Section 3: Environmental Control

3.2 Environmental Decontamination

Jointly prepared by

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and

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Microbiologically contaminated inanimate surfaces generally are not directly as sociated with transmission of infections to human beings (1). The main concern is still transmission indirectly via hand contact with the contaminated surface. Cleaning the environmental surfaces is fundamental in reducing their potential contribution to infections (2-4).

1 Category of Environmental Surfaces

Environmental surfaces can be further divided into medical equipment surfaces (e.g. haemodialysis machines, x-ray machines, instrument carts and dental units) and housekeeping surfaces (e.g. floors, walls, tabletops, bedside rails) (1).

2 Decontamination of Environmental Surfaces

2.1 To facilitate the environmental cleaning, belongings of patients/ residents are preferably stored inside the wardrobe, locker or in a covered container.

2.2 Environmental surfaces should be cleansed by “active damp scrubbing” (5) to avoid creation of aerosols or splashing, or dust dispersion (1-3, 6-8).

2.3 Environmental surfaces should be cleaned regularly, for example, daily, and decontaminated promptly when visibly soiled (1-2, 7). A general rule of environmental cleaning is to start cleaning at the highest point and work towards the lowest; and from outside to the inside (8).

2.4 High-touch surfaces should be cleansed more frequently, for example, at least daily, than minimal touch surfaces (1,5).

2.5 In general, detergent is adequate for cleaning the environmental (housekeeping and equipment) surfaces in health care facilities and community, including institutions and households (1-3, 9-14).

2.6 Cleaning and disinfection procedures in HA hospitals should be carried out in accordance with local policy.

2.7 Areas with frequent invasive procedures, such as haemodialysis unit or blood donation centre, low level disinfection, for example, 500ppm sodium hypochlorite solution (one part of 5.25% sodium hypochlorite solution add in 99 parts of water) may be employed for decontaminating environmental surfaces, because minute spillage may be difficult to recognize (10-11,15). When visible blood spills occur, decontaminating procedure stated as Point 3 should be followed.

2.8 In the areas accommodating patients with organisms that may contaminate the environment easily, for example in outbreak situation, environmental surfaces may be cleansed and disinfected with a higher level of disinfection strategy, for example, intermediate-level disinfection using one part of household bleach (5.25% sodium hypochlorite solution) in 49 parts of water (about 1,000 ppm available chlorine) at least daily (1-2, 5, 16-18). Use 70% alcohol solution to disinfect equipment's metal surface.

2.9 For environmental surfaces which are contaminated by uncommon infective materials, for example, Creutzfeldt-Jakob disease (CJD), please refer to *fact sheet on Infection Control of Creutzfeldt-Jakob Disease (CJD), prepared by Central Committee on Infectious Diseases of Hospital Authority.*

3 Handling Spills of Blood, Body Fluids, or other Potentially Infectious Materials

Other potentially infectious materials means (19):

- Human body fluids include semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids, such as mixing of faeces and blood;
- Any unfixed tissue or organ (other than intact skin) from a human (living or dead)

3.1 If spills occur, the surfaces should be decontaminated immediately (1, 10, 19-22) with adequate staff protection (1, 10). For recommendation of appropriate protection, please refer to Section Personal Protective Equipment of ICB Infection Control Guidelines.

3.2 For spillage of blood and other potentially infectious materials, cleanse the visible matter with disposable absorbent material. Mop the area with a cloth or paper towels wetted with one part of household bleach (5.25% hypochlorite solution) in 4 parts of water, leave for 10 minutes. Then rinse with water.

Small spill of blood can also be removed by applying chlorine-releasing granules or powder directly to the spill. This can then be removed using one or more paper towels or wipes (23).

3.3 For spillage of other body fluids such as vomitus, cleanse the visible matter with disposable absorbent material. Mop the area with a cloth or paper towels with one part of household bleach (5.25% hypochlorite solution) in 49 parts of water, leave for 15-30 minutes. Then rinse with water.

4 Environmental Control in Special Areas

4.1 Neonatal unit

When performing cleansing procedure with disinfectant to environmental surfaces of neonatal area, avoid unnecessary exposure of neonates to disinfectant residue, for example, do not use disinfectant to cleanse incubators during the infant's stay, and rinse the disinfectant-treated surfaces with water (1).

4.2 Areas with immunocompromised patients

Areas of immunocompromised patients, such as haematopoietic stem cell transplant recipients, wet-mopping method should be used to clean the surfaces (1, 24).

The doors of immmunocompromised patients' rooms should be closed when vacuuming, waxing, or buffing corridor floors to minimize exposure to dust (1).

4.3 Operating room

Wet vacuum or mop the operating room floor with disinfectant after the last operation of the day or night (25).

When the surfaces or equipment is visibly soiled or contaminated with blood or other body fluids, clean and disinfect the affected areas before the next operation (25).

Tacky mats at the entrance of operating room or individual operating room for infection control purpose is not necessary (1, 22).

Table 1: Common Disinfectants Used for Environmental Cleaning in Hospitals

Disinfectants	Recommended Use	Precautions
Sodium hypochlorite 1% in-use dilution, one part of household bleach (5.25% hypochlorite solution) in 4 parts of water	Disinfection of material contaminated with blood and other potentially infectious materials.	✧ Should be used in well ventilated areas ✧ Protective clothing required while handling and using undiluted disinfectants ✧ Do not mix with strong acids to avoid release of chlorine gas ✧ Corrosive to metals
Alcohol (70%) Isopropyl, ethyl alcohol, methylated spirit.	Smooth metal surfaces, tabletops and other surfaces on which bleach cannot be used.	✧ Flammable, toxic, to be used in well- ventilated area, avoid inhalation. ✧ Kept away from heat source, electrical equipment, flames, hot surfaces. ✧ Allow it to dry completely, particularly when using diathermy as it can cause diathermy burns.

Note: A neutral detergent and water solution should be used for all routine and general cleaning. When a disinfectant is required for surface cleaning, e.g. after spillage or contamination with blood or body fluids, the manufacturer's recommendations for use and occupational health and safety instructions should be followed.

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