

Appendix L - Cleaning and Disinfecting Strategies for Environmental Surfaces in Patient-Care Areas

Adapted from the 2003 CDC *Guidelines for Environmental Infection Control in Health-Care Facilities*.

Source: Schulster L, Chinn RY. Guidelines for environmental infection control in health-care facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC) [Published errata appear in MMWR Recomm Rep 2003 Oct 24;52(42):1025-6]. MMWR Recomm Rep 2003 Jun 6;52(RR-10):1-42.

Rating Categories

Recommendations are rated according to the following categories:

- **Category IA.** Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies.
- **Category IB.** Strongly recommended for implementation and supported by certain experimental, clinical, or epidemiologic studies and a strong theoretical rationale.
- **Category IC.** Required by State or Federal regulation, or representing an established association standard. (Note: Abbreviations for governing agencies and regulatory citations are listed, where appropriate. Recommendations from regulations adopted at State levels are also noted. Recommendations from AIA guidelines cite the appropriate sections of the standard).
- **Category II.** Suggested for implementation and supported by suggestive clinical or epidemiologic studies, or a theoretical rationale.
- **Unresolved Issue.** No recommendation is offered. No consensus or insufficient evidence exists regarding efficacy.

1. Select EPA-registered disinfectants, if available, and use them in accordance with the manufacturer's instructions. Category IB, IC (EPA: 7 United States Code [USC] § 136 et seq)
2. Do not use high-level disinfectants/liquid chemical sterilants for disinfection of either noncritical instrument/devices or any environmental surfaces; such use is counter to label instructions for these toxic chemicals. Category IB, IC (FDA: 21 CFR 801.5, 807.87.e)
3. Follow manufacturers' instructions for cleaning and maintaining noncritical medical equipment. *Category II*
4. In the absence of a manufacturer's cleaning instructions, follow certain procedures.
 - a. Clean noncritical medical equipment surfaces with a detergent/disinfectant. This may be followed with an application of an EPA-registered hospital disinfectant with or without a tuberculocidal claim (depending on the nature of the surface and the degree of contamination), in accordance with disinfectant label instructions. *Category II*
 - b. Do not use alcohol to disinfect large environmental surfaces. *Category II*
 - c. Use barrier protective coverings as appropriate for noncritical equipment surfaces that are

- 1) touched frequently with gloved hands during the delivery of patient care;
 - 2) likely to become contaminated with blood or body substances; or
 - 3) difficult to clean (e.g., computer keyboards). *Category II*
- d. Keep surfaces (e.g., floors, walls, crew seats, and countertops) visibly clean on a regular basis and clean up spills promptly. *Category II*
- 1) Use a one-step process and an EPA-registered hospital-grade disinfectant/detergent designed for general housekeeping purposes in patient-care areas when a) uncertainty exists as to the nature of the soil on these surfaces [e.g., blood or body fluid contamination versus routine dust or dirt]; or b) uncertainty exists regarding the presence or absence of multi-drug resistant organisms on such surfaces. *Category II*
 - 2) Detergent and water are adequate for cleaning surfaces in nonpatient-care areas (e.g., administrative offices). *Category II*
 - 3) Clean and disinfect high-touch surfaces (e.g., doorknobs and handles, stretcher rails, light switches, and arm rests) on a more frequent schedule than minimal touch housekeeping surfaces. *Category II*
 - 4) Clean walls in patient-care areas when they are visibly dusty or soiled. *Category II*
- e. Do not perform disinfectant fogging in patient-care areas. *Category IB*
- f. Avoid large-surface cleaning methods that produce mists or aerosols or disperse dust in patient-care areas. *Category IB*
- g. Follow proper procedures for effective use of mops, cloths, and solutions. *Category II*
- 1) Prepare cleaning solutions daily or as needed, and replace with fresh solution frequently according to facility policies and procedures. *Category II*
 - 2) Change the mop head at the beginning of the day and also as required by facility policy, or after cleaning up large spills of blood or other body substances. *Category II*
 - 3) Clean mops and cloths after use and allow drying before reuse; or use single-use, disposable mop heads and cloths. *Category II*

Cleaning Spills of Blood and Body Substances

1. Promptly clean and decontaminate spills of blood or other potentially infectious materials. *Category IB, IC* (OSHA: 29 CFR 1910.1030 §d.4.ii.A)
2. Follow proper procedures for site decontamination of spills of blood or blood-containing body fluids. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.ii.A)
 - a. Use protective gloves and other PPE appropriate for this task. *Category IC* (OSHA: 29 CFR 1910.1030 § d.3.i, ii)
 - b. If the spill contains large amounts of blood or body fluids, clean the visible matter with disposable absorbent material, and discard the contaminated materials in appropriate, labeled containment. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.iii.B)
 - c. Swab the area with a cloth or paper towels moderately wetted with disinfectant, and allow the surface to dry. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.ii.A)

