

Infection Prevention and Control (IPC) for Ebola and Marburg:
Environmental Cleaning & Waste Management for Healthcare Workers

Speaker's Notes and Script

Slide 1:

*Intended Audience: This presentation focuses on what **healthcare workers** should know about environmental cleaning and disinfection for Ebola disease (Ebola) and Marburg virus disease (Marburg). A different presentation on this topic is available for facilities management personnel on the IPC for Ebola and Marburg web page on cdc.gov.*

Please note that the training topics for IPC for Ebola and Marburg are presented in sequence, with the expectation that participants will progress through the series. You may, however, mix and match content to meet participant needs, and you will need to adjust the sample script below.

Script:

Welcome! Today we'll be focusing on environmental cleaning and disinfection as well as waste management in the context of Ebola disease - or Ebola - and Marburg virus disease - or Marburg.

Slide 2:

Script:

We have three learning objectives for today. By the end of our time together today, you should be able to explain why environmental cleaning is important in the context of Ebola or Marburg, describe at least three general principles of environmental cleaning, and describe 3 common streams for waste in healthcare facilities.

Slide 3:

Activating background knowledge:

A key benefit of working with adult learners is that they likely already have some knowledge or experience related to the topic you are teaching. Activating background knowledge helps participants connect new learning to what they already know and may help them understand new information better. It also helps you, the instructor, to identify gaps in knowledge where you may need to spend extra time or add emphasis while teaching. Use this slide as an opportunity to let participants share what they already know.

Script:

You clean and disinfect a lot in healthcare, but what's the difference? There are four statements here about cleaning and disinfecting. Only one is correct. I want you to choose the sentence that best describes cleaning and disinfection. I'll give you a minute to think before revealing the answer.

[Pause for participants to decide on their answer.]

Slide 4:

Script:

The correct answer is the last one: that cleaning removes dust, dirt, and grime, including organic material like blood, and some germs. Disinfection kills germs. We're going to talk more about cleaning and disinfection today and why they're so important in the context of Ebola or Marburg.

Slide 5:

Script:

Let's do a quick overview of environmental cleaning: why it's important and how to do it safely and effectively.

Slide 6

Script:

So why is environmental cleaning important? Viruses that cause Ebola or Marburg can live on surfaces like tables, chairs, and medical equipment. If you touch contaminated surfaces or use contaminated equipment, you can spread these viruses to yourself and your patients. Appropriate cleaning and disinfection helps prevent the spread of viruses that cause Ebola or Marburg in facilities. This protects you, your co-workers, and patients. By keeping yourself safe, you also protect your friends, family, and others you come in contact with in your community.

Slide 7:

Script:

Environmental cleaning is the general term used to refer to cleaning and disinfecting the patient care environment. Cleaning removes dirt and some germs and is performed with soap and water. Disinfecting kills germs using chemicals such as 0.5% chlorine solution.

Slide 8:

Script:

These are some general principles of environmental cleaning. Some of these may sound familiar to you because these principles are not just for cleaning when viruses that cause Ebola or Marburg may be present. They are principles that help to generally prevent healthcare-associated infections of many kinds.

First, always clean before disinfecting. When you clean, you remove organic material left on surfaces. If that organic material isn't removed, it can decrease the effectiveness of disinfectants. Use soap and water to clean and chlorine to disinfect. This means you will use soap and water first so that chlorine can do its job.

Begin cleaning in the cleanest area and move towards the dirtiest area. Isolation areas should always be cleaned last and preferably should have their own cleaning staff and protocols.

Always clean in a systematic manner (for example, clockwise) to avoid missing areas.

Clean and disinfect patient care equipment between each patient such as stethoscopes or blood pressure monitors.

Finally, where possible, dedicate cleaning supplies in higher risk areas such as the delivery area or the operating room so that they are not used elsewhere. In the case of Ebola or Marburg, **always** dedicate cleaning supplies for Ebola or Marburg isolation areas so that they're not used in other patient care areas.

Slide 9:

Script:

When performing environmental cleaning in the context of Ebola or Marburg, you need to wear appropriate personal protective equipment, also called PPE, to protect yourself from exposure to infectious agents.

You should always wear double gloves: an outer pair of thick, rubber gloves for protection from the chemicals used to clean and disinfect, and an inner pair of gloves to assist when removing PPE. To protect your body, you should wear a gown or coverall and an apron. To protect your eyes, nose, and mouth, you should wear a face mask with a face shield or a face mask with goggles. If you find that your face mask collapses from getting soaked with sweat, you can wear a respirator in place of the face mask. The structure of the respirator will prevent this problem and also provide proper protection. You should also wear rubber boots or shoe covers and a head cover.

You can learn more about PPE from the PPE-focused sessions on the IPC for Ebola or Marburg web page on cdc.gov:

HCW Slide Deck 6: PPE Part 1 - What, When, and How to Use PPE and

HCW Slide Deck 7: PPE Part 2 - How to Put On and Remove PPE for Ebola or Marburg.

