بسمه تعالی

جمهوری اسلامی ایران

وزارت بهداشت، درمان و آموزش پزشکی

پیشگیری و کنترل ابولا در مراکز ارائه خدمات سلامت

(Infection prevention and control for Ebola)

دکتر آرش سیفی

متخصص بیماری های عفونی و فلوشیپ کنترل عفونت

دانشیار بیماریهای عفونی دانشگاه علوم پزشکی تهران

مسئول واحد کنترل عفونت بیمارستان امام خمینی (ره)

طراح سامانه کشوری نظام مراقبت عفونت بیمارستانی

رئیس گروه مراقبت عفونت بیمارستانی، وزارت بهداشت

عضو کمیته کشوری IPC و مصرف منطقی آنتی بیوتیکها

مشاور علمی سازمان بهداشت جهانی ، حوزه AWaRe

Ebolavirus Ecology

Enzootic Cycle

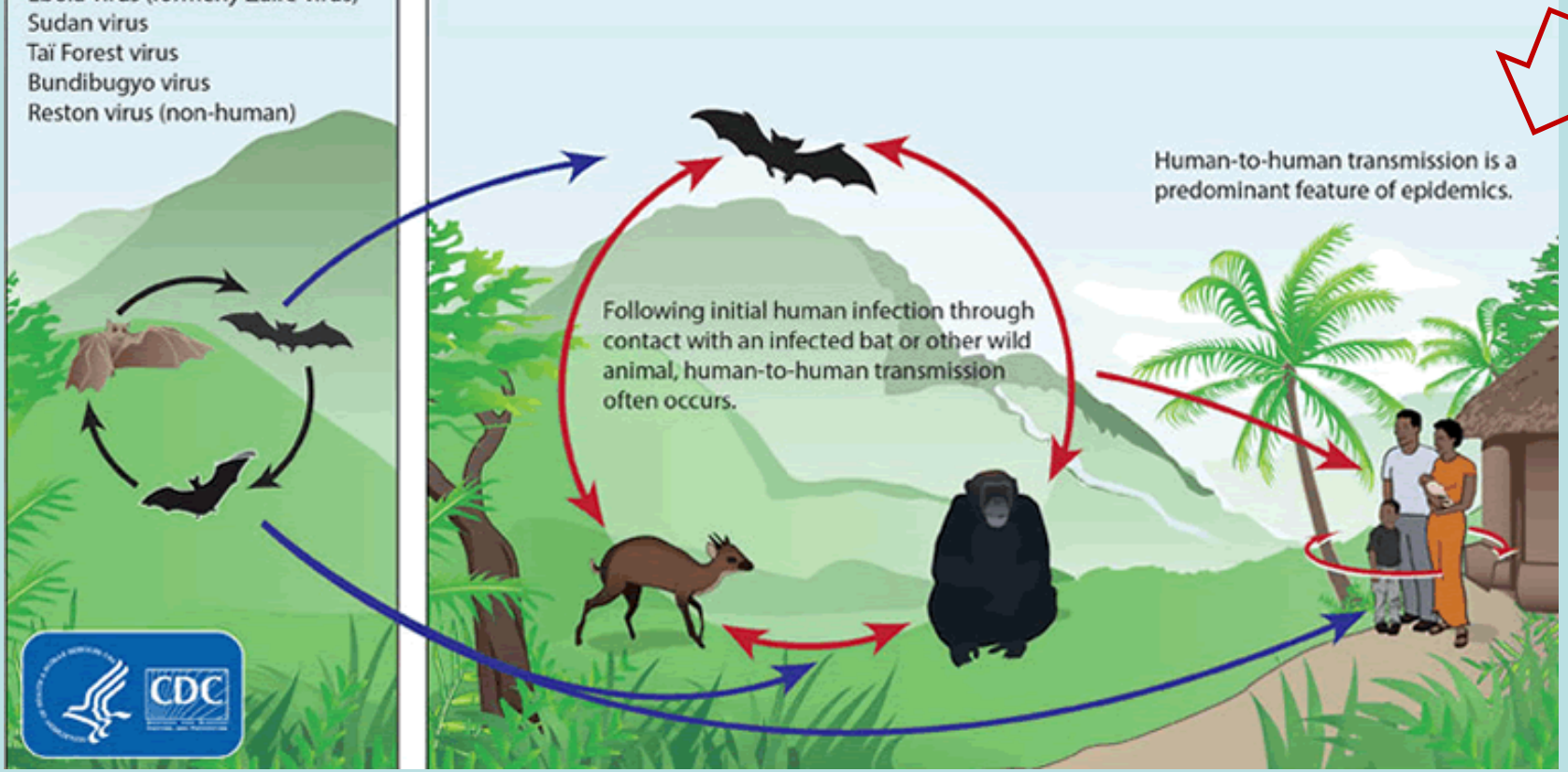
New evidence strongly implicates bats as the reservoir hosts for ebolaviruses, though the means of local enzootic maintainance and transmission of the virus within bat populations remain unknown.

