WHO/EVD/Manual/ECU/15.1

Manual for the care and management of patients in Ebola Care Units/ Community Care Centres

Interim emergency guidance

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WHO/EVD/Manual/ECU/15.1

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PURPOSE OF THIS MANUAL

This manual provides guidance on best practices to be followed in Ebola Care Units (ECUs)/Community Care Centres (CCCs). It is intended for health aid workers (including junior nurses and community health-care workers) and others providing care for patients in ECUs/CCCs. While the focus is on the care and management of patients with Ebola Virus Disease (EVD), the care of patients with other causes of fever is also described.

EVD spreads from an infected sick person to others when there is direct contact with bodily fluids. EVD should be considered a possible diagnosis for every patient presenting to an ECU/CCC with fever. Attending health aid workers should protect themselves by taking appropriate precautions. At the same time, health aid workers should respect each patient and provide treatment and care with dignity.

Patients with EVD can have symptoms similar to patients with malaria and other endemic infectious diseases including typhoid and Lassa fever. Given that the EVD-affected areas in West Africa are located in high malaria-endemic zones, patients with fever should be appropriately treated for malaria.

Procedures detailed here to care for and manage patients with fever and EVD in ECUs/CCCs should help to establish a systematic approach at the community level for providing reliable and acceptable health care.

INTRODUCTION

The Ebola virus disease (EVD) outbreak in West Africa is the most severe and complex outbreak of this disease in history. Containing it requires several public health interventions. These include early identification of cases; appropriate treatment of people with EVD (to reduce suffering and to improve chances of survival); physical isolation of cases to reduce further spread; rigorous tracing of contacts; and burial practices that are safe in terms of EVD-transmission risk and dignified in terms of allowing culturally-appropriate grieving. These measures are supported by strong social mobilization and sound risk communication practices. Much of the care of patients with EVD has taken place in hospitals and Ebola Treatment Centres (ETCs). However, as the number of cases has grown, the capacity of ETCs in some areas has been insufficient to cope. This has led to some patients with EVD remaining at home, putting family members at risk.

WHO, with the support of UN, NGO and government partners, has devised a complementary strategy to increase the capacity for treating large numbers of EVD patients and to help reduce EVD transmission through patient isolation. This has been done through the establishment of controlled settings, called Ebola Care Units (ECUs) or Community Care Centres (CCCs). These centres enable infected persons to receive basic curative and palliative care along with access to essentials including food, drink, clean clothing and linens, while being isolated. This is done in the community, meaning the ECUs/CCCs can be set up and maintained with local supports. It also reduces the transportation of patients with EVD, a practice that can lead to infections among transporters and helpers.

An advantage of ECUs/CCCs is that they can be operated by trained health aid workers with help from community workers and volunteers. A well-managed ECU/CCC can draw upon community will and support, while at the same time offering basic care in a safe and friendly setting, above what can be provided at home. The facilities created for these ECUs/CCCs could also be used in the future for other community-level health-care provision.

TIPS FOR SAFE AND FRIENDLY ECUs/CCCs

Rule No.1 Protect yourself and others from infection.

Rule No. 2 Treat patients with respect and dignity.

- It is important for ECU/CCU health aid workers to develop trust and good relationships with patients and their families. To facilitate this:
  - Write your name on your outfit (for example on your personal protective equipment – PPE), so they know who you are.
  - Put pictures of the health aid workers on the walls of the treatment area (when your face will be hidden behind PPE).
- Allow patients to communicate with their family and friends
  - Find a creative way to allow communication. For example, designate meeting areas that are physically separated, introduce transparent separations and permit the use of cell phones. This is usually easier to manage if only one visitor at a time is permitted per patient.
  - If the patient is bedbound, one person at a time may be permitted to see the patient. Visitors should be trained in proper use of PPE and hand hygiene, and instructed not to touch the patient, bed linens or other objects. A staff member may accompany or observe the visit to ensure safe practices are followed.
- Dos and Don'ts for ECU/CCC Health aid workers

DO:

- **inform patients and families** about EVD. Explain how it is transmitted from one person to another and how to take precautions to prevent it. Keep families updated on the patient's condition, and provide any other information they may seek;
- provide **care and support** to patients, particularly in helping them to drink and eat if it is possible. If needed, help patients use the latrine/ toilet;

- **monitor** patients for new signs or symptoms, or improvements in their condition. Observe and respond to their needs, such as the need for comfort;
- **record** patients' details on a chart maintained within the facility. **Report to data management and supervisory personnel on the condition of patients.**

DON'T

- touch the patient or environment except when wearing PPE;
- treat the patient in a way that is disrespectful or hurtful;
- provide unnecessary medication, as this can be harmful – e.g., non-steroidal anti-inflammatory medicines (NSAIDs such as aspirin or ibuprofen).

Make ECUs/CCCs friendly and safe for patients and their families

Patients coming to an ECU/CCC are often scared and full of speculation and questions. ECU/CCC staff should explain what Ebola is and how it is transmitted (see Annex 1, page 35). Explain that you are wearing PPE to protect yourself and other people from infection. For patients who will be admitted as suspected cases, try to reduce their distress by explaining to them and their families how they will be cared for in the ECU/CCC.

TRIAGE

Triage in ECUs/CCCs

What is triage?

Triage is the process in which a staff member rapidly assesses a patient to determine whether Ebola is suspected, and if there is an urgent need for treatment. This process has three aims:

- patients with suspected Ebola are isolated from others who do not have Ebola to reduce the risk of transmission;
- patients with suspected Ebola who need treatment can receive it quickly, to improve their chance of survival;
- patients who are unwell but likely NOT to have Ebola can be sent home with instructions/medication, or referred for treatment in other health-care facilities. This reduces their risk of infection in facilities where patients with Ebola are being cared for.

Triage area

- All patients must enter the facility through **one common area (triage area)** for screening (see Figure 1 of facility layout).
- **Clear signage** must direct all patients through this triage point (see Figure 2).
- **Only patients** should enter the triage area. Their family members or companions should wait outside. Infants/young children requiring adult assistance should be accompanied by only one adult. **ECU/CCC guard(s)**[1] should be assigned to watch the flow of people at the entrance of the triage area. Guards should keep non-patients away from the ECU/CCC, unless visitors have approval to enter.

[1] Guards can be recruited from the community. Guards should not come in close contact with patients or their remains. Guards should be present 24 hours a day, to ensure patients do not leave the ECU/CCC without a discharge certificate, and that their family and other visitors do not come in without approval. Guards are not expected to conduct physical interventions, but to provide advice and report any unauthorized entries or departures to the responsible person in the ECU/CCC. Guards should be trained to perform hand hygiene properly.