3. Use EPA-registered hospital-grade disinfectants labeled tuberculocidal or registered germicides on the EPA Lists D and E (products with specific label claims for HIV or hepatitis B virus [HBV]) in accordance with label instructions to decontaminate spills of blood and other body fluids. *Category IC* (OSHA 29 CFR 1910.1030 § d.4.ii.A memorandum 2/28/97; compliance document CPL 2-2.44D [11/99])
4. An EPA-registered sodium hypochlorite product is preferred, but if such products are not available, generic versions of sodium hypochlorite solutions (e.g., household chlorine bleach) may be used.
 - a. Use a 1:100 dilution (500–615 ppm available chlorine) to decontaminate nonporous surfaces after cleaning a spill of either blood or body fluids in patient-care settings. *Category II*
 - b. If a spill involves large amounts of blood or body fluids, use a 1:10 dilution (5,000–6,150 ppm available chlorine) for the first application of germicide before cleaning. *Category II*

Special Pathogens

1. Use appropriate hand hygiene, PPE (e.g., gloves), and isolation precautions during cleaning and disinfecting procedures. *Category IB*
2. Use standard cleaning and disinfection protocols to control environmental contamination during a pandemic influenza. *Category IB*
 - a. Pay close attention to cleaning and disinfection of high-touch surfaces in patient-care areas (e.g., bedrails, equipment cabinets, drug boxes, monitor/defibrillators, armrests, door knobs and handles). *Category IB*
 - b. Ensure compliance by staff with cleaning and disinfection procedures. *Category IB*
 - c. Use EPA-registered hospital-grade disinfectants appropriate for the surface to be disinfected (e.g., either low- or intermediate-level disinfection) as specified by the manufacturers' instructions. *Category IB, IC* (EPA: 7 USC § 136 et seq.)
 - 1). 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. *Category IB*
 - 2). Follow these same surface cleaning and disinfecting measures for managing the environment of influenza patients. *Category II*
3. Thoroughly clean and disinfect environmental and medical equipment surfaces on a regular basis using EPA-registered disinfectants in accordance with manufacturers' instructions. *Category IB, IC* (EPA: 7 USC § 136 et seq.)
4. Advise families, visitors, and patients about the importance of hand hygiene to minimize the spread of body substance contamination (e.g., respiratory secretions) to surfaces. *Category II*
5. 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. *Category IC* (FDA: 21 CFR 801.5, 807.87.e)
6. Clean surfaces that have been contaminated with body substances; perform low- to intermediate-level disinfection on cleaned surfaces with an EPA-registered disinfectant in accordance with the manufacturer's instructions. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.ii.A; EPA: 7 USC § 136 et seq.)

7. Use disposable barrier coverings as appropriate to minimize surface contamination.

Category II

8. Use disposable, impervious covers to minimize body substance contamination to stretchers and surfaces when transferring or transporting bodies to morgue facilities.

Category IB

9. Use standard procedures for containment, cleaning, and decontamination of blood spills on surfaces as previously described (Environmental Services: II).967 *Category IC* (OSHA: 29 CFR 1910.1030 §d.4.ii.A)

a. Wear PPE appropriate for a surface decontamination and cleaning task.

Category IC (OSHA 29 CFR 1910.1030 §d.3.i, ii)

b. Discard used PPE by using routine disposal procedures or decontaminate reusable PPE as appropriate. *Category IC* (OSHA 29 CFR 1910.1030 §d.3.viii)

Post-Mortem Considerations

There are a multitude of issues surrounding the handling of human remains during a pandemic however, infection control and decontamination measures are no different than with any other infectious disease process. A pandemic influenza death is a natural manner of death. Those who physically handle remains may be at risk of blood borne or body fluid exposure requiring universal precautions and proper training for handling the dead. Responders will need the knowledge and capability to identify PI event related deaths versus non PI event related deaths to ensure proper actions are taken at the scene.

Additional information sources:

Reynolds KA, Watt PM, Boone SA, Gerba CP. Occurrence of bacteria and biochemical markers on public surfaces. *Int J Environ Health Res.* 2005 Jun;15(3):225-34.

Guidelines for Environmental Infection Control in Health-Care Facilities. *MMWR* June 6, 2003 / 52(RR10);1-42. Centers for Disease Control and Prevention. Accessed December 2006 at www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html

Centers for Disease Control and Prevention. 2005. Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2 Supplement I: Infection Control in Healthcare, Home, and Community Settings Section IV. Infection Control for Prehospital Emergency Medical Services (EMS) retrieved March 24, 2007 at <http://www.cdc.gov/ncidod/sars/guidance/I/index.htm> .

U.S. Northern Command and Department of Health and Human Services Fatality Management Pandemic Influenza Working Group Conference, *White Paper: Scene Operations, to Include Identification, Medico-legal Investigation Protocols and Command and Control of Mass Fatalities Resulting from a Pandemic Influenza (PI) in the United States*, September 2006 available at *Joint Task Force Civil Support*, [www.jtfc.northcom.mil/pages/WP_SceneOps\(FINAL\).pdf](http://www.jtfc.northcom.mil/pages/WP_SceneOps(FINAL).pdf)