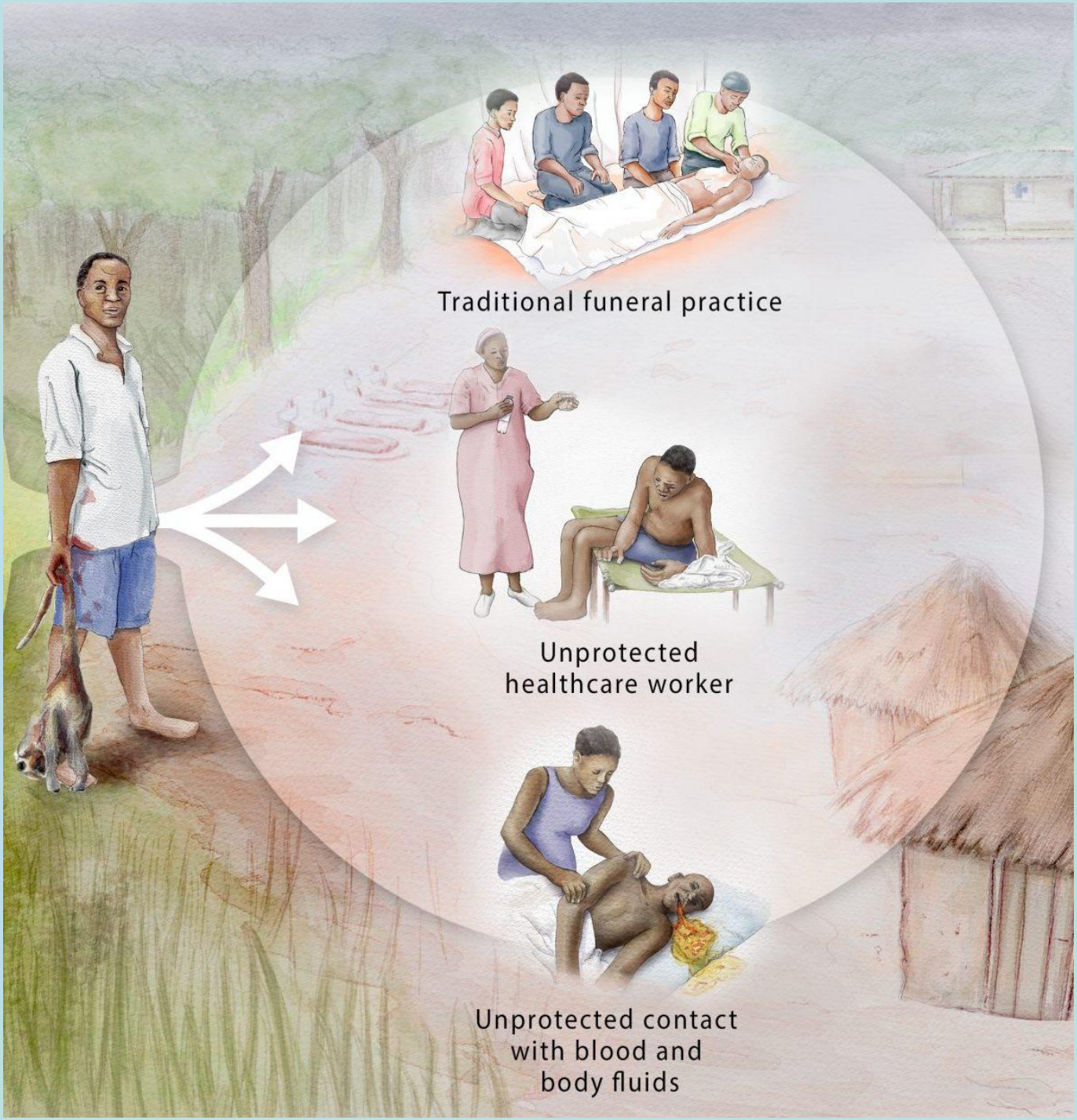
Ebolaviruses:

Ebola virus (formerly Zaire virus)
Sudan virus
Taï Forest virus
Bundibugyo virus
Reston virus (non-human)

Epizootic Cycle

Epizootics caused by ebolaviruses appear sporadically, producing high mortality among non-human primates and duikers and may precede human outbreaks. Epidemics caused by ebolaviruses produce acute disease among humans, with the exception of Reston virus which does not produce detectable disease in humans. Little is known about how the virus first passes to humans, triggering waves of human-to-human transmission, and an epidemic.




Traditional funeral practice
Unprotected
healthcare worker
Unprotected contact
with blood and
body fluids

ابولا در دوره کمون

- دوره کمون ۲۱-۲ روز

- There is no evidence that asymptomatic persons still in the incubation period are infectious to others.

در فرد علامت دار

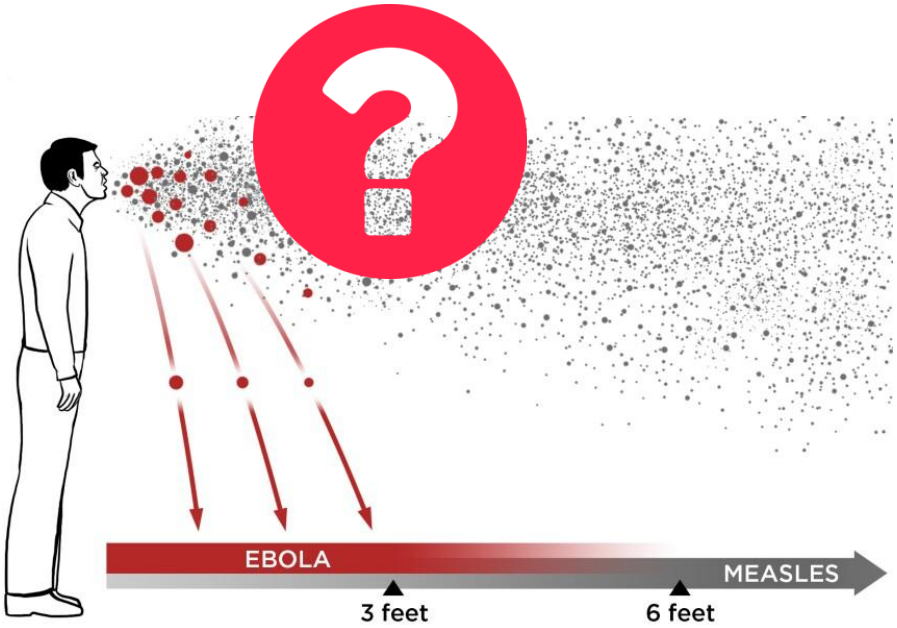
- All symptomatic individuals should be assumed to have virus in the blood and other body fluids

- by direct contact with the blood (e.g. through mucous membranes or broken skin), or other bodily fluids (e.g. saliva, urine or vomit) of infected people, dead bodies, or any surfaces and materials soiled

- Ebola disease is not an airborne disease

راه های انتقال

- Sexual transmission
- Droplet transmission?