Figure 1. Facility design and layout

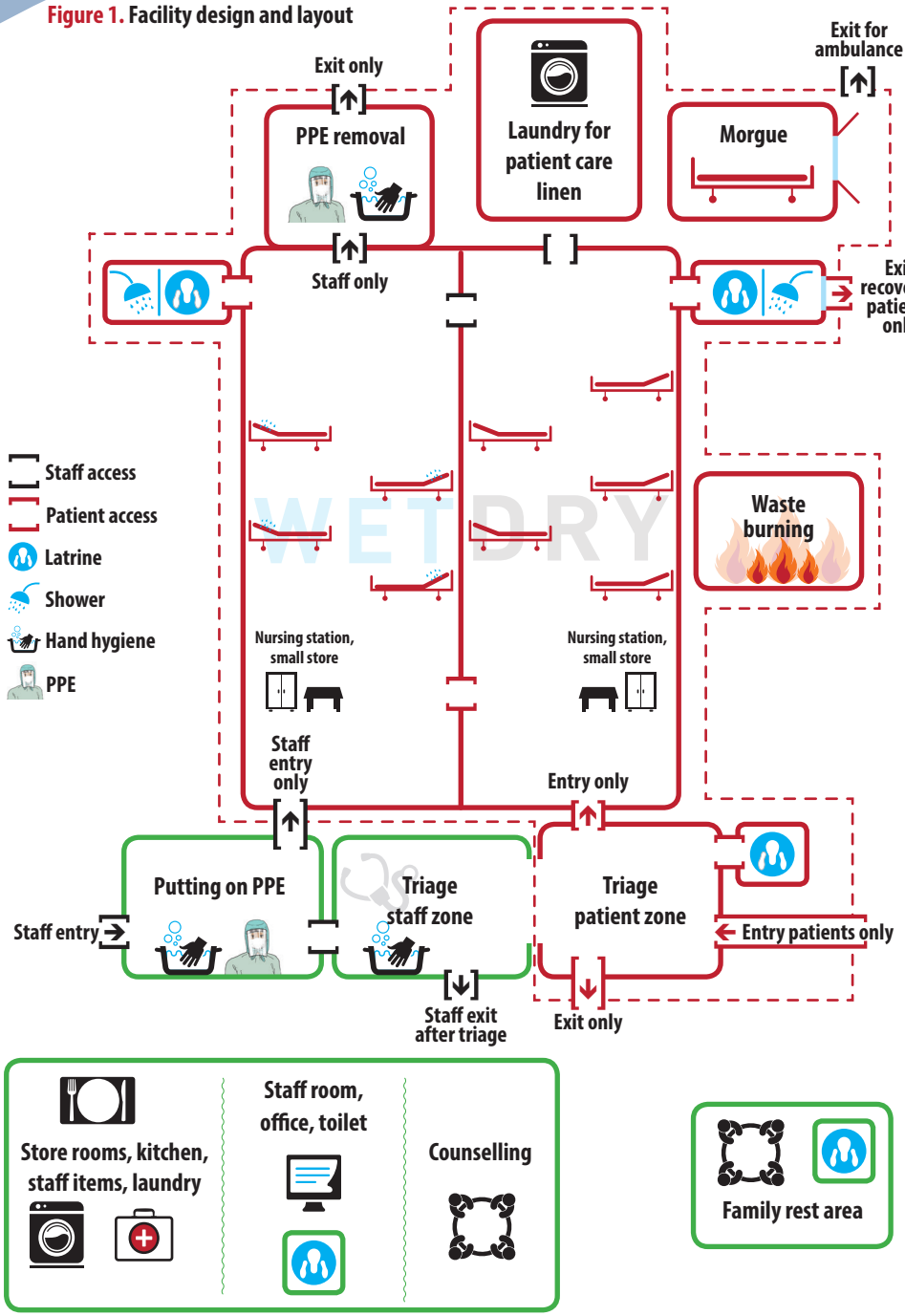
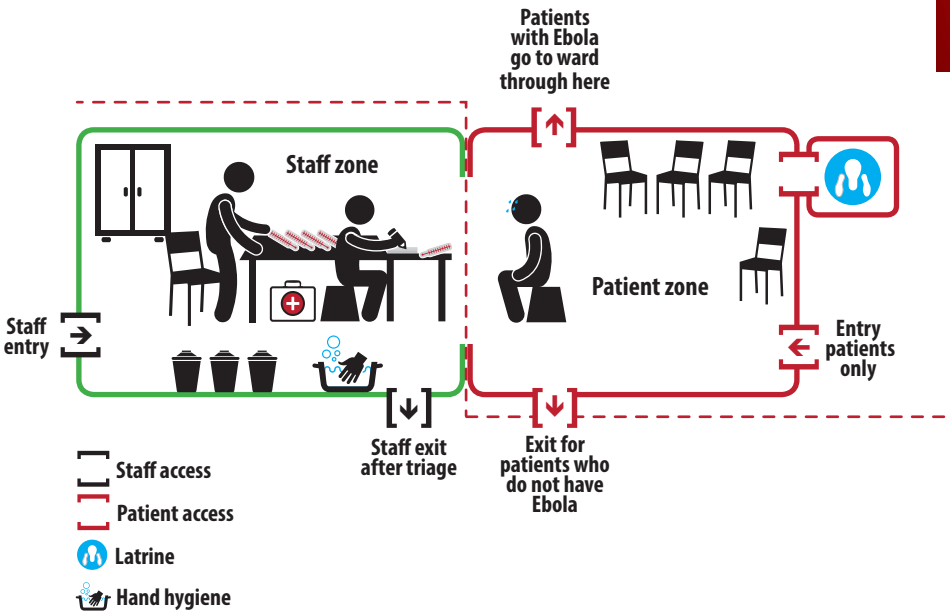


Figure 2. Triage area, expanded from Figure 1



- The triage area should be open only during fixed hours (for example, 8am to 6pm).
- The triage area should be divided into **two zones**: a) for **patients** and b) for ECU/CCC **staff** to conduct screening/medical evaluation.
- Avoid direct contact with patients as much as possible. In order to abide by 'no touch' and 'keep 1m distance' rules, low wooden fences (about 1m high) have been introduced in the triage areas of some ECUs/CCCs to separate patients and staff.
- In the **patient zone**, there is a need for:
  - chairs to be at least 1 metre apart
- In the **staff zone**, there is a need for:
  - infrared thermometers
  - patient medical evaluation forms and pens
  - alcohol-based handrub or a washing basin with water and soap and disposable towels at an accessible distance

- disposable gloves
- 0.5% chlorine solution and disposable towels for table disinfection
- rubbish bin

Triage process

- A trained person should perform triage – **triage staff.**
- **Triage staff** should remain 1–2 metres (3–6 feet) away from patients and not touch them or their remains as much as possible.
- All triage staff should wear PPE: a goggle or face shield to protect their eyes, mask to protect their nose and mouth, disposable apron, gloves and waterproof boots (or closed-toe slip-on shoes without shoelaces and shoe covers).
- Greet the patient upon arrival. Inform the patient about what happens in the triage area and what information is needed from him/her (history of contact and attendance at funerals, symptoms).
- Explain why his/her answers are so important for the process.
- Explain that early treatment can maximize the chance of recovery and reduce the risk of disease for the family.
- **Triage staff** should not touch the patient while conducting the interview.
- Screening/medical evaluation of the patient includes:
  - Interviewing and writing down the findings in the patient evaluation form:
    - **Description of symptoms and their date of onset:** high fever (≥38°C), headache, extreme tiredness, loss of appetite, nausea, stomach pain, sore throat, muscle and joint pain, red eyes, rash, hiccups, diarrhoea, vomiting and bleeding (in vomit, stool, urine, gums, nose, etc.), pregnancy loss (e.g., miscarriage), difficulty in breathing, drowsiness.
    - History of contact with an Ebola patient[1].
  - Take the patient's temperature with an infrared thermometer and write down the result.

[1] This includes a person who had contact with an Ebola patient by providing care, washing their clothes, touching and/or washing their body even after they have died, and touching contaminated objects such as bed linen. It also includes physical contact, sexual contact, attending the funeral of an Ebola patient who died, and touching a sick or dead animal (monkey, bat).

- Complete the Checklist and Patient Record (Annex 2).
- Now you are ready to make a decision about the patient. We will discuss how to do this in the next section.

Making decisions about patients

A patient can present with any combination of signs and symptoms described in the table below. Follow the actions described for each scenario in Table 1. A triage algorithm is provided in Figure 3.

All patients with fever should be provided malaria treatment and should complete the treatment.

Table 1. What to do for patients presenting with the following symptoms

● Yes, provide.
➔ See 'Notes' column.
— Not applicable.

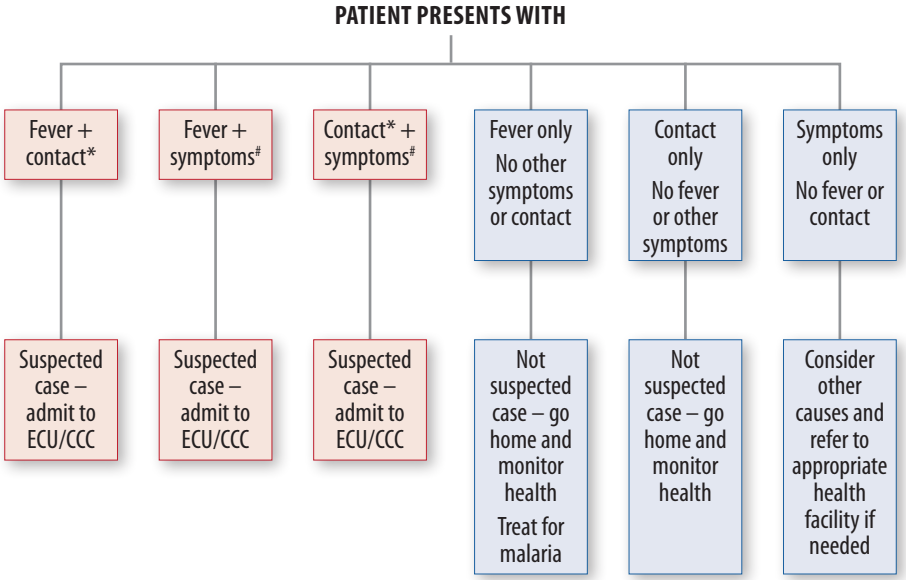
Scenario	Action – admission or send home	Food and drink	Malaria treatment	ORS	Notes
Fever ≥38°C **and** reports history of contact with an Ebola patient (alive or dead)	Consider as suspected Ebola case and admit to ECU/ CCC	●	●	➔	• ORS if sign of dehydration* • Paracetamol as needed**
Fever ≥38°C **and** three or more symptoms described above, with or without history of contact	Consider as suspected Ebola case and admit to ECU/ CCC	●	●	●	• Start ORS immediately for patients with diarrhoea and/or vomiting • ORS if sign of dehydration • Symptomatic treatment†
No fever, **but** has a history of fever and more than three symptoms **and** a history of contact	Consider as suspected Ebola case and admit to ECU/ CCC	●	➔	●	• Malaria treatment if fever after admission • Start ORS immediately for patients with diarrhoea and/or vomiting • ORS if sign of dehydration • Symptomatic treatment

● Yes, provide.
➔ See 'Notes' column.
— Not applicable.

Scenario	Action – admission or send home	Food and drink	Malaria treatment	ORS	Notes
Fever **and no other** symptoms **and does not report history** of contact with an Ebola patient	• Give anti-malarial medicines and paracetamol (to reduce pain and fever) • Send home for 48 hours of observation • Provide a home kit if available and advice to prevent transmission • Ask to come back if fever persists beyond 48 hours	➔	●	➔	• Food, ORS, vitamins can be included in the home kit
Fever >48 hours **and no other** symptoms, **does not report history** of contact with an Ebola patient, **and has not responded** to antimalarials	• Consider as suspected Ebola case and admit to ECU/CCC	●	➔	●	• Complete malaria treatment • ORS if sign of dehydration • Symptomatic treatment
No fever and no other symptoms **but** reports history of contacts	• Send home • Provide a home kit if available, and advice on how to monitor his/her health and to prevent transmission • Advise to come back to the ECU/CCC if fever appears	➔	—	➔	• Home kit can be provided for the contacts according to the local strategy and can include ORS
Non-Ebola symptoms	Send home with or without medication as appropriate, or refer to a separate health facility where possible	➔	—	➔	• Symptomatic treatment as appropriate • Home kit can be provided for the contacts according to the local strategy and can include ORS

* Typical signs of dehydration are thirst, decreased skin turgor, skin pinch goes back slowly and sunken eyes. If patient has obvious sweating, continuing high fever, frequent vomiting or diarrhoea, the patient can be suffering, or soon suffer from dehydration.
** Paracetamol is also included in 'symptomatic treatment' as pain and fever relief.
† Symptomatic treatment. See sections for medicines, page 16.

