ◆ Used for cleaning walls, floor and furnishings.
- ◆ Can be used for cleaning hard surfaces
- ◆ A phenolic must not be used in the nursery on surfaces (e.g., bassinets,) that may come in contact with infants. There is an association between the excessive use of a phenolic disinfectant and hyperbilirubinemia in newborns.

## **8. Ineffective Practices**

- Fumigation with formalin is an ineffective method of reducing the risk of infection. It is toxic and irritant to the eyes and mucous membranes, in addition to being time consuming and makes rooms unavailable for use.

## **9. Cleaning Spills of Blood and Body Fluids**

### **1. Procedures for dealing with small spillages eg, splashes and droplets (<10 ml)**

1. Gloves and a plastic apron must be worn
2. The area should be wiped thoroughly using disposable paper roll / towels.
3. The areas should be cleaned using a neutral detergent and warm water.
4. Use a 1:100 dilution of a 5.25-6.15% sodium hypochlorite provides which provides 525-615 ppm available chlorine to decontaminate nonporous surfaces after a small spill .
5. The gloves, apron and paper roll / towels should be put into a clinical waste bag.
6. Wash hands.

### **2.Procedure for dealing with large spills (>10 ml ):**

#### **A. Large blood spills in a 'wet' area e.g. a bathroom or toilet area:**

- Where large spills have occurred in a 'wet' area, such as a bathroom or toilet area, the spill should be carefully washed off into the sewerage system using copious amounts of water and the area flushed with warm water and detergent.
- The area must then be disinfected using a chlorine releasing agent. Use a 1:100 dilution (e.g., 1:100 dilution of a 5.25-6.15% sodium hypochlorite provides 525-615 ppm available chlorine)

#### **B. Large blood spills in 'dry' areas (such as clinical areas)**

1. Where possible, isolate spill area
2. Where a spillage of potentially infectious material has occurred the area must be vacated for at least 30 minutes for aerosol particles to be dispersed.

3. Wear disposable cleaning gloves, eyewear, mask and plastic apron
4. Cover the spill with paper towels or absorbent granules, depending on the size of the spill, to absorb the bulk of the blood or body fluid/substance. Use disposable (for example, cardboard) scraper and pan to scoop up absorbent, paper towel and any unabsorbed blood or body substances
5. Place all contaminated items into yellow plastic bag or in sharp container for disposal .
6. Pour 5,000 ppm chlorine solution and allow 10 minutes to react then wipe up making sure that you don't allow it to come into contact with your skin or clothing and discard in biohazard waste.
7. Decontaminated areas should then be cleaned thoroughly with warm water and neutral detergent .
8. Follow this decontamination process with a terminal disinfection. Use a 1:100 dilution (500–615 ppm available chlorine)
9. Discard contaminated materials (absorbent toweling, cleaning cloths, disposable gloves and plastic apron).
10. Wash hands
11. Clean and disinfect bucket and mop. Dry and store appropriately

**3. Procedure for dealing with spilled Urine, feces, sputum and vomit:**

1. single use gloves and a plastic apron must be worn.
2. The spillage should be covered with disposable paper towel to absorb the spilled material. These should then be gathered up and placed in a yellow waste bag. The area must then be cleaned thoroughly using detergent and hot water and dried.
3. The area must then be disinfected using a chlorine releasing agent. Use a 1:100 dilution (e.g., 1:100 dilution of a 5.25-6.15% sodium hypochlorite provides 525-615 ppm available chlorine)
4. Protective clothing and paper must be discarded into the yellow waste sack.
5. Wash hands.

**N.B. Urine and vomit spillages:**

Chlorine releasing agents must never be poured directly onto urine or vomit as this causes chlorine gas to be released.

**10. Carpeting and Cloth Furnishings**

- A. Avoid use of carpeting in patient care areas
- B. Vacuum carpeting in public areas of health-care facilities regularly with well-maintained equipment designed to minimize dust dispersion.
- C. Periodically perform a thorough, deep cleaning of carpeting as determined by local policy by using a method that minimizes the production of aerosols and leaves little or no residue
- D. Thoroughly dry wet carpeting to prevent the growth of fungi; replace carpeting that remains wet after 72 hours.
- E. Avoid the use of upholstered furniture and furnishings in patient-care areas.

