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MEMORANDUM

TO: Regional Offices of the Illinois Department of Public Health, Local Health Departments, Hospital Infection Control Professionals, Illinois Hospitals, Illinois Long Term Care Facilities and Assisted Living Facilities, and Other Illinois Healthcare Facilities

FROM: Judith Conway, RN, BS, CIC
Communicable Disease Control Section

DATE: June 13, 2008

SUBJECT: Infection Control Measures for Health-Care Facilities during Flooding, Sewage Intrusion, or Other Water-Related Emergencies

The Illinois Department of Public Health (IDPH) is closely monitoring the flood waters in Illinois. Interruptions of the water supply and sewage spills in health-care facilities are situations that require immediate recovery and remediation measures to ensure the health and safety of patients and staff. Flooding from either external (e.g., a river) or internal sources (e.g., a water system break) usually results in property damage and a temporary loss of water and sanitation. Infection control recommendations from the Centers for Disease Control and Prevention (CDC) for health-care facilities are published in the "Guidelines for Environmental Infection Control in Health-Care Facilities" (2003) available at <http://www.cdc.gov/mmwr/PDF/rr/rr5210.pdf>

CDC has recommended the following remediation strategies for water distribution system repairs or water-related emergencies in health-care facilities:

1. Whenever possible, disconnect the ice machine before planned water disruptions.
2. Prepare a contingency plan to estimate water demands for the entire facility in advance of significant water disruptions (i.e., those expected to result in extensive and heavy microbial or chemical contamination of the potable water), sewage intrusion, or flooding.

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3. When a significant water disruption or an emergency occurs, adhere to any advisory to boil water issued by the municipal water utility.
 - a. Alert patients, families, staff, and visitors not to consume water from drinking fountains, ice, or drinks made from municipal tap water, while the advisory is in effect, unless the water has been disinfected (e.g., by bringing to a rolling boil for greater than or equal to 1 minute. [N.B., IDPH Technical Information Bulletin / Food #39 requires boiling the water vigorously for 5 minutes.]
 - b. After the advisory is lifted, run faucets and drinking fountains at full flow for greater than or equal to 5 minutes, or use high-temperature water flushing or chlorination. [N.B., Health-care facility retail food service establishments also must comply with requirements of IDPH Technical Information Bulletin / Food #39.]
4. Maintain a high level of surveillance for waterborne disease among patients after a boil water advisory is lifted.
5. Corrective decontamination of the hot water system might be necessary after a disruption in service or a cross-connection with sewer lines has occurred.
 - a. Decontaminate the system when the fewest occupants are present in the building (e.g., nights or weekends).
 - b. If using high-temperature decontamination, raise the hot-water temperature to 160 degrees Fahrenheit – 170 degrees Fahrenheit (71 degrees Celsius – 77 degrees Celsius) and maintain that level while progressively flushing each outlet around the system for greater than or equal to 5 minutes.
 - c. If using chlorination, add enough chlorine, preferably overnight, to achieve a free chlorine residual of greater than or equal to 2mg/L (greater than or equal to 2 ppm) throughout the system.
 - i. Flush each outlet until chlorine odor is detected.
 - ii. Maintain the elevated chlorine concentration in the system for greater than or equal to 2 hours (but less than or equal to 24 hours).
 - d. Use a through flushing of the water system instead of chlorination if a highly chlorine-resistant microorganism (e.g., *Cryptosporidium* spp.) is suspected as the water contaminant.
6. Flush and restart equipment and fixtures according to manufacturer's instructions.
7. Change the pretreatment filter and disinfect the dialysis water system with an EPA-registered product to prevent colonization of the reverse osmosis membrane and downstream microbial contamination.
8. Run water softeners through a regeneration cycle to restore their capacity and function.
9. If the facility has a water-holding reservoir or water-storage tank, consult the facility engineer or local health department to determine whether this equipment needs to be drained, disinfected with an EPA-registered product, and refilled.
10. Implement facility procedures to manage a sewage system failure or flooding (e.g., arranging with other health-care facilities for temporary transfer of patients or provision of services), and establish communications with the local municipal water utility and the

local health department to ensure that advisories are received in a timely manner after release.

11. Implement infection-control measures during sewage intrusion, flooding, or other water-related emergencies.
 - a. Relocate patients and clean or sterilize supplies from affected areas.
 - b. If hands are not visibly soiled or contaminated with proteinaceous material, include an alcohol-based hand rub in the hand hygiene process 1) before performing invasive procedures; 2) before and after each patient contact; and 3) whenever hand hygiene is indicated.
 - c. If hands are visibly soiled or contaminated with proteinaceous material, use soap and bottled water for handwashing.
 - d. If the potable water system is not affected by flooding or sewage contamination, process surgical instruments for sterilization according to standard procedures.
 - e. Contact the manufacturer of the automated endoscope reprocessor (AER) for specific instructions on the use of this equipment during a water advisory.
12. Remediate the facility after sewage intrusion, flooding, or other water-related emergencies.
 - a. Close off affected areas during cleanup procedures.
 - b. Ensure that the sewage system is fully functional before beginning remediation so contaminated solids and standing water can be removed.
 - c. If hard-surface equipment, floors, and walls remain in good repair, ensure that these are dry within 72 hours; clean with detergent according to standard cleaning procedures.
 - d. Clean wood furniture and materials (if still in good repair); allow them to dry thoroughly before restoring varnish or other surface coatings.
 - e. Contain dust and debris during remediation and repairs as outlines in air recommendations. (N.B. Refer to the CDC Guidelines for Environmental Infection Control in Health-Care Facilities for recommendations.)
13. Regardless of the original source of water damage (e.g., flooding versus water leaks from point-of-use fixtures or roofs), remove wet, absorbent structural items (e.g., carpeting, wallboard, and wallpaper) and cloth furnishings if they cannot be easily and thoroughly cleaned and dried within 72 hours (e.g., moisture content less than or equal to 20% as determined by moisture meter readings); replace with new materials as soon as the underlying structure is declared by the facility engineer to be thoroughly dry.