Figure 3. Algorithm for making decisions during triage



* **History of contact with Ebola:**

In the past three weeks, has the person:

- Cared for a sick person?
- Washed the clothes of the person who was sick or died?
- Had sexual contact with someone who has since died?
- Touched the body of someone who has died?
- Washed the body of someone who has died?
- Attended the funeral of someone who died from Ebola?
- Touched a sick or dead animal (monkey, fruit bat)?

\# **Symptoms include any three of:**

'Dry' symptoms: headaches, extreme tiredness, loss of appetite, nausea, stomach pain, sore throat, breathing difficulties, difficulty swallowing, muscle and joint pain, red eyes, rash, hiccups.

'Wet' symptoms: diarrhoea, vomiting, bleeding (in vomit, stool or urine), foetal loss, unusual or non-traumatic bleeding.

If the patient has a fever lower than 38˚C, but describes having had higher fevers before arriving at the ECU/CCC, then that is accepted as meeting the definition of fever.

Flow of suspected EVD patients

- Suspected Ebola patients admitted to an ECU/CCC are grouped into two categories:
  - **Dry cases** (fever plus symptoms other than diarrhoea, vomiting or bleeding);
  - **Wet cases** (with diarrhoea, vomiting or bleeding).

Patients not likely to have EVD

Place items to be given to the patient (home kit, medicines) on the table and provide instructions for use. Advise patients on transmission prevention, and when to return to the ECU/CCC.

After each patient screening, clean the table with 0.5% chlorine solution, using a moistened towel.

Remove the gloves, perform hand hygiene and put on a new pair of gloves.

If your apron is soiled, dispose of it and put on a clean apron. For more complete information about safe patient care, see SAFETY section of this manual.

Facility design

There are two separate zones: the green and the red (see Figure 1). The red zone is for the care of patients suspected or confirmed to have EVD, and to clean and disinfect contaminated objects and burn waste. The morgue is also in the red zone. The movement of staff and patients should be from clean to more contaminated areas. Staff should enter through the PPE donning area and exit through the area for PPE removal. Hand hygiene stations are to be provided in both these areas. Patients enter and leave through assigned points.

Within patient care areas:

- Beds should be 1 to 2 metres apart.
- Each patient should be provided with a plate, cup, and utensils (spoon, fork). These should not be shared with others.

- Each patient should be provided with a bedpan and a bucket.
- Fresh 0.5% chlorine solution should be provided every day in each patient area to disinfect any spills after cleaning.

The green zone is for all activities that do not pose a risk of EVD transmission. This zone has counselling areas, rest areas for staff and patients' families and supporting services such as data management, administration, stores, pharmacy, kitchen and laundry for staff scrubs and boots.

Activities in both these zones are supervised and monitored by designated staff.

TREATMENT

Treatment of patients with suspected or confirmed EVD

Treatment of patients in ECU/CCC follows a 'syndromic approach', which means an approach based on patients' symptoms and signs.

Principles of treatment in ECUs/CCCs

- Provide basic care such as food and water. If a patient cannot eat or drink, help them to take frequent small sips. If it is difficult to access safe water, tea, soup, rice water or any locally preferred drink (not alcohol) can be provided.
- Patients with fever, especially those with diarrhoea and vomiting, should be encouraged to drink fluids and as much oral rehydration solution (ORS) as can be tolerated. **Oral rehydration** is the mainstay of EVD treatment for patients suffering from severe gastro-intestinal symptoms such as nausea, vomiting and diarrhoea. Frequent watery diarrhoea is the hallmark of the ongoing EVD outbreak which causes severe dehydration and results in kidney dysfunction, hypovolemic shock and multiorgan failure. Reports from ETCs suggest successful rehydration can greatly increase a patient's chance of survival. More information about rehydration by a special hydration formula developed for the most efficient body fluid replacement (ORS) is provided in the next section.
- Malaria treatment should be provided to all patients with fever, in accordance with national guidelines (see page 15).
- Medicines to control symptoms can be given orally, as described in the 'managing symptoms' section on page 16. Injections increase the risk of staff infection, and can be given only if appropriately trained staff are assigned to the ECU/CCC.
- If sufficient oversight (such as a trained nurse) is available, oral antibiotics may be given to treat apparent bacterial infections such as bacterial pneumonia or bacterial enteritis.

- Take and record the patient's temperature once per shift with a calibrated infrared thermometer.

Rehydration with oral rehydration solution (ORS)

Patients with EVD typically suffer high fever and gastrointestinal symptoms such as nausea, vomiting and diarrhoea. These symptoms place patients at risk of dehydration, the most frequent and important cause of further deterioration. Oral rehydration is an important way to manage dehydration, both in the community and in hospital-based care. A combination of salt and sugar enhances fluid absorption, because glucose promotes the absorption of both sodium and water. The **WHO Oral Rehydration Solution (ORS)** is best suited for treating dehydration. Prepare the solution as directed on the sachet (usually one sachet per litre of water).

WHO ORS contains: Glucose 13.5 g/l, Sodium chloride 2.6 g/l, Potassium chloride 1.5 g/l, Trisodium citrate dihydrate 2.9 g/l (total osmolarity of 245 mOsm/l).

If glucose and sodium citrate are not available, they may be replaced with:
Sucrose (common sugar) 27 g/l
Sodium bicarbonate 2.5 g/l

Solutions must be freshly prepared, with recently boiled and cooled water.

Each patient should have individual containers and utensils for taking ORS.

If mixing ingredients, **accurate weighing and thorough mixing and dissolution of ingredients in the correct volume of water is important**. Administration of more concentrated solutions can result in hypernatraemia (elevated sodium concentration in the blood).

Supervise and urge patients to take ORS, as this can be lifesaving. Use the guidelines below to decide the amount of ORS required for children and adults.

Approximate amount of ORS solution to give in the first 4 hours

Age	Less than 4 months	4–11 months	12–23 months	2 –4 years	5–14 years	15 years or older
Weight	Less than 5 kg	5–7.9 kg	8–10.9 kg	11–15.9 kg	16–29.9 kg	30 kg or more
In ml	200–400	400–600	600–800	800–1200	1200–2200	2200–4000
In local measure						

- Use the patient's age when the weight is not known.
- The approximate amount of ORS required in millilitres (ml) can also be calculated by multiplying the patient's weight in kilograms (kg) by 75.
- During the initial stages of therapy, while still dehydrated, adults can consume up to 750 ml per hour if necessary, and children can consume up to 20 ml per kg body weight per hour.
- If the patient asks for more ORS than indicated in the guidelines, give them more – be guided by the patient's thirst.
- The exact amount of fluid to be given to the patient also depends on the extent of stool loss and vomiting. Signs of more significant fluid loss (requiring larger volumes of fluid rehydration) include lethargy, confusion, sunken eyes, wrinkled skin and a weak pulse.
- It is generally safe to use ORS without monitoring electrolyte levels. Potassium contained in ORS is generally sufficient to correct hypokalemia.
- If a patient (child or adult) has no diarrhoea or dehydration, and finds it difficult to drink ORS, use flavoured ORS. Do not use sports drinks, or sugary drinks such as fruit flavoured and fizzy commercial drinks, as they can worsen diarrhoea.

Reassess the patient's condition after four hours, and provide more ORS as detailed above if dehydration persists.

In addition, give the patient Zinc sulphate, especially children:

- Under 6 months (10 mg per day for 10–14 days).
- Over 6 months (20 mg per day for 10–14 days).

Encourage food and other fluids if tolerated.

Malaria

All patients presenting to ECUs/CCCs with fever should be given malaria treatment.

Treatment and dose

Artesunate plus amodiaquine (AS+AQ)

Fixed dose combination (50 mg + 153 mg/tablet)

- 5–9 kg body weight (2–11 months): 1/2 tablet daily for 3 days
- 9–18 kg body weight (1–5 yrs): 1 tablet daily for 3 days
- 19–35 kg body weight (6–13 yrs): 2 tablets daily for 3 days
- ≥35 kg body weight (≥14 yrs): 2 tablets daily for 3 days

OR

Artemether-lumefantrine (AL)

Fixed dose combination (20+ 120 mg/tablet)

- 5–15 kg body weight (2–24 months): 1 tablet twice daily for 3 days
- 15–25 kg body weight (25 months–7 yrs): 2 tablets twice daily for 3 days
- 25–35 kg body weight (8–13 yrs): 3 tablets twice daily for 3 days
- ≥35 kg body weight (≥14 yrs): 4 tablets twice daily for 3 days

OR

Dihydroartemisinin plus piperaquine (DHP+PQP)

Fixed Dose combination (40 mg + 320 mg/tablet)

- 11–16 kg body weight: 1 tablet daily for 3 days
- 17–24 kg body weight: 1.5 tablet daily for 3 days
- 25–35 kg body weight : 2 tablets daily for 3 days
- 36–59 kg body weight: 3 tablets daily for 3 days
- 60–79 kg body weight: 4 tablets daily for 3 days
- > 80 kg body weight: 5 tablets daily for 3 days

Remarks

- If there are a selection of artemisinin-based combination therapies (ACTs), follow the first-line treatment recommended in your national malaria treatment guidelines.*
- For procurement: a course of therapy blister packs with complete dosage for 3 days, with treatment according to body weight, are commercially available for both AS+AQ and AL. To increase patient adherence to treatment, ACTs available in these packages should be procured.