- transmission via transfusion and transplantation is possible, although this has not been reported to date

Ebola Virus Shedding and Transmission: Review of Current Evidence

- saliva (22 days), conjunctiva/tears (28 days), stool (29 days), vaginal fluid (33 days), sweat (44 days), urine (64 days), amniotic fluid (38 days), aqueous humor (101 days), cerebrospinal fluid (9 months), breast milk (16 months [preliminary data]), and semen (18 months).

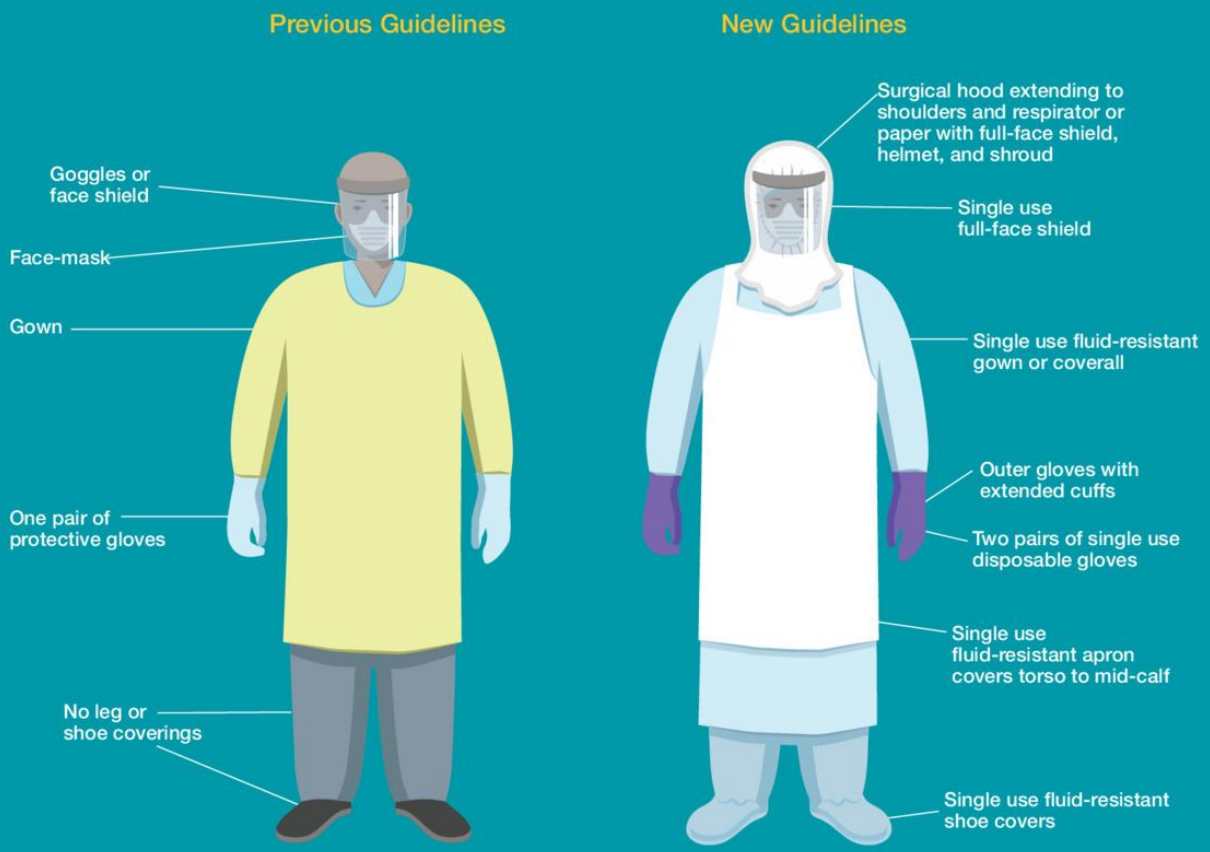
- the only documented cases of secondary transmission from recovered patients have been through sexual transmission.
- We did not find strong evidence supporting ~~respiratory~~ or ~~fomite~~-associated transmission.