## **11. Flowers and Plants in Patient-Care Areas**

- A. Flowers and potted plants need not be restricted from areas for immunocompetent patients.
- B. Designate care and maintenance of flowers and potted plants to staff not directly involved with patient care.
- C. If plant or flower care by patient-care staff is unavoidable, instruct the staff to wear gloves when handling the plants and flowers and perform hand hygiene after glove removal.
- D. Do not allow fresh or dried flowers, or potted plants in patient-care areas for immunosuppressed patients.

## **12. Cleaning and Disinfection of Environment Contaminated with Specific Pathogens**

### **1. Antibiotic-resistant gram-positive cocci**

- A. Use appropriate hand hygiene, personal protective equipment (PPE) (e.g., gloves), and isolation precautions during cleaning and disinfecting procedures.
- B. Use standard cleaning and disinfection protocols to control environmental contamination with antibiotic-resistant gram-positive cocci (e.g., methicillin-resistant *Staphylococcus aureus*, vancomycin intermediate-resistant *Staphylococcus aureus*, or vancomycin-resistant *Enterococcus* [VRE]).
  - 1. Pay close attention to cleaning and disinfection of high-touch surfaces in patient-care areas (e.g., bed rails, carts, bedside commodes, bedrails, doorknobs, or faucet handles).
  - 2. Ensure compliance by housekeeping staff with cleaning and disinfection procedures.
  - 3. Use a registered hospital disinfectants appropriate for the surface to be disinfected as specified by the manufacturers' instructions.
  - 4. When contact precautions are indicated for patient care, use disposable patient-care items (e.g., blood pressure cuffs) whenever possible to minimize cross-contamination with multiple-resistant microorganisms.
  - 5. Follow these same surface cleaning and disinfecting measures for managing the environment of VRSA patients.
- C. Environmental-surface culturing can be used to verify the efficacy of hospital policies and procedures before and after cleaning and disinfecting rooms that house patients with VRE.
- D. Thoroughly clean and disinfect environmental and medical equipment surfaces on a regular basis using a registered disinfectants in accordance with manufacturers' instructions.
- E. Advise families, visitors, and patients about the importance of hand hygiene to minimize the spread of body substance contamination (e.g., respiratory secretions or fecal matter) to surfaces.
- F. Do not use high-level disinfectants (i.e., liquid chemical sterilants) on environmental

surfaces; such use is inconsistent with label instructions and because of the toxicity of the chemicals

## **2. *Clostridium difficile***

In units with high rates of *C. difficile* infection or an outbreak setting, use dilute solutions of 5.25%-6.15% sodium hypochlorite (e.g., 1:10 dilution of household bleach) (5000 ppm) for routine environmental disinfection. Currently, no products are registered specifically for inactivating *C. difficile* spores.

## **3. Creutzfeldt-Jakob disease (CJD)**

Develop and maintain cleaning and disinfection procedures to control environmental contamination with agents of Creutzfeldt-Jakob disease (CJD), for which no registered product exists.

1. In the absence of contamination with central nervous system tissue, extraordinary measures (e.g., use of 2N sodium hydroxide [NaOH] or applying full-strength sodium hypochlorite) are not needed for routine cleaning or terminal disinfection of a room housing a confirmed or suspected CJD patient
2. After removing gross tissue from the surface, use either 1N NaOH or a sodium hypochlorite solution containing approximately 10,000–20,000 ppm available chlorine (dilutions of 1:5 to 1:3 v/v, respectively, of household chlorine bleach to decontaminate operating room or autopsy surfaces with central nervous system or cerebral spinal fluid contamination from a diagnosed or suspected CJD patient.
  - a. The contact time for the chemical used during this process should be 30 min–1 hour. Blot up the chemical with absorbent material and rinse the treated surface thoroughly with water.
  - b. Discard the used, absorbent material into appropriate waste containment.
3. Use disposable, impervious covers to minimize body substance contamination to autopsy tables and surfaces.

## **13. In-Service Education**

- All new employees must have a documented orientation session before beginning their duties.
- Annual (or more frequent) in-service education program in infection control, are recommended and must be documented.

## **References**

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