* WHO database (http://www.who.int/malaria/areas/treatment/drug_policies/en/), the first-line malaria treatment in Guinea, Liberia and Sierra Leone is artesunate plus amodiaquine.

Managing symptoms

Manage common EVD symptoms as described below. Reduce the dose after the first day, and make decisions about the cessation of treatment based on improvements in symptoms.

Symptom	Medicine	Dose
Nausea, vomiting	Ondansetron	Age 4–12 years: 4 mg two times a day Adult: 8 mg two times a day
Diarrhoea	ORS and Zinc	See details above
Pain or Fever	Paracetamol	Dose by weight is 15 mg/kg Age 6 months–2 years: 100 mg every 4–6 hours Age 3–5 years: 200 mg every 4–6 hours Age 6–9 years: 300 mg every 4–6 hours Age 10–15 years: 500 mg every 4–6 hours Adult: 1000 mg every 4–6 hours
Epigastric pain	Omeprazole	Once a day before food Age 6 months to 2 years: 10 mg Age 2–12 years: 10 mg Adult: 20 mg
Eye redness, discharge	Tetracycline	Eye ointment for topical application
Agitation, confusion	Diazepam	2 mg to 5 mg per dose, up to 3 doses per day

Antibiotics

If a bacterial infection is suspected, use oral antibiotics as below.

Lower respiratory infections (e.g., pneumonia)

Amoxicillin:

Child: 40 mg/kg/dose twice daily
Age 2 to 12 months: 250 mg twice a day for 5 days.
12 months to 5 years: 500 mg twice a day for 5 days.

Adult: 500 mg to 1 gm three times a day for 5 days
Can also be used for other infections such as dental infections, otitis media (middle ear inflammation), suspected blood stream infections and urinary infections.

Gastroenteritis

Ciprofloxacin:

Child: 15 mg/kg twice daily for 5–7 days
Age 1 to 5 years: 125 mg twice a day.
5 to 12 years: 250 mg twice a day.

Adult: 500 mg twice daily for 7 to 10 days
Can also be used for other infections such as urinary tract infections and typhoid fever.

Nutrition

It is important to pay attention to the patient's nutrition. Provide as much food and drink as the patient can tolerate. Further guidance on nutrition is provided in Annex 3.

Pregnant women with EVD

- Provide care for EVD as for other patients.
- Be aware that EVD can cause miscarriage and foetal death *in utero*. In case of vaginal bleeding or foetal death *in utero*, refer to guidance document for appropriate management (being developed).

Discharging a patient from ECUs/CCCs

A) Patient with fever only and no other symptoms at admission

No fever for 72 hours and no other symptoms.

AND

Able to eat and carry out daily routine activities such as walking (taking into account any previous disabilities) and washing themselves independently.

B) Patient with fever and other symptoms (e.g., diarrhoea, vomiting, bleeding) at admission

No fever for 72 hours, symptoms that may be associated with ongoing shedding of virus (e.g., diarrhoea, vomiting, bleeding) have completely disappeared for 72 hours.

AND

Able to eat and carry out daily routine activities such as walking (taking into account any previous disabilities) and washing themselves independently.

C) If laboratory blood polymerase chain reaction (PCR) testing is available (in situations A and B)

A negative test on day 3 following onset of fever and symptoms, or later

OR

A negative test at least 48 hours after the last positive test.

Advice for men after discharge:

- Virus remains in the semen for up to 3 months.
- Condoms must be used during sexual contact.

Advice for pregnant women on discharge:

- Be aware/inform women and family that miscarriage and foetal death may occur.
- If a pregnant woman who has recovered from EVD has a miscarriage, or is carrying a dead foetus, which she wishes to be delivered, refer her to an ETC or an obstetric centre equipped for good infection prevention and control (IPC) practices including PPE, for further care. Make an appointment with the referral facility before transporting the mother.
- If a mother survives EVD and the foetus is alive, advise her to stay close to an ETC until she gets labour pains. For delivery report to an ETC or an obstetric centre equipped for appropriate IPC practices including PPE.

Advice for lactating women after discharge:

- If the mother and baby are Ebola survivors, resume breastfeeding if the mother is able to.
- If the baby was not infected, test the breast milk every 3 to 7 days and resume feeding when PCR testing on breast milk is negative.

- Provide breast feeding support and counselling.

Advice for all patients after discharge:

- Psychosocial support should be given to recovering patients as needed.
- Link with community engagement staff to minimize stigma and discrimination.

For family members and the community, provide family planning/ contraceptive advice since EVD in pregnancy is associated with very high mortality.

Patient deaths in ECUs/CCCs

The management of dead bodies and burials should be performed by a team trained in IPC measures. The team should have the necessary resources such as PPE, body bags, disinfectant and appropriate transportation. Other important considerations include:

- notifying the supervising staff;
- the supervising staff should notify and alert the surveillance officer and burial team;
- the supervising staff should inform family members;
- do not touch the body or any of the patient's belongings without wearing PPE;
- wait for the burial team to arrive.

If the burial team cannot come right away:

- at least four staff should wear PPE with heavy-duty gloves;
- spray the body and the area around it with 0.5% chlorine solution;
- place the body in a body bag and close it securely;
- spray the body bag with 0.5% chlorine solution;
- mark the outside of the body bag with the person's name, age, and ID number;
- move the body bag with the body to the mortuary area.

Entry into the mortuary is restricted to health-facility staff and burial team members wearing appropriate PPE. Family members should not touch dead bodies.

After the body of the deceased patient has been moved:

- The patient care area should be thoroughly disinfected with 0.5% chlorine solution, while wearing PPE.
- Social mobilization and psychosocial staff should support family members as needed.
- Burial ceremonies often carry a high risk of Ebola transmission either during the preparation of the body or during the funeral. It is essential to reduce transmission that occurs during burials. Mourners should not touch the body of the deceased.
- Respecting cultural practices and beliefs is essential.

SAFETY

Preventing transmission during health care – Infection Prevention and Control (IPC) in ECUs/CCCs

Ebola infection can be transmitted from person to person. Health aid workers and other staff in ECUs/CCCs are at risk of EVD infection.

- Those who touch patients or the environment are at greater risk (e.g., care provider, cleaners, burial teams etc.).
- Take measures as detailed below to prevent transmission while working in the ECU/CCC. Most importantly:
  - Perform hand hygiene.
  - **DO NOT** touch face, mouth or eyes as these are the most important places through which infection enters the body.
- Wear PPE as detailed below.

General considerations

To prevent infection while providing effective care, attention should be paid to several aspects including isolation facilities, ventilation of the facility, hand hygiene, safe water supply, sanitation and waste management in addition to practices described below. ECUs/CCCs manage patients only with oral medications, so the prevention of sharps injuries (from needles, scalpels and other sharp objects) is not covered in this guidance.

A staff member with strong knowledge in IPC should be designated as the IPC supervisor for the ECU/CCC.

All staff working in an ECU/CCC should:

- be trained in protocols for the facility – before assuming responsibilities;
- be made aware of procedures to be followed if exposure occurs by accident;

- avoid coming to work when sick; take the temperature of all staff upon arrival at work, and refrain from working if temperature exceeds 38°C.

The IPC supervisor should:

- ensure that all staff members have adequate training and monitor adherence;
- oversee assignment of dedicated personnel to triage and patient care areas;
- supervise putting on and removal of PPE;
- ensure strict adherence to staff flow in the red zones;
- coordinate management of accidental exposures including follow-up;
- ensure continuing availability of supplies including PPE, disinfectants, soap and alcohol-based handrub in respective stations;
- ensure regular and rigorous cleaning and disinfection according to protocols;
- ensure appropriate disposal of waste in accordance with protocols;
- oversee chlorine mixing;
- identify and solve any IPC-related problems.

Hand hygiene in ECUs/CCCs

Wash hands with soap and water and dry using disposable towels OR use alcohol-based handrub. Follow the steps as shown in Annex 4 while performing hand hygiene. When hands are visibly soiled, hand hygiene is best performed with soap and water.

The efficacy of bleach/chlorine solutions in preventing the transmission of filovirus is not proven. There is also potential for skin irritation and damage with chlorine. In settings where bleach/chlorine solutions are used for hand hygiene, consider implementing a strategy to change to alcohol-based handrub or soap and water. In the interim period, bleach/chlorine solutions at a concentration of 0.05%, applied for a minimum of 40 to 60 seconds until hands are dried, is considered appropriate.

Hand hygiene is performed:

- before putting on gloves and wearing PPE;
- after any potential or actual exposure to a patient's body fluids;
- after touching (even potentially) contaminated surfaces/items/ equipment in the patient's surroundings;
- after removal of gloves and PPE.

Use soap and water *OR* alcohol-based handrub on gloved hands while caring for suspected or confirmed Ebola cases (0.05% chlorine can be used in the interim, when the above products are not available). This should be done:

- between patients in patient care areas (as described below);
- while removing PPE (as described in Annex 5, page 47).

