Environmental Infection Control

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Environmental Infection Control

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Learning Objectives

- Understand the rationale for environmental infection control
- Know that protocols are required to prepare
  - Staff
  - Patient rooms
  - Procedures for cleaning and disinfection
- Know how to prepare the patient room – what must go, what must stay
- Know what disinfectants are effective against Ebola
- Understand the principles and how to apply them effectively for
  - Equipment management
  - Terminal cleaning
Guidance

Limited laboratory studies conducted under favorable conditions, has shown Ebola Virus can remain viable on solid surfaces.

There is no epidemiologic significant evidence of Ebola virus transmission via the environment or fomites contaminated during patient care (bed rails, door knobs, laundry)

However based on the:

• Apparent low infectious dose
• Potential for high virus titers in the blood of ill patients
• Disease severity

Recommendations are to take precautions to reduce potential risk from contaminated surfaces in the patient care environment because of
Preparing the Unit

Clearly demarcate the Cold, Warm and Hot Zones

Maintain strict rules on movement within the unit

Develop protocols to address movement of staff, patient, waste, equipment etc... to, from and within the unit
Preparation for Environmental Infection Control

Have protocols in place for staff, including environmental services staff, to wear appropriate PPE when cleaning an Ebola patient’s room and equipment:

- Donning and doffing PPE requires training, practice, demonstrated competency, and observation
- Staff must have received job-specific training and demonstrated competency prior to performing duties

Protocols should be in place for monitoring of cleaning and disinfection procedures to ensure they are consistently and correctly performed including:

- Frequency/ongoing cleaning of patient room and other patient care environments
- Spill management
Preparing the Patient Room

Before placing a patient into a room, ensure that all items in the room are non-porous and can be easily and safely cleaned and disinfected

- Use a mattress and pillow with plastic or other covering that fluids cannot penetrate.
- Do not place PUIs or patients with confirmed EVD in carpeted rooms.
- Remove upholstered furniture and decorative curtains.
- Remove medically unnecessary room furnishings (e.g. artwork, decorations, shelving).
- Avoid glass items if possible.
What changes would you make to this room?
What changes would you make to this room?

Remove items that are unnecessary and difficult to clean
Definition:

"The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal" (OSHA 29 CFR 1910.1030).

Decontamination
Disinfectants

There are no products with specific label claims against the Ebola virus. Enveloped viruses, such as Ebola virus, are susceptible to a broad range of hospital disinfectants used to disinfect hard non-porous surfaces.

• Non-enveloped viruses (norovirus, rotavirus) are more resistant to disinfectants.

As a precaution, facilities should select an approved EPA-registered hospital disinfectant with a label claim of potency at least equivalent to that for a non-enveloped virus.

• A list of approved EPA-registered disinfectants can be found at: http://www.epa.gov/oppad001/list-l-ebola-virus.html

When selecting a disinfectant, consider:

• Contact/kill time
• Odor that is not overly offensive to patients and staff
• Potential damage to equipment or the environment
Protocols should be in place to monitor cleaning and disinfection procedures to ensure they are consistently and correctly performed.

Examples from hospitals that cared for Ebola patients:
- Doffing coach responsible for cleaning doffing area. Doffing area cleaned and disinfected after each doffing procedure.
- Hallways of “hot zone” mopped whenever patient care nurse exited patient room.
- Cleaning and disinfection of patient care area performed by patient care nurse and observed by anteroom nurse.
- Anteroom nurse maintained cleaning and disinfection of the doffing area and the locker room that were located within the anteroom.
Protocols should be in place for staff to wear appropriate PPE to prevent exposure to Ebola virus during cleaning of the patient room and equipment.

- Donning and doffing PPE requires training, practice, demonstrated competence, and observation.
- Staff must have received job-specific training and demonstrated competency prior to performing duties.

PPE worn should protect against:

- Direct skin and mucous membrane exposure of cleaning chemicals.
- Contamination of skin or mucous membranes by potentially infectious materials.
- Splashes or spatters during environmental cleaning and disinfection activities.
Cross-training

- Minimize the number of hospital staff with direct patient contact by cross-training Ebola patient care staff on cleaning

- Emory and Nebraska patient care staff are cross-trained to perform routine cleaning and decontamination of Ebola patient room surfaces
Materials to be used for cleaning and disinfection of Ebola patient room and equipment are disposable, for single use only

- Some facilities are using approved EPA-registered wipes to disinfect surfaces and single use mops on the floor.
- Some facilities are using plastic sweeper-mops with wipes to disinfect the floor
# Cleaning Checklists

Separate checklist for each zone  
Involve hospital infection control in creating the checklists  
Wear appropriate PPE according to each zone being cleaned

## NBU Daily Environmental Cleaning Checklist for Non-Patient Care Areas

Clean surfaces of gross contamination before you disinfect.  
Friction is the key to removing bioburden.  
Use one disinfectant wipe per checklist item.