J Infect Dis. 2016 Oct 4;214(Suppl 3):S177–S184. doi: 10.1093/infdis/jiw254

محيط

- virus survive in liquid/dried material for many days.
- They are inactivated by heating for 60 minutes at 60°C or boiling for five minutes
- sensitive to lipid solvents, sodium hypochlorite, and other disinfectants.
- ~~Freezing or refrigeration~~ does not inactivate viruses

CDC's Personal Protective Equipment Changes for Health Workers



New guidelines from the Centers for Disease Control and Prevention issued on October 20, 2014 called for head-to-toe protection for health workers treating Ebola patients.

CS276800-B

WHO: PPE for Ebola

- standard precautions: gloves, mask, gown. If it is **blood** or aerosol-generating procedure (AGP), will include: goggles and mask or face shield, gloves, gown or coverall, head cover, rubber boots

Steps to put on personal protective equipment (PPE) for Ebola/Marburg disease: Gown and headcover

World Health Organization

Always put on PPE under the supervision of a trained buddy. Do not use tape to secure PPE in place.

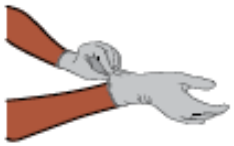
1. Remove all personal items.

2. Put on scrubs and rubber boots[1]. Tie hair back.

3. Select correct size of PPE. Do not use if damaged or expired.

4. Perform hand hygiene with ABHR or soap and water.

5. Put on the inner pair of gloves.



6. Put on fluid resistant gown. Gown sleeves should go over the inner pair of gloves.

7. Put on non-collapsible medical mask. Use seal-checked respirator if performing aerosol generating procedures.

8. Put on face shield OR goggles.

9. Put on head and neck covering.

10. Put on disposable or reusable waterproof apron. For hygienists, cleaners, waste handlers and safe and dignified burial teams, use heavy duty apron.

11. Put on second pair of gloves over the cuff. For hygienists, cleaners, waste handlers and safe and dignified burial teams, use heavy duty gloves.

12. Ensure buddy check and name and time of entry are put on PPE.

[1] If boots are not available, use slip on shoes (no laces) that cover the ankle and the top of the foot.

Steps to put on personal protective equipment (PPE) for Ebola/Marburg disease: Coverall

World Health Organization

Always put on PPE under the supervision of a trained buddy. Do not use tape to secure PPE in place.

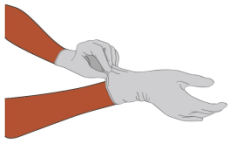
1. Remove all personal items.

2. Put on scrubs and rubber boots[1]. Tie hair back.

3. Select correct size of PPE. Do not use if damaged or expired.

4. Perform hand hygiene with ABHR or soap and water.

5. Put on the inner pair of gloves.



6. Put on coverall.

Use finger/thumb loop if present.

7. Put on non-collapsible medical mask. Use seal-checked respirator if performing aerosol generating procedures.

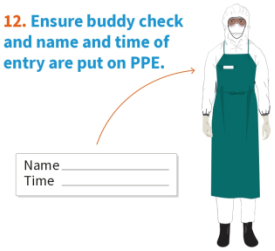
8. Put on face shield OR goggles.

9. Pull the hood of the coverall over the head.

10. Put on disposable or reusable waterproof apron. For hygienists, cleaners, waste handlers and safe and dignified burial teams, use heavy duty apron.

11. Put on second pair of gloves over the cuff. For hygienists, cleaners, waste handlers and safe and dignified burial teams, use heavy duty gloves.

12. Ensure buddy check and name and time of entry are put on PPE.



[1] If boots are not available, use slip on shoes (no laces) that cover the ankle and the top of the foot

Steps to remove personal protective equipment (PPE) for Ebola/Marburg disease: Gown and headcover

World Health Organization

Always remove PPE under the supervision of a trained buddy.