Personal protective equipment (PPE)

Ensure dedicated staff are allotted for triage and patient care areas, and for other responsibilities. Restrict entry to specific areas to only assigned staff.

A) Triage staff

Before starting duty, triage staff should change out of their street clothes and shoes and put on scrubs and rubber boots. Before going home, staff should change back into their street clothes and shoes. While working in the triage area, staff should wear:

- **Gloves**
  - Wear gloves while screening any patient.
  - BEFORE wearing gloves perform hand hygiene.
  - Remove gloves immediately after screening a patient.
  - Perform hand hygiene.
  - Put on a new pair of gloves before screening the next patient.
  - Do not touch face, mouth, eyes and skin even while wearing gloves. If this happens, remove gloves, perform hand hygiene, safely remove face shield in the designated area and wash face with soap and water. Report the incident to the supervisor.

- **Face shield**
  - Remove the face shield in the designated area when leaving the triage area or immediately if soiled.
- **Medical/surgical mask**
  - Wear mask under the face shield.
  - If a face shield is not available, use goggles and a disposable structured, fluid-resistant mask.
- **Disposable apron**
  - Remove in the designated area when leaving the triage area or immediately if soiled.
- **Waterproof rubber boots** (if not available, use slip-on closed-toed shoes with shoe covers)
  - Remove at the end of the shift, and disinfect. Do this immediately if soiled.

Order of putting on PPE: scrubs, boots, hand hygiene, apron, mask, face shield/goggles, and then gloves.

Order of removing PPE: Hand hygiene, apron, hand hygiene, gloves, hand hygiene, face shield/goggles, hand hygiene, mask and then hand hygiene.

B) Staff caring for suspected or confirmed Ebola cases

PPE should be worn before entering the designated high-risk area, following the protocol in Annex 5 (page 47).

- **Gloves**
  - Wear two pairs of gloves as detailed in Annex 5.
  - Change gloves if soiled and in between patients:
    - use alcohol-based handrub on outer gloves, remove outer gloves;
    - use alcohol-based handrub on inner gloves; wear a new pair of outer gloves.
  - Do not touch face, mouth, eyes and skin while wearing gloves.
- **Face shield**
- **Medical/surgical mask**
  - Wear mask under the face shield.
  - If face shield is not available, use goggles and a disposable, structured, fluid-resistant mask.

- **Fluid-resistant gown**
  - The gown should extend to just above the ankles to cover boots.
- **Disposable apron**
  - Wear a water-resistant disposable apron to provide added protection against contaminated fluids.
- **Head cover** (hood)
- **Waterproof rubber boots**

Order of putting on and removing PPE: Follow strictly the steps in Annex 5 (page 47).

C) Cleaners, waste removal staff and burial teams
Same PPE required as for staff caring for suspected or confirmed Ebola cases, *BUT*

- Use heavy duty rubber gloves as outer pair of gloves.
- Use heavy duty water-resistant aprons instead of disposable aprons.
- Wear fluid resistant coveralls instead of gowns.

Order of putting on and removing PPE: Follow strictly the steps in Annex 5.

Removing PPE

Staff should remove PPE when they leave the triage or high-risk patient care areas, or when cleaning/burial tasks are completed.

If PPE is visibly soiled by body fluids, it should be removed immediately and safely.

- PPE removal should be done in the designated areas.
- Place all disposable items in designated containers.
- Face shields should be cleaned or disposed of (follow the manufacturer's instructions).
- Boots should be removed and properly cleaned and disinfected.

Protocol to follow if accidental contact with infectious body fluids occurs

Splash while wearing PPE:

- Do not touch any item of PPE or anything else.
- Immediately leave the triage or high-risk area and safely remove PPE in the designated area.
- Report the incident to the supervisor.
- Monitor health as described below.

Splash in the eyes:

- Immediately leave the triage or high-risk area and safely remove PPE.
- Flush the eyes with copious amounts of clean water.
- Take a shower, use soap liberally and change scrubs.

Splash in the mouth or nose:

- Immediately leave triage or high-risk area and safely remove PPE.
- Rinse mouth or nose thoroughly with clean water.
- Take a shower, use soap liberally and change scrubs.

Splash on broken skin:

- Immediately leave the triage or high-risk area and safely remove PPE.
- Wash the affected area thoroughly with soap and water.
- Take a shower, use soap liberally and change scrubs.

Follow up of accidental exposures:

- ECU/CCC supervising staff should notify the district medical officer and district surveillance officer.
- ECU/CCC supervising staff should ask the staff member to monitor and report his/her temperature twice a day for 21 days following exposure.
- The staff member should inform the supervisor if fever or any symptoms of ill health appear.

- The staff member should not perform any activities if fever or symptoms occur.
- ECU/CCC supervising staff should notify the district surveillance officer and district medical officer if the staff becomes symptomatic.
- The staff member should continue to receive full pay and benefits for the duration of the 21 days following exposure, even if not performing any duties.

Cleaning and disinfection in the ECU/CCC

IPC considerations

- Cleaners should wear PPE as described above.
- Cleaners should perform hand hygiene as mentioned on pages 45–46, Annex 4.
- Remain at least 1 metre away from other persons (including patients) until PPE has been removed.
- Cleaning and disinfectant solutions should be prepared every day. Change cleaning solutions and refresh equipment frequently while it is used during the day.
- Always clean by starting with ‘clean‘ areas first and then moving to ‘dirty’ areas.
- Maintain separate implements (buckets, cleaning and disinfection solutions) for each area (e.g., triage, isolation) and conduct cleaning duties separately for each of these areas.
- Clean non-disposable PPE (heavy duty gloves and aprons) at the end of the day. If visibly soiled safely remove immediately.

Cleaning

- Remove visible soiling/waste before performing disinfection procedures.
- Moisten towel/rag to clean and wipe surfaces.
- Start cleaning in ‘clean’ areas first and then move to ‘dirty’ areas, for each task.

- Do not mix chlorine and soap.
- After cleaning, leave surfaces dry.
- Do not spray disinfectants, especially in areas where there are patients.
- Avoid dry sweeping with brooms.

Cleaning patient areas	
Disinfecting spills of body fluids Do not directly touch the contaminated area	• Cover completely with 0.5% chlorine solution • Let it stand for 10 minutes • Remove with rag or paper towels • Discard rag in plastic bag for infected waste • Wash the area with soap and water, rinse with water and let it dry • Disinfect with 0.5% chlorine solution and let it dry
Cleaning floors and other surfaces not visibly soiled	• Twice a day using disposable towels/rags soaked in soap/detergent solution and then water • Allow surfaces to dry before using
Cleaning latrines and showers	• Clean daily using soapy water • Disinfect with 0.5% chlorine solution
Cleaning contaminated objects	
If not visibly soiled	• Clean with disposable towels/rags soaked in soap and water and then water • If possible soak directly in soap and water, rinse in water, then dry
If visibly soiled	• Follow steps described above for disinfecting spills of body fluids
Washing plates and utensils	• Dispose of leftover food as solid waste • Leave the utensils in 0.5% chlorine solution for a minimum of 10 minutes • Wash them with soap and water • Rinse them with clean water • Let them dry in the sunlight
Bedpan or waste bucket	• Discard contents (see waste management) • Soak and rinse the bedpan with 0.5% chlorine solution
Management of linen	
Bed linen and clothing	• Collect the linen and clothing in leak-proof plastic buckets • Transport them to a designated laundry area • Use washing machine if possible • If not possible, soak them fully in detergent/soap and water, using a stick to stir • Empty the soapy water • Soak the linen and clothing in 0.05% chlorine solution for 30 minutes • Rinse them thoroughly in clean water, using a stick to stir • Dry them on a clothesline
Heavily soiled linen	**DO NOT CLEAN.** Discard and burn (see waste management)
Cleaning and disinfection of re-usable PPE	
Goggles or face shield Heavy duty gloves Boots Heavy duty apron	• Disinfect in 0.5% chlorine solution for 10 minutes • Rinse with clean water • Leave to dry in the sunlight

FACILITIES

Facility considerations including water, sanitation and hygiene

Criteria to be considered in identifying and developing ECU/CCC sites for safe and effective operations:

Site selection

- accessibility by road, especially for ambulances;
- close proximity of preferably less than 100 metres to an existing improved water source (e.g., a borehole or dug well that provides a reliable year-round supply);
- placement down a gradient of community water sources, and a minimum of 50 metres from streams and open watercourses;
- site gradient should facilitate natural drainage from the green to red zone;
- the possibility for expansion of the site if needed – a buffer zone at least 10 metres wide is needed.

Water supply

Phase A water supply

Phase A water supply may be basic and the following criteria are for those that are NOT in a facility with an existing water supply:

- target daily water supply of 600 litres for staff and patients (assumption: 3 staff require 70 litres/person/day AND 8 patients using approximately 50 litres/person/day);
- water storage capacity of 1500 litres consisting of a single polyethylene rotomould tank placed on a pallet to facilitate abstraction from a tap (or valve) installed close to the base of the tank; storage capacity allows 2½ days' contingency;

- water source is assumed to be that of the host community, but checked for quality (i.e., covered well/bore hole), away from sources of faecal contamination;
- water hand carried in jerry cans by community members paid an incentive in line with other community members working in the ECU/CCC.