Slide 10:

Script:

When you need to clean up a spill of body fluids, NEVER spray disinfectant directly on the spill because that can create splashes or make the spill bigger.

Before beginning to clean the spill, always conduct hand hygiene and put on appropriate PPE for the task.

You should begin by using a cloth or absorbent towel to soak up as much of the spill as possible. This cloth or towel should then be discarded into an infectious waste bag.

Then you should clean the area by wiping with a clean cloth soaked in soap and water.

NEVER put a cloth or towel in chlorine or water after use as it is considered highly infectious waste and will contaminate the chlorine solution. Instead, you can use a cup to pour the chlorine solution over your cloth to avoid dipping the cloth itself. After each cloth is used, it should be put into an infectious waste bag for disposal. More than one cloth may be required to clean and disinfect the spill.

After thoroughly cleaning the area to remove all visible contamination, use a clean cloth soaked in 0.5% chlorine solution to disinfect the area. You should make sure that the area stays wet with chlorine for 15 minutes. This may involve using additional cloths and adding more chlorine solution to the surface to keep it wet.

Finally, discard the waste and remove PPE properly. Then, perform hand hygiene.

We will talk more about waste disposal in a little bit. For more details on how to remove PPE and perform hand hygiene, you can review the presentations found on the IPC for Ebola or Marburg web page at cdc.gov.

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Script:

When using chlorine solutions for environmental cleaning in Ebola or Marburg isolation areas, a concentration of 0.5%, sometimes called “strong chlorine”, is needed for hard surfaces such as floors, counters, and bed rails. The contact time of chlorine is 10 minutes. This is how long chlorine needs to be on a surface to kill the microorganisms. The surface should be sufficiently wet for 10 minutes to make sure it’s enough time to disinfect.

Note that WHO suggests that soiled linens be safely disposed of as infectious waste via incineration (as opposed to disinfection or decontamination).

You should never spray chlorine.

You especially never want to spray chlorine on people (direct spraying, disinfectant tunnels, or any other “creative” solutions) because of potential adverse health effects which we’ll discuss on another slide. When cleaning surfaces, wiping is preferred over spraying.

Further reading:

Deliberate exposure of humans to chlorine-the aftermath of Ebola in West Africa - PubMed (nih.gov)

Slide 12:

Script:

Chlorine can cause adverse health effects including respiratory problems and burns when handled without the proper PPE. This picture shows a chlorine burn from dunking hands in a bucket of chlorine. The concentration was unknown, and by the time this person could get the rest of her PPE off safely, about 10 minutes, she had chlorine burns on her arms.

Chlorine is also potentially explosive. Calcium hypochlorite may be combustible when mixed with some other types of powdered chlorine. At an Ebola treatment unit during an Ebola outbreak in West Africa, an explosion happened in a chlorine mixing area, which had two separate types of chlorine present: HTH Granular (Calcium Hypochlorite) and SDIC Powder (Sodium Dichloroisocyanurate). The blast was strong enough to be heard several hundred meters away, scattered chlorine powder around a wide area, and blew out a nearby tarpaulin wall.

Finally, if chlorine is mixed with any other disinfectants or cleaning products, particularly acids and ammonia based products, there is the potential for the creation of toxic gases, which can cause eye, nose, and throat irritation and other severe reactions.

In sum, always use caution when using chlorine.

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Script:

Part of keeping a healthcare facility clean is disposing of waste properly, so now we'll talk a bit about the process of waste management and your role in it.

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Script:

The waste management process at healthcare facilities includes several steps:

Sorting or segregating waste

Collecting waste

Transporting waste after it's collected

Potentially storing waste

Any needed treatment of waste

And final disposal of waste.

Safe management of waste generated during patient care is the responsibility of all staff. While facilities management may be largely responsible for collecting, transporting, and disposing of waste, **all** facility employees play a role in waste management. As someone who works with patients, sorting or segregating waste may be the part of this process that you are most involved in, so this is the piece of waste management that we will focus on most today.

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Script:

Healthcare facilities are responsible for managing waste, whether it's handled on site or whether there's a contracted company. Inappropriate waste management poses potential health risks to you, your patients, and other staff in your facility, as well as to your community.

Potential risks might include exposure to items contaminated with a virus that causes Ebola or Marburg, such as contaminated gloves, or exposure to sharp items such as used needles that pose a risk of physical injury as well as exposure to a virus.

Slide 16:

Script:

Waste segregation, also called waste sorting, involves disposing of waste in the correct waste receptacles. Waste segregation is the responsibility of all staff. Medical facility waste is typically sorted by a 3-bin system that includes non-infectious waste, infectious waste, and sharps waste. As you do your job, you should dispose of waste in the appropriate waste bins.