### Date: 11/5/2014

<table>
<thead>
<tr>
<th>High-touch Surfaces Undressing Area</th>
<th>✓ when complete</th>
<th>Agent Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff entry door handles (both sides)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12” square area around door handle (both sides)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undressing area locker faces (special attention to handles/ knobs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure linens/scrubs are covered</td>
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<td></td>
</tr>
<tr>
<td>Bench in the undressing area</td>
<td></td>
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</tr>
<tr>
<td><strong>Staff Bathroom</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom door knob / plate (inner/outer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12” square area above/below door handle (both sides)</td>
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<tr>
<td>Bathroom light switch</td>
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<tr>
<td>Bathroom handrails by toilet</td>
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<tr>
<td>Bathroom sink</td>
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<tr>
<td>Toilet seat/chin</td>
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<tr>
<td>Toilet flush handle</td>
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<tr>
<td>Sink/faucet/handles</td>
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<tr>
<td>Mirror</td>
<td></td>
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</tr>
<tr>
<td>Paper towel holder</td>
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<tr>
<td>Toilet paper holder</td>
<td></td>
<td></td>
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<tr>
<td>Empty Trash/re-bag trash can</td>
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<tr>
<td><strong>Staff Shower</strong></td>
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<td></td>
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<tr>
<td>Shower room door knob/ plate (inner/outer)</td>
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<tr>
<td>Shower room light switch</td>
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<td></td>
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<tr>
<td>Shower room sink</td>
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<tr>
<td>Shower stall (remove any hair from drain)</td>
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<tr>
<td>Toilet seat/chin</td>
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<td>Toilet flush handle</td>
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<tr>
<td>Empty Trash/re-bag trash can</td>
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</tr>
<tr>
<td>Change green laundry bag per protocol</td>
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<td></td>
</tr>
<tr>
<td><strong>High-touch Surfaces Redressing Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-dressing area locker faces (special attention to handles/ knobs)</td>
<td></td>
<td></td>
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<tr>
<td>Walls, door/ door frames in walk through shower area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow Chlorine Shoe Dip protocol</td>
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<td></td>
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<tr>
<td>Change green laundry bag per protocol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty Trash/re-bag trash can as needed</td>
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</tr>
</tbody>
</table>

Follow Chlorine Shoe Dip protocol  
Change green laundry bag per protocol  
Empty Trash/re-bag trash can as needed
Develop protocols for environmental cleaning when body fluid spills occur.

Protocols should address spills in designated patient care areas AND during transport to and from patient care areas.

Ebola patient care staff members should be trained how to safely and appropriately clean up a body fluid spill.

Each facility will have unique workflows:

• Emory developed a “spill kit” that contained all the necessary materials and protocols to safely clean up a body fluid spill.

• Some facilities have designated a “spill team” specifically trained to respond to body fluid spills

• Others have protocols for the HCW to clean the spill

HCW who may be involved in managing a spill should practice, validate competency, and drill.
Emory Spill Kit

- 3-Towels
- 2-Wash clothes
- 2-Red biohazard waste bags
- 3-Pairs of outer gloves (large)
- 3-Pairs of booties
- 2-Zip ties
- Gallon of Micro Chem Plus
- Tongs
- Hand sanitizer
- Laminated 25 step spill clean-up SOP

https://www.youtube.com/watch?v=rGk8s8tySew&feature=youtu.be
Nebraska Process

The NBU Spill Cleanup Process involves layering absorbent sheets on top of the spill until there is no pooling on top.
Nebraska Process

When there is no more pooling on the absorbent sheets, place an absorbent pad with a fluid resistant backing on top of the layers – making sure the fluid resistant backing is facing up.

Gather the edges together to contain the spill then gently place the bundle in the waste.
- If necessary, repeat the process.

Clean the area with 1:10 bleach.
Use dedicated medical equipment (preferably disposable, when possible) for patient care.
If disposable items are not an option select items and develop procedures with a high level of infection control.

Digital Stethoscope with disposable ear buds

Electronic Stethoscope
All NON-DEDICATED OR NON-DISPOSABLE medical equipment used for patient care should be cleaned and disinfected according to manufacturer's instructions and hospital policies.

Many devices can have disposable covers that may be purchased from the manufacturer or made for them.
Equipment Management

Only take equipment and supplies that are required for patient care into the care room.

Consider staging equipment and supplies that have a potential to be needed in a clean area near the care room.
Protocols should be in place for post-discharge cleaning and disinfection of the Ebola patient care areas, including visibly soiled areas, frequently touched surfaces, and floors in the Ebola patient care area.

Facilities that have treated Ebola infected patients have used similar methods:

- Patient care staff (not Environmental Services staff) do cleaning tasks.
- Linens and waste removed and disposed per solid waste disposal procedures.
- Surfaces wiped with hospital disinfectant.
- Medical equipment cleaned per manufacturer instructions.
- Final decontamination and validation testing:
  - Vaporized hydrogen peroxide (Emory).
  - Ultraviolet germicidal irradiation (Nebraska).
Resources

www.NETEC.org


Emory Spill Cleanup Video https://www.youtube.com/watch?v=rGk8s8tySew&feature=youtu.be