Phase B water supply

A basic piped water system could be developed in the short to medium term (3–6 months) to provide the convenience of a piped supply and an increased quantity of water. The system would be based on the following criteria:

- target daily water supply of 1500 litres for staff and patients; assumption of 3 staff requiring 150 litres/person/day plus 8 patients using approximately 125 litres/person/day;
- water storage capacity of 3000 litres consisting of 2 interconnected polyethylene rotomould tanks raised on 5-metre towers; storage capacity allows 2 days' contingency;
- limited piped network consisting of supply lines to a single tap stand;
- water source to be a newly drilled borehole equipped with an electric submersible pump and powered by a generator (unless either an existing borehole and/or power source is available).

Sanitation

Provide latrines and shower/bathing facilities in both the green and red zones. In the red zone separate facilities are needed for wet and dry and for suspected and confirmed cases.

Provide at least one such facility for staff and another one for patients' family members.

Latrines

- There should be a minimum of three latrines for patients as indicated in Figure 1.

- Each latrine should have two pits; once one pit is full it can be closed for a period of at least one week but ideally longer to allow for the virus to decline and thus reduce risks in later handling.
- There should be a plastic squatting plate 80cm x 60cm placed on top of a supporting wooden frame covering the pit.
- The minimum pit volume should be 1.5m^3 per latrine (do not put any other waste in this).
- The bottom of the pit should be at least 1.5m above the water table to minimize the risk of groundwater pollution, which may be the host community's source of drinking water (ideally measured during the wet season as the standing water level in a nearby well).
- Use a temporary superstructure of plastic tarpaulin, wooden frame, and corrugated zinc steel roofing for privacy.
- Disinfect the latrine after each use with 0.5% chlorine solution; use a container with spout (similar to a tea pot).

Showers/bathing facilities

- There should be a minimum of two showers/bathing facilities for patients in the red zone, and one each for staff and patients' families.
- A wooden slatted platform measuring at least 1.2m x 1.2m can be used to form the base of the shower/washing facility. This should be placed over a soakaway pit of 2.5m^3 minimum volume to drain the bathing water.
- Provide soap to patients, relatives and staff.
- As per the latrine specification similar precautions should be taken in constructing the soakaway pit to minimize the risk of groundwater pollution.

Hand-washing facilities

- Hand-washing facilities must be easily accessible.
- Provide soap and water and disposable towels at each hand-washing facility (refer to section on hand hygiene pages 45–46) and alcohol-based handrub.

- Buckets with taps (containing water) and a waste receptacle should be placed:
  - at different points in patient care areas;
  - next to latrines, and at transition points between green and red zones.

Drainage

Provide adequate drainage in the ECU/CCC.

- For the tent in the green zone, simply divert rainwater and water outside of the unit as there is no infection risk.
- Red zone drainage should be to a dedicated soakaway (wastewater pit) located within the red zone.

Monitoring of water and sanitation

Monitoring of the following operations and parameters is recommended:

- quantity of water supply delivered to ensure the ECU/CCC always has an adequate reserve;
- chlorine solution strengths every time mixing is made (see page 34);
- free chlorine residual in drinking water;
- inspection of latrines and soakaway to assess functionality (i.e., not blocked) and fill rates.

Waste management

Liquid waste

- Infectious liquid waste includes patients' body fluids such as faeces, vomit and urine.
- Dispose these in the latrine (use latrine in red zone for patients admitted in this zone).
- Clean the latrine after waste disposal.

Solid waste

Infectious solid waste should be collected and disposed of at least once a day.

- Infectious solid waste includes food, linen, clothes, PPE items (which are disposable) and any other item used by patients or for patient care.
- Collect all such items in leak-proof bags kept at the site of use (or covered bins if available).
- Sharp objects should be placed inside puncture-resistant waste containers.
- Do not fill the bags fully with waste (e.g., <75% capacity and <15kg);
- Close the bag securely when about 75% full.
- DO NOT carry bags and/or bins against the body.
- Dispose of the waste in the designated pits and burn.
- Disinfect buckets used to carry waste after each use with 0.5% chlorine solution.

How to burn waste in a pit

The use of an appropriate incinerator is essential to ensure safe disposal of solid infected waste. A range of burning technologies are available. The safest are fuel-supported incinerators.

- Designate a fenced area to incinerate health-care waste materials.
- Place waste in a designated pit of appropriate depth (e.g., 2 metres or about 7 feet).
- Use flammable fuel to light the fire.
- After each waste load, cover with 10 –15 cm of soil.
- Burn pit should be filled in with soil when it is ¾ full of ashes, and a new pit should be dug.

Drum incinerators can also be used for burning infectious waste.

- Drum incinerators use fuel oil (kerosene) to ignite.
- Drum incinerators are likely to require replacement every 1–2 months.

Waste burning (including drum incinerators) should be sited in the red zone and down-wind of the ECU/CCC.

Caution is required when handling flammable material and when wearing gloves due to the risk of burn injuries if gloves are ignited.

The area designated for the final treatment and disposal of waste should have controlled access to prevent entry by animals, untrained personnel or children.

A waste pit is also required for non-infectious materials.

Chlorine mixing

Use a dedicated mixing area for preparation of chlorine solutions.

- Use colour-coded buckets with taps for chlorine solutions: blue (0.05%) and red (0.5%).

Care should be taken to avoid contact with chlorine solution, especially strength of 0.5% with skin and eyes.

Mix as shown below: Use HTH 65–70% granules

Water	Chlorine solution (0.05%)	Chlorine disinfection solution (0.5%)
20 litres	1 tablespoon (10ml) HTH granules	10 tablespoons (100ml) HTH granules

Chlorination of drinking water is recommended but should not be done in the mixing area.

Use chlorine tablets for drinking water (recommended free chlorine residual of 0.3 to 0.5mg/l).

ANNEXES

Annex 1: Advice for individuals and families in Ebola-affected areas

Ebola is real and can kill. But you can protect yourself, your family and your community by following the advice below.

You are at risk if you have:

- Spent time with someone sick with Ebola

OR

- Attended a funeral of someone who has recently died with symptoms of Ebola.

Ebola starts suddenly with high fever. A person with Ebola feels very tired, has headache and body ache and does not want to eat.

Remember:

- **Only people who are sick can spread Ebola disease to others.**
- **Dead bodies of Ebola patients are also infectious.**
- **If you have recovered from Ebola you cannot catch it again during this outbreak.**

What should I do?

SEEK HELP IMMEDIATELY

Remember: early treatment increases chance of survival and prevents spread

- Take the patient to the designated Ebola Care Centre. Immediately inform health-care staff that the sick person may have Ebola.
- If you cannot go to the hospital or health post for any reason, you must speak with your local community leader immediately.
- If there is a person who has recovered from Ebola in your community, ask this person to help. Once a person has recovered from Ebola they cannot get it again during this outbreak. The person should follow hygiene rules so he/she does not carry the fluids of a sick person to other family or community members.

While you are waiting for help you should:

PROTECT YOUR FAMILY

- Provide the sick person with their own space, separate from the rest of the family. Provide them with their own plate, cup, and utensils (spoon, fork), toothbrush, etc. No item should be shared with others.
- Only one family or community member should care for the sick person. Others should not come into contact.
- Avoid touching the sick person. All body fluids including stool, vomit, blood, breast milk, sperm, urine and sweat are dangerous and must not be touched. Use soapy water to clean. Wear gloves while cleaning. Make sure the gloves have no holes. You can get gloves from community helpers and health posts. If none are available, get some from a shop. Put clothes, towels and bed linens contaminated with body fluids in a plastic bag and incinerate.
- If you provide extended care for a person with Ebola in your home you will need personal protective equipment. Ask your local health post to provide this. WHO does not recommend providing home care for patients with EVD.

- Wash hands with soap and water or rub hands with an alcohol-based hand sanitizer (ask community workers about how to do this):
  - after touching the sick person or anything that belongs to the person;
  - after touching a used toilet;
  - after touching any blood or body fluids (e.g., faeces, vomit);
  - after touching anything that could be contaminated with body fluids **even if you wore gloves**; and
  - after removing gloves.
- All family members should wash their hands frequently, especially after touching any area that can be contaminated with body fluids.

CARE FOR THE SICK

- Provide plenty to drink for the sick person such as water, soup, tea or locally available beverages. If possible, encourage the sick person to feed little by little, 'spoon by spoon'.
- Give paracetamol to the patient, if they are suffering from fever and pain. Do not give aspirin or any other pain killer.

DANGER SIGNS

If the patient vomits, has diarrhoea or starts to bleed, they must be transported to a hospital immediately. **These are the danger signs.** The patient can infect others and is at **risk of dying**.

The patient should be moved only by those health workers who have been provided with **Personal Protective Equipment (PPE)** under the guidance of local authorities.

Annex 2: Patient record and checklist

EARLY DIAGNOSIS OF EBOLA SUSPECTED CASE WITHOUT LABORATORY TEST AVALIABILITY IN EVD EPIDEMIC AREAS

Name of patient:			
Date of birth:		Age:	
Place:			
Sex:	Male ☐	Female ☐	If female, pregnant: Yes ☐ No ☐

SYMPTOMS

Please tick the symptoms at the time of patient admission:

Dry symptoms	Yes	No	Wet symptoms	Yes	No
Fever	☐	☐	Diarrhoea (watery/bloody)	☐	☐
Weakness/tiredness	☐	☐	Vomiting	☐	☐
Headache	☐	☐	Bleeding from gums, nose	☐	☐
Muscle or joint pain	☐	☐	Blood in vomiting	☐	☐
Stomach pain	☐	☐	Blood in stool	☐	☐
Sore throat	☐	☐	Blood in urine	☐	☐
Redness in both eyes	☐	☐	Miscarriage (pregnancy loss)	☐	☐
Difficulty in breathing	☐	☐			
Hiccups	☐	☐			
Rash	☐	☐			
Measured temperature ___˚C					
Any other symptoms, if present:					

HISTORY OF CONTACT

1) Did you have contact with an Ebola patient (eg: family member, friend or relative suffering from Ebola)? If 'yes':

When (how many days ago): . . . . . .

