Vomiting and Fecal Episodes

In 2011, more than 80 patrons became ill from a rural North Carolina restaurant that did not have proper sanitation guidelines, especially for vomit clean-up.

Public Health Reasons

Individuals who are sick with a gastrointestinal illness can produce large volumes of diarrhea and/or vomit that can be sources of pathogenic microorganisms. Generally, sick people produce much more feces than healthy individuals. Sick individuals produce approximately 100-500 grams of feces per day, while healthy individuals only produce 100-200 grams. Additionally, a sick person produces about 30ml of vomit per vomiting episode.

Both vomit and feces can contain high levels of pathogenic microorganisms. Stool from individuals that are sick with gastroenteritis can contain from 10^4 to 10^{11} bacterial cells or virus particles per gram. Electron microscopic examination has revealed that a minimum of 10^6 norovirus particles is normally present in a milliliter of vomit, and that the concentration of rotavirus in vomit can be 100 times what it is in feces (10^{11} particles). A vomiting episode can also release droplets containing pathogens into the air, and these aerosolized particles may be deposited onto surfaces in the surrounding area. Therefore, any surface that comes into direct contact with vomit or feces, or is located in the surrounding area, can easily become contaminated.

For example, in 2002, an outbreak of norovirus at a concert hall occurred after a concert attendee vomited. The concert hall staff cleaned up the vomit, but they *did not* use a disinfectant. The day after the vomiting event, 257 people who attended events at the concert hall became ill. Additionally, 27 people became ill after attending events over the following three days. The highest attack rate (75%) was reported by people seated in the same section where the sick person was seated. Lower attack rates were reported for people sitting nearby.

As this shows, cleaning up vomit and fecal matter is critical to preventing the spread of pathogens that cause gastrointestinal illness. To do this, it is important to understand the difference between sanitizers and disinfectants, so the proper chemicals are used during clean-up. Sanitizers reduce the bacterial and fungal counts on a surface by 99.999% or 5 logs. For example, if there are 1 million bacteria on a surface before the sanitizer is applied, then there should only be 10 bacterial cells left after the sanitizer is dry. Disinfectants differ from sanitizers in that they eliminate *all* of the microorganisms listed on the label, which can include viruses. This is why it is important to use disinfectants when cleaning up vomit and feces.

It is also important to have a bodily fluid clean-up kit in an easy-to-access location. The kit should contain all items needed to clean and disinfect a vomit/feces episode. Staff members who

clean up bodily fluids must be trained on how to properly clean up spills with a bodily fluid clean-up kit, what precautions to take, and what disinfectant to use. If surfaces contaminated by vomit and diarrhea are not properly cleaned and disinfected, there is the possibility that pathogens could remain on the surface, which could sicken other individuals. Norovirus has been reported to survive on hard surfaces for up to 42 days, while rotavirus and hepatitis A virus can persist for up to 60 days on hard surfaces. Pathogenic bacteria can also survive for extended periods on hard surfaces. *Escherichia coli* can persist up to 28 days on metal surfaces and *Clostridium difficile* spores for up to five months.

At present, there are no universally accepted standards on how to clean up vomit and fecal matter. However, the Centers for Disease Control and Prevention and the Occupational Safety and Health Administration both have guidelines on the clean-up of bodily fluids with only minor differences between the two.

Practices

There are three levels of cleaning and sanitizing/disinfecting surfaces. In increasing rigor, they are routine cleaning, vomit/fecal episode cleaning, and outbreak cleaning. This section covers the second level, cleaning up after a vomit or fecal episode. The following methods must be used in addition to routine cleaning, and in the event of outbreak, these methods must be used to clean up any vomit or fecal matter in addition to the outbreak cleaning methods.

Training Staff In Clean-Up Procedures

- Identify employees to be in charge of cleaning up vomit and fecal matter episodes.
- Train designated workers in proper
    - use of personal protective equipment in the bodily fluid clean-up kit; and
    - cleaning and disinfecting of surfaces contaminated by bodily fluids; and
    - disposal methods of vomit and fecal matter, classified as infectious waste by OSHA.
- Assess the trained workers' knowledge and ability to implement clean-up procedures by testing them at least once a year. This can be done by setting up a simulation of a vomiting/diarrheal episode and evaluating the steps taken to clean up the area.
- Staff training in infectious waste management procedures must
    - provide an explanation of the infectious waste management plan and assign roles and responsibilities for implementation of the plan; and
    - educate all employees who handle infectious waste
- Training programs must be implemented when
    - the infectious waste management plans are first developed and instituted; and
    - new employees are hired; and
    - infectious waste management practices are changed.

Food workers must never clean up bodily fluids.