1. Perform glove disinfection of outer gloves with ABHR or soap and water.

2. a. Untie or break apron strap from the back/waist. **b.** Remove apron leaning forward and keeping it away from the body. If disposable apron place in waste bin. If reusable/heavy duty apron place in bucket for decontamination.

3. Perform glove disinfection of outer gloves with ABHR or soap and water.

4. Remove outer pair of gloves and dispose of them safely in waste bin. If heavy duty gloves used place in bucket for decontamination.

5. Perform glove disinfection of inner gloves with ABHR or soap and water.

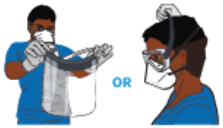
6. Remove head and neck covering from back to front and dispose of it safely in waste bin.

7. Perform glove disinfection of inner gloves with ABHR or soap and water.

8. Remove the gown from back to front rolling it from inside to outside and dispose of it safely in waste bin.

9. Perform glove disinfection of inner gloves with ABHR or soap and water.

10. Remove eye protection by lifting the strap from behind the head and dispose of it safely in waste bin. If reusable eye protection is used, place safely in bucket for decontamination.

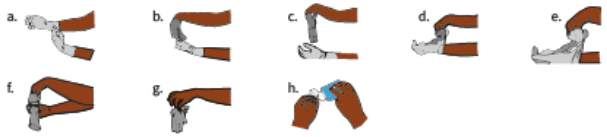


11. Perform glove disinfection of inner gloves with ABHR or soap and water.

12. Remove mask from behind the head by first lifting the bottom strap above the head and leaving it hanging in front; and then lift the top strap from behind head and dispose of it safely in waste bin.

13. Perform glove disinfection of inner gloves with ABHR or soap and water.

14. Remove inner gloves and perform hand hygiene with ABHR or soap and water.



15. Step into 0.5% chlorine foot bath. Step out of the foot bath and remove rubber boots without touching them.

16. Perform hand hygiene with ABHR or soap and water.

Steps to remove personal protective equipment (PPE) for Ebola/Marburg disease: Coverall

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Always remove PPE under the supervision of a trained buddy.

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2. a. Untie or break apron strap from the back/waist. **b.** Remove apron leaning forward and keeping it away from the body. If disposable apron place safely in waste bin. If reusable/heavy duty apron place safely in bucket for decontamination.

3. Perform glove disinfection of outer gloves with ABHR or soap and water.

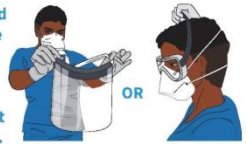
4. Remove outer pair of gloves and dispose of them safely in waste bin. If heavy duty gloves used place safely in bucket for decontamination.

5. Perform glove disinfection of inner gloves with ABHR or soap and water.

6. While wearing inner gloves, remove hood of the coverall. Unzip coverall completely and remove from shoulders to feet. Avoid touching skin or scrubs.

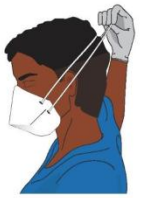
7. Perform glove disinfection of inner gloves with ABHR or soap and water.

8. Remove eye protection by lifting the strap from behind the head and dispose of it safely in waste bin. If reusable eye protection is used, place safely in bucket for decontamination.



9. Perform glove disinfection of inner gloves with ABHR or soap and water.

10. Remove mask from behind the head by first lifting the bottom strap above the head and leaving it hanging in front; and then lift the top strap from behind head and dispose of it safely in waste bin.



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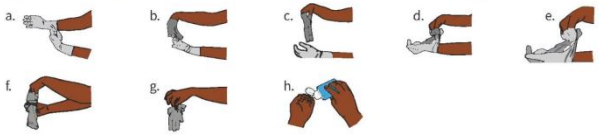

13. Step into 0.5% chlorine foot bath. Step out of the foot bath and remove rubber boots without touching them.

14. Perform hand hygiene with ABHR or soap and water.

Vaccines

- Two vaccines now licensed.
- Only for Zaire ebolavirus.
- Ervebo (Merck), Mvabea (Janssen)

از توجه شما متشکرم