How/nature of contact (e.g. cared for the patient, washed clothes of patient etc.): . . . . . .

. . . . . .

Where (at home, in a health-care facility): . . . . . .

2) Did you attend a funeral ceremony of someone with EVD or unknown cause of death? If 'yes':

When (how many days ago): . . . . . .

How/nature of contact (e.g. washed the body, touched the body etc.): . . . . . .

. . . . . .

Where (at home, in a health-care facility): . . . . . .

3) In the case of children, was the patient (newborn/child) breastfed by an Ebola patient (EVD case)?

CHECKLIST FOR DECISION MAKING

No.	Steps	Status	Remarks
1.	Symptoms presented in the patient noted in indicator table	Yes ☐ No ☐	
	Bleeding signs present	Yes ☐ No ☐	
	Recent history of miscarriage	Yes ☐ No ☐	
	Dry symptoms present	Yes ☐ No ☐	
	Wet symptoms present	Yes ☐ No ☐	
2.	Exposure history present	Yes ☐ No ☐	
3.	Patient provided with malaria treatment	Yes ☐ No ☐	
	Patient provided with antibiotics	Yes ☐ No ☐	
	Patient provided with ORS	Yes ☐ No ☐	
	If provided malaria treatment, decrease in fever noted within 48 hrs of first dose administration	Yes ☐ No ☐	
9.	Patient in Ebola suspected unit	Yes ☐ No ☐	Please indicate: Dry or wet category

ADDITIONAL INFORMATION

If sample taken for lab diagnosis, which sample: blood ☐ swab ☐ Date:	
Record result of test:	
Patient recovered and discharged	Yes ☐ No ☐
Patient died	Yes ☐ No ☐

Annex 3: Nutrition

Interim guideline:

Nutritional care of children and adults with Ebola virus disease in treatment centres[1]

Key Recommendations[2]

19 November 2014

Signs and symptoms that affect nutritional care in Ebola virus disease (EVD) patients include a lack of appetite, nausea, sore throat, difficulty swallowing and breathing difficulties. Vomiting also interferes with nutritional care and along with diarrhoea, causes additional nutritional stress through rapid loss of electrolytes, protein, other essential nutrients and fluid.

The nutritional needs and approach to nutritional care in any individual will be determined by the patient's preceding nutritional status, severity of illness and age; and is assessed by severity of dehydration, presence of appetite and physical ability to eat.

Currently, field experience with EVD patients in treatment centres shows differences in their capacity to eat and drink. The interim guideline[2] recognizes three feeding phases for EVD patients: maintenance feeding, transition feeding and boost feeding, in addition to an initial rehydration phase, where necessary (see Figure 1). **For patients requiring nutritional support, the foremost considerations in the selection of food commodities include the low osmolarity and renal solute load of the diet; along with the texture of food commodities.** Table 1 lists feeding protocols for adults and children 6 months and older.

For the breastfed infant of an Ebola-infected mother:

- Where the infant is asymptomatic, it is recommended that the infant is separated from the mother and is replacement fed.

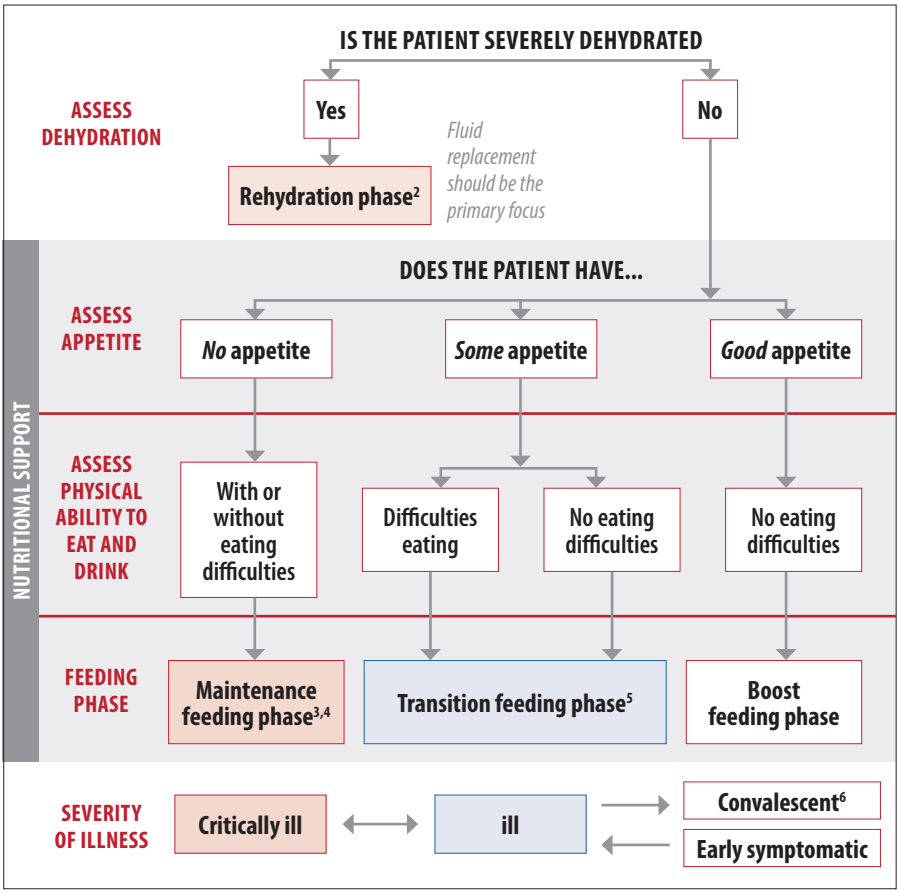
[1] These also apply to Ebola Care Units (ECUs) / Community Care Centres (CCCs).

[2] WHO/UNICEF/WFP. Interim guideline: Nutritional care of children and adults with Ebola virus disease in treatment centres. Geneva: World Health Organization; 2014 http://www.who.int/nutrition/publications/guidelines/nutritionalcare_with_ebolavirus/en/

- Where the infant has developed Ebola or is a suspected Ebola case, if the mother is well enough to breastfeed, she should be supported to continue to do so. If the mother is too ill to breastfeed, then replacement feeding is needed.

The safest replacement feeding in the current context for infants aged less than 6 months is ready-to use infant formula (RUIF). Wet nursing is not recommended.

Figure 1. Decision tree to ascertain patients' feeding phase[1]



[1] It is very important to maintain hydration with oral rehydration salt (ORS) solution; particularly in the maintenance feeding phase.
[2] These patients need ORS. Fluid replacement should be the primary focus in this phase.
[3] "Maintenance feeding phase" refers to maintaining vital body functions.
[4] Irrespective of the presence or absence of eating difficulties, nutritional care will be the same.
[5] The presence or absence of eating difficulties will determine nutritional care.
[6] For convalescent patients do not limit the quantity of food and provide extra snacks.

Table 1. Nutritional care protocols for adults and children aged 6 months and older with Ebola virus disease

Feeding phase	Suggestion
Rehydration phase Severely dehydrated	ORS
Maintenance phase Not severely dehydrated Poor or no appetite May or may not have eating difficulties	Milk-based fortified diets (F-75)[1] For adults: "sip feeds" (low renal solute load, low-osmolarity options)
Transition phase Not severely dehydrated Some appetite May or may not have eating difficulties	*No eating difficulties:* Any one or combination of any of the following: • ready-to-use fortified nutrient-rich biscuits/bars (can also be offered as a porridge or paste) • 1–2 porridges per day of fortified cereal legume blends with added sugar (adults) and added sugar and milk (children) • common family meal (plus micronutrient powders [MNP], if no fortified food is given); preferably offer lipid-based nutrient supplements (LNS)[2] in addition to common family food; LNS must be eaten separately[3] *Eating difficulties:* As for those with no eating difficulties, except that: • common family meal should be offered as mashed food or as soups • LNS are not suitable for patients with swallowing difficulties • ready-to-use fortified nutrient-rich biscuits/bars (as porridge) In addition, the following commodities are also suitable: • milk-based fortified diets (F-100)[4] • for adults: "sip feeds" (low renal solute load, low-osmolarity options)
Boost phase Not severely dehydrated Good appetite No eating difficulties	Any one or combination of any of the following: • ready-to-use fortified nutrient-rich foods (as a paste, porridge or biscuit/bar) • 1–2 porridges of fortified cereal legume blends with added sugar (adults) and added sugar and milk (children) • common family meal (plus MNP, if no fortified food is given); preferably offer LNS in addition to common family food; LNS must be eaten separately[3] • and snacks: for example high-energy biscuits (HEBs) Convalescent patients usually need (and want) more food: do not limit the quantity of food, and provide extra ready-to-use fortified nutrient-rich foods

[1] Suitable for any patient (even adults) but particularly for children. F-100 should only be used if F-75 is not available. F-75 must be prepared by trained personnel.