Body Fluid Clean-Up Kit

Kits can be purchased from a chemical supplier or assembled in-house. Bodily Fluid Clean-Up kits should contain the following**:**

Protective gear*

- 2 pairs of disposable, non-latex gloves
- 1 face mask
- 1 disposable gown with sleeves
- 1 disposable hair cover
- 1 pair of shoe covers

Cleaning supplies

- 1 sealable, plastic bag or biohazard bag with twist tie
- 1 scoop/scraper
- paper towels
- absorbent powder/solidifier (such as kitty litter)
- bottle of disinfectant (1 and 1/2 cups bleach in 1 gallon of water [1:10 dilution] is recommended for heavily contaminated surfaces)

**At a minimum, any individual cleaning up vomit/feces must wear disposable gloves, shoe covers, and disposable gown to prevent spreading infectious particles to another area in the facility.*

Cleaning Procedures

- Clear all individuals out of the immediate area, and block off the affected space to prevent re-entry of anyone other than the person cleaning up.
- Put on the proper personal protective equipment (gloves, gown, hair cover, shoe covers, and face mask).
- Cover the spill with the absorbent powder or disposable towels to soak up the fluid.
- Scoop up the solidified powder or soaked towels, and place them in a sealable plastic bag. Be sure to remove all vomit/feces and other debris from the surface.
- Using a clean reusable cloth or a disposable towel, apply enough disinfecting solution to cover the surfaces thoroughly. Allow proper contact time according to the manufacturer's label (or 10-20 minutes, if using 1:10 dilution of bleach to water).
- Wipe up any residual disinfectant with paper towels, and dispose of them in a sealable bag or biohazard bag.
- Discard all open, exposed food in close proximity of the vomit incident.
- After cleaning, disinfect mops or any other cleaning equipment that was used in order to prevent spreading harmful microorganisms to other areas of the facility.
- Remove all personal protective equipment, and dispose of the items in the plastic bag.

Personal protective equipment must be removed before leaving the affected area in order to reduce the risk of contaminating other areas of the facility.

- Use the twist tie to close the plastic bag.
- Dispose of the bag in accordance with local regulations.
- Wash hands thoroughly (See "Practicing Good Hand Hygiene for Care Providers" fact sheet for handwashing instructions).

Locations to Clean

Droplets produced during vomiting and diarrhea can become airborne. Thus, it is important to clean and disinfect not only the surfaces that come in contact with the bodily fluids but also the surfaces located near the event (floors, walls, shelves, toys, etc.). Clean and disinfect surfaces in as wide of an area around the vomit or fecal episode as is practical for your facility.

Hard surfaces:

- Wipe surfaces first with a damp cloth to remove dust and other debris.
- Disinfect the surface with a bleach solution of 1 and 1/2 cups bleach in 1 gallon of water (1:10 dilution) or an EPA-registered disinfectant that is effective against norovirus.
- Allow the surface to air dry.
- For food-contact surfaces, disinfection must be followed by a clear-water rinse to remove any harmful residue that may have been left by the disinfectant.

Machine-washable items:

- These items include bed linens, towels, and clothing.
- Do not mix contaminated items with non-contaminated items.
- Separate soiled items from clean items.
- Pre-wash visibly soiled items.
- Machine-wash the contaminated items in hot water (at least 140-160°F or 60-71.1°C) with detergent, using bleach (5-25 tablespoons of bleach per gallon of water) for white fabrics.
- Dry items in a dryer on the high heat setting, separate from other items.

Fabrics can never be disinfected. They can only be sanitized.

Carpet and cloth furnishings:

- Spot-clean areas where bodily fluid contamination has occurred to remove visible debris.
- Steam clean the area at 170°F (76.7°C) for 5 minutes to disinfect. (Not all steam cleaners can reach a temperature for 170°F (76.7°C), so check the manufacturing specifications.)
- Porous surfaces, such as upholstered furniture, that are soiled with vomit/feces can also be cleaned with a chlorine bleach solution (1:10 dilution) with a contact time of 10-20 minutes. However, the solution will likely cause discoloration of the material.

Do not dry vacuum because microorganisms can become airborne.

Disposing of Infectious Waste

- Keep infectious waste separate from general waste from the time that it is generated.
    - Infectious waste must be discarded directly into containers or plastic bags that are clearly identifiable and distinguishable from general waste.
    - Containers must be distinctively colored red or orange and marked with the universal biological hazard symbol.
- Package infectious waste in ways that protect waste handlers and the public from possible infection that may result from exposure to the waste.

The integrity of the packaging must be maintained through handling, storage, transportation, and treatment.

- Identify packaged infectious waste containers with clear labeling to indicate all hazards that are present in the waste.
- Handle infectious waste carefully to prevent the bags from tearing or leaking.
- Single plastic bags may not effectively contain the waste, so additional packaging must be used to preserve the integrity of the bags and to ensure containment of the waste.
    - Place single-bagged waste within a rigid or semi-rigid container, such as a bucket, box, or carton. Plastic bags may be used for liners for such containers.
    - Also, you can double-bag the waste by placing a single, sealed plastic bag within another bag that is subsequently sealed.
- Avoid mechanical devices for loading plastic bags and instead load bags by hand.
- Transport packages using carts within the facility.

These carts must be cleaned and disinfected frequently and must not be used for other materials until after they have been cleaned and disinfected.

- Store infectious waste packages for as little time as possible.
    - The packaging must provide containment of the waste throughout the waste management process.
    - Packaging must deter rodents and vermin, which can be vectors in disease transmission.
    - The storage area must be a specifically designated area and must restrict the entry of unauthorized personnel.
    - The universal biohazard label must be posted on waste containers and other appropriate areas.
- Contact the local health department to transport the infectious waste for offsite treatment.
- A contingency plan must be provided for emergency situations. For ruptured plastic bags, there must be alternative plans for clean-up, protection of personnel, and repackaging of waste. Continuing education must also be included as a part of staff training.

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