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Script:

Household and general waste should go in one container. This type of waste is non-infectious and includes packaging, food scraps, newspapers, plastic containers, and bottles. These bins are typically black.

Slide 18:

Script:

Infectious waste that does NOT include sharps should go in another bin. This type of waste is known or suspected to contain pathogens and presents a risk of disease transmission. Examples include

- Gloves
- Highly infectious waste such as laboratory cultures and microbiological stocks,
- Waste and wastewater contaminated with blood and other body fluids or excreta
- And materials that have been in contact with patients infected with highly infectious diseases in isolated rooms

These bins are typically yellow. A bucket should also be available for infected liquids and fluids.

Slide 19:

Script:

Finally, sharps should be disposed of in a different container. Sharps waste includes used or unused sharp objects, including:

- Needles and syringes
- Infusion sets
- Scalpels
- Pipettes
- Knives
- Blades
- And broken glass.

We focused on sharps safety in a previous presentation. If you'd like more information on sharps safety, you can go back and review that presentation <HCW Slide Deck 3: Injections and Sharps Safety>

Slide 20:

Script:

Some facilities may need other kinds of waste collection containers such as containers for pathological waste (organic or anatomical), chemical and pharmaceutical waste, and radioactive waste. These types of waste are disposed of in a garbage can or bucket that is most commonly either red or yellow, but may also be brown.

They should be clearly labeled with the type of waste they contain. Typically, pathological waste can be disposed of on-site in a dedicated pit (e.g., placenta pit). Less common chemical, and radioactive waste, if produced, should be managed in close coordination with Ministry of Health to determine appropriate disposal procedures; these may involve centralized collection.

For more details about managing waste, check out the presentation Facilities Mgmt Slide Deck 4: Waste Management Part 1 – The Waste Management Process found on the IPC for Ebola or Marburg web page at cdc.gov.

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Script:

Each separate waste bag will need to be collected. Waste bags should be collected on a regular schedule or when a bin is 2/3 full, whichever comes first, so that waste isn't over-flowing out of bins. The waste will then need to be transported to areas of waste storage and disposal.

In the context of Ebola or Marburg, if it is your job to collect, transport, treat, or dispose of waste, you must wear appropriate PPE during the process to keep yourself safe. Appropriate PPE includes heavy duty gloves, gown or coveralls, face mask, eye protection, and foot covers or boots. (If you'd like more information on what PPE you need and how to put it on, check out the presentation on putting on and taking off PPE – HCW Slide Deck 7.)

Waste should be transported in a cart or wheelbarrow from the place of segregation, that is, the waste bins, buckets, and boxes, to the place of storage or disposal. By transporting in a cart or wheelbarrow, if you have sharps in some of the bags, those bags aren't up against your body which could lead to sharps injuries. Notice that in this picture, the person isn't carrying the bag of waste but is transporting it in a wheelbarrow.

It is also recommended to have a planned transportation route that you follow when collecting waste to avoid any exposure to staff, patients, and the public.

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Script:

To review from our last training, every facility must have a functional device for the final disposal of waste including an incinerator with ash pit or a non-burn system such as an autoclaving and grinding process for infectious waste. If infectious waste is autoclaved and grinded, it can be then added to the regular waste stream for landfill disposal.

In some very low-resource settings, a temporary burning pit may also be an option for treating and then burying infectious waste on-site while longer term improvements are being made. It is also common to have a placenta or organic waste pit on site, as other methods of treatment for these may not be culturally acceptable.

Slide 23:

Reflection: Encourages participants to apply, analyze, and/or evaluate what they've learned, helps them to deepen their understanding of the topic and also allows you to check their comprehension of what they learned..

Personalization: Helps participants think about how what they have learned applies to their specific situations. Connecting learning to personal experiences helps learners to better understand and remember the ideas taught.

Script:

Now that we've spent some time talking about environmental cleaning and waste management, I'd like you to think about your specific job duties. Based on what you learned today, will you do anything differently when performing environmental cleaning or disposing of waste in your healthcare facility in the context of Ebola or Marburg?

Take a minute to write down or think about one or two things that you might do differently based on what you learned today.

[Give participants 1-2 minutes to write down their ideas. After participants are finished, you may ask for volunteers to share their answers, but as this is a personal question, and some might feel embarrassed about what they feel they weren't doing properly in the past, don't require anyone to answer in front of the group.]

Slide 24:

Script:

To wrap up, here some key things I hope you take away from our time today:

First, because viruses that cause Ebola or Marburg can live on surfaces, it's important to keep the healthcare environment clean and dispose of waste properly to keep yourself, your co-workers and patients, and your community safe.

Remember that you should always clean before disinfecting to remove organic material left on surfaces that can prevent disinfectants from working well.

Finally, all facility employees play a role in waste management. Always dispose of waste in the proper bin.