[2] The term LNS refers generically to a range of fortified, lipid-based spreads, including products like ready-to-use therapeutic food (RUTF) used to treat severe acute malnutrition (SAM), ready-to-use supplementary food (RUSF) used as supplementary foods to treat moderate acute malnutrition (MAM), and others that are used for "point-of-use" fortification to improve diets and aiming to prevent malnutrition.

[3] In order to optimise the bioavailability of nutrients in the LNS.

[4] Suitable for any patient (even adults) but particularly for children. F-100 must be prepared by trained personnel.

Other key recommendations:

In critically ill patients *with severe dehydration*, nutritional support should not interfere with the strategies for volume and electrolyte repletion, as nutritional requirements will temporarily be of a lower priority.

Even in critically ill patients, *without severe dehydration*, who have no appetite, excess energy or protein is not needed and an excess could further compromise liver and kidney function.

As soon as appetite starts to return, patients need sufficient energy (kcal) and essential nutrients, in addition to fluid electrolytes.

EVD patients should be provided with a minimum of the recommended daily allowance for each nutrient. Until further evidence is available, excess use of any micronutrient for EVD patients is currently not recommended, unless correcting for a specific micronutrient loss (e.g. treating hypokalaemia). For patients who receive adequate quantities of fortified ready-to-use-food, multivitamins are not required.

The food that is offered to the patient should ideally be palatable and attractive; be nutrient dense; be liquid, semi-solid or solid (depending on the patient's condition); be easy to ingest and require minimal assistance from health-care staff when the patient eats; carry limited risk of bacterial contamination when kept at the bedside for 2–3 h; and not require many eating utensils, as these can be a source of contamination.

Whenever possible, an assessment should be done on patients, to indicate what the patients can and prefer to eat, in order to bridge the gap between what is nutritionally needed and what the patient wants to eat.

The intake of high nutrient-dense foods (e.g. ready-to-use-therapeutic food (RUTF) and ready-to-use-supplementary food (RUSF)) may be important in patients in the boost feeding phase and for patients in the transition feeding phase with no eating difficulties, see Figure 1.

In most field settings, the use of nasogastric tubes is not currently recommended for the treatment of EVD. However, when patients tolerate nasogastric tube placement, exceptions can be made for treatment

centres that are fully equipped with sufficient and appropriate staff and material, good infection-prevention/control practice and good waste-disposal management.

Owing to the high osmolarity of sugary carbonated beverages and fruit juices, it is important that they are not given to patients with diarrhoea, as they may exacerbate diarrhoea. In addition, sugary carbonated beverages are low in electrolytes and nearly all essential nutrients. *If patients request* these commodities, they should only be offered during the boost feeding phase.

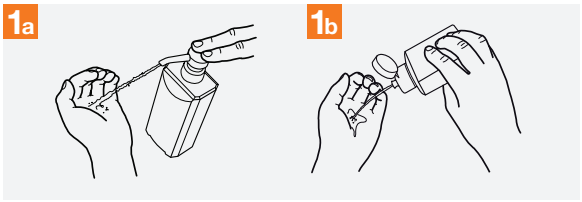
It is recommended that recovered patients receive a discharge food ration. A nutritional assessment of recovered patients should be taken at discharge as the presence or absence of malnutrition will determine the appropriate food ration and follow-up care.

Annex 4: Hand hygiene

How to Handrub

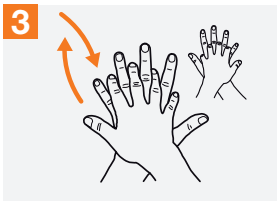
RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;

Rub hands palm to palm;



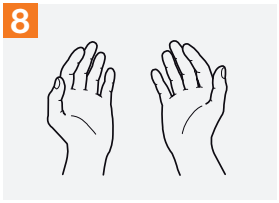
Right palm over left dorsum with interlaced fingers and vice versa;

Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;

Rotational rubbing of left thumb clasped in right palm and vice versa;

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Once dry, your hands are safe.

World Health Organization | Patient Safety — A World Alliance for Safer Health Care | **SAVE LIVES** Clean **Your** Hands

WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.

May 2009

How to Handwash

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

Duration of the entire procedure: 40-60 seconds

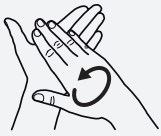
0

Wet hands with water;

1

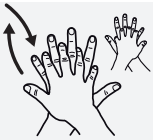
Apply enough soap to cover all hand surfaces;

2



Rub hands palm to palm;

3



Right palm over left dorsum with interlaced fingers and vice versa;

4

Palm to palm with fingers interlaced;

5

Backs of fingers to opposing palms with fingers interlocked;

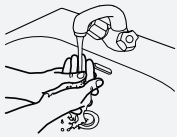
6

Rotational rubbing of left thumb clasped in right palm and vice versa;

7

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8

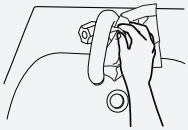


Rinse hands with water;

9

Dry hands thoroughly with a single use towel;

10



Use towel to turn off faucet;

11

Your hands are now safe.

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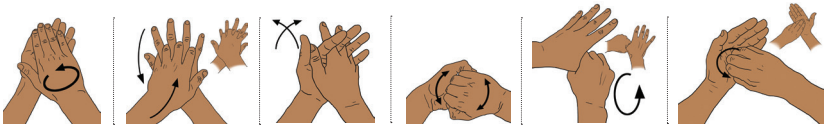
Annex 5: Putting on and removing full set of PPE including gown

Steps to put on PPE

1. Remove all personal items (jewellery, watches, cell phones, pens, etc.).

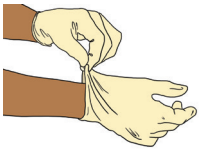
2. Put on the scrub suit and rubber boots* in the changing room.

3. Move to the clean area at the entrance of the isolation unit.
4. By visual inspection, ensure that all sizes of the PPE set are correct and the quality is appropriate.
5. Undertake the procedure of putting on PPE under the guidance and supervision of a trained observer (colleague).
6. Perform hand hygiene.

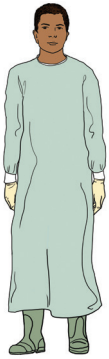


** If not available, use closed shoes (slip-ons without shoelaces and fully covering the dorsum of the foot and ankles) and shoe covers (nonslip and preferably impermeable).*

7. Put on gloves (examination, nitrile gloves)



8. Put on disposable gown made of fabric that is tested for resistance to penetration by blood or body fluids OR to blood-borne pathogens.



9. Put on face mask.

10. Put on face shield (a) OR goggles (b).

a

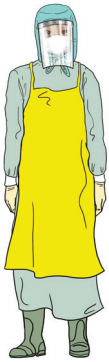
b

11. Put on head and neck covering: surgical bonnet covering neck and sides of the head (preferable with face shield) (a) OR hood (b).

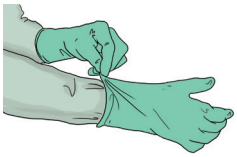
a

b

12. Put on disposable waterproof apron (if not available, use heavy duty, reusable waterproof apron).

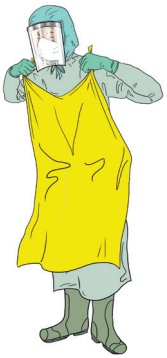


13. Put on second pair of (preferably long cuff) gloves over the cuff.



Steps to remove PPE

1. Always remove PPE under the guidance and supervision of a trained observer (colleague).
2. Perform hand hygiene on gloved hands.
3. Remove apron taking care to avoid contaminating your hands by peeling it off.



4. Perform hand hygiene on gloved hands.

5. Remove outer pair of gloves and dispose of safely.

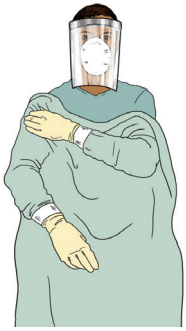
a b c

6. Perform hand hygiene on gloved hands.

7. Remove the head cover taking care to avoid contaminating your face by starting from the bottom of the hood in the back and rolling from back to front and from inside to outside, and dispose of safely.

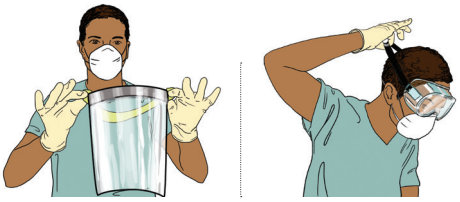
8. Perform hand hygiene on gloved hands.

9. Remove the gown by untying the knot first, then pulling from back to front rolling it from inside to outside and dispose of safely.



10. Perform hand hygiene on gloved hands.

11. Remove eye protection from behind the head and dispose of safely.



12. Perform hand hygiene on gloved hands.

13. Remove the mask from behind the head by first untying the bottom string above the head and leaving it hanging in front; and then the top string next from behind the head and dispose of safely.

14. Perform hand hygiene on gloved hands.
15. Remove rubber boots without touching them (or overshoes if wearing shoes). If the same boots are to be used outside of the high-risk zone, keep them on but clean and decontaminate appropriately before leaving the doffing area.*
16. Perform hand hygiene on gloved hands.
17. Remove gloves carefully with appropriate technique and dispose of safely.
18. Perform hand hygiene.

** Appropriate decontamination of boots includes: entering them in a footbath of 0.5% chlorine solution (and removing dirt with toilet brush if heavily soiled with mud and/or organic materials) and then wiping all sides with 0.5%chlorine solution. At least once a day boots should be disinfected by soaking them in a 0.5% chlorine solution for 30 min, then rinsing and drying them.*

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