WASH Package for Ebola Care and Treatment Centres/Units

Guidance Note

UNICEF Programme Division

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1. Introduction

UNICEF offices and sector partners in Ebola-affected and at-risk countries are increasingly requesting guidance on WASH (water, sanitation and hygiene) services provision in Ebola Care Centre and Units.

The Centres for Disease Control and Prevention (CDC), World Health Organization (WHO) and Médecins Sans Frontières (MSF) Ebola virus disease (EVD) infection control (IFC) guidelines and protocols state that the Ebola virus can be destroyed by disinfection with 0.5% or 0.05% chlorine solution, through exposure to UV rays and heat, and through hand washing with soap or alcohol rub and water.

This guidance note recommends actions for the implementation of WASH packages in treatment and care centres. The guidance note is intended for use by UNICEF WASH staff and WASH sector partners in affected countries to implement activities in Ebola Centres and Units. The guidance was developed in consultation with our country and regional teams and is informed by approaches and practices taking place on the ground. This guidance will be reviewed periodically based on feedback from the field and once the wider sector guidance from the Technical Group (UNICEF, CDC, MSF, IFRC and WHO) is available.

The recommended actions are presented under the different components (water supply, hygiene and hand washing, disinfection, solid waste management, latrine and wastewater management, and dead body management) of the defined Ebola Care Centre/Unit WASH package to complement community and house-to-house level interventions.

2. Water Supply

Water is required for hydration, disinfection and disposal of waste. To ensure sustained water supply to the Ebola Care Centres and Units, the following should be assessed:

- the type of water supply system available or feasible,
- the water storage facility storage (at least 2 days),
- the water demand, and
- functionality of the water system.

The following are recommended for water supply in Ebola Care Centres/Units:

(i) 100- 400 litres per person per day is estimated to be the total water supply needed for cleaning, laundry, chlorinated hand washing, chlorinated foot baths, disinfection material and bodies, drinking and preparing ORS (oral rehydration solution) per person in an Ebola Centre.

(ii) For drinking water free residual chlorine at the tap should be between 0.3 and 0.5% and measures should be taken for safe storage.

(iii) For washing/laundry, footbath, spraying of foot, and disinfection, free residual chlorine should be 0.5 %. It is important to consider space and drainage to soak ways in the construction of laundries and showers in the Ebola Care Centres/Units.

(iv) Monitor water quality daily and clean storage containers regularly and ensure a two-day consumption buffer of storage.

To avoid contamination connections and water supply lines to facilities (including wards, laboratories, and storage tanks) should be separate from lines supplying water to staff. Any water line to facilities should have a non-return valve to prevent contamination of the system.

3. Hygiene and hand washing

One of the most important measures to prevent transmission of EVD is to practice routine hand hygiene before and after every patient encounter. Hand hygiene is effective with soap and water or alcohol-based hand rub. These are preferred over hand washing with 0.05% chlorine which can be harmful to the skin and eventually lead to risk of lesions and infection. However, it is recognized that there may be no alternative to chlorine at times.

Health workers and patients in Ebola Care Centres/Units should regularly wash their hands with soap and running water after visiting or taking care of Ebola patients. The time interval from infection to onset of symptoms, is from two to 21 days. Hand washing with water and soap as a good practice for viral prevention, is part of other measures recommended by WHO to help prevent the spread of Ebola virus.

Hygiene education materials and messages should be displayed and visible in all areas of the Ebola Care Centre/Unit, and hand washing facilities should be checked on a regular based to ensure availability of water and soap and proper drainage for grey water.

4. Disinfection

To disinfect patient's excreta, vomit, urine in containers/hand wash basins, add 0.5% chlorine to the content and discard into a latrine. Wash container/ hand wash basin with soapy water and discard in latrine, and rinse the container with 0.5% chlorine to re-use.

For disinfection of spills of body fluids, pour 0.5% chlorine solution onto a clean rag, let stand for 15 minutes, remove with rag or paper towels, discard rag in a plastic bag for infected waste, wash area with soap and water, and disinfect again with 0.5% chlorine solution.

Dip the plates, cups, and utensils into a bucket filled with 0.5% chlorine and wash with soap and water. Rinse with clean water and dip plates, cups, and utensils into a bucket of 0.05% chlorine and dry in the sunlight.

Disinfection procedures for 0.5% and 0.05% chlorine solution

Chlorine solution	How to Make	Uses
0.5%	70% HTH chlorine powder: 10 spoons* of chlorine powder in 20 Liters of water (approximately 5 gallons) of water	Disinfection of: - Body fluids, excreta, vomit, etc. - Corpses - Toilets and bathrooms - Gloved hands - Floors - Beds & mattress covers - Footbaths - Plates, cups and eating utensils.
	3.5% Liquid Bleach: 2 spoons* in 20 Liters of water	
0.05%	70% HTH Chlorine Powder: 1 spoon* of chlorine powder in 20 Liters (approximately 5 gallons) of water	Disinfection of: - Bare hands, skin and shoes. - Thermometers. - Laundry. - Plates, cups and eating utensils.
	3.5% Liquid Bleach: 1 liter of 0.5% solution in 10 Liters water	

*One levelled table spoon, 14 – 15g

For all other contaminated items such as clothes, bedding used by a suspect or probable Ebola patient, discard in designated waste bag/bin/pit and burn.

5. Solid waste management

The approach to solid waste management is to reduce the risks and costs associated with handling and transportation by on site disposal and burning. The area designated for solid waste management should have controlled access to prevent entry by animals, untrained personnel or children.

All solid waste produced from the Ebola Care Centres/Units is potentially contaminated and must be securely collected, transported and disposed using different methods. No material or waste should leave patients room or isolation/Care Centres and Units without spraying with or submersing in 0.5% chlorine solution. As recommended by WHO all Ebola treatment Centres/Units should have a separate waste management and disposal facility for both suspected cases and non-suspected cases.

Used bed mattresses of affected patients should be sprayed with 0.5% chlorine solution before burning. Also, biological waste material such as placenta and biopsy samples are to be contained in sealed, leak-proof cadaver bags (or double bags to ensure that there is no leakage as per WHO recommendation) and either buried or burned.

All sharps (including syringes, needles, scalpel blades, cannulas and other sharps) are to be disposed of in puncture-resistant/leak-proof sealed disposable containers designed for sharp medical waste collection before incineration. In Liberia there are local manufacturers of WHO-approved drum incinerators that are suitable for this purpose. Sharps not fully burnt should be buried in designated waste pits and covered with a layer of soil 10 –15 cm deep. It is also recommended to use pre-heated chamber that utilize gas/oil fired incinerators. The puncture-resistant waste containers should be located as close as practical to the patient care area or laboratory where the items are used. It is essential to ensure that total incineration has taken place. Caution is also required when handling flammable material and when wearing gloves due to the risk of burn injuries if gloves are ignited.

All used disposable Personal Protective Equipment (PPE), non-sharps and other infectious medical waste need to be collected in leak-proof hazard waste bags and placed in covered waste bins. Pouring 0.5% chlorine solution on top of the waste bags prior to being securely sealed as pre-treatment disinfection is recommended. The procedure can create back-splash, so care should be taken to protect the eyes. Pre-treated contaminated medical waste can be transported for incineration in accordance with IFC unit guidelines, or locally incinerated in drums or small mobile incinerators.

All other waste generated in the Centres (i.e. gloves, masks, surgical gowns) should be collected and contained in waste bags and cover bins. It is important not to carry the waste bags or cover bins against the body (e.g. on the shoulder). The outside of the sealed waste bag should be sprayed with 0.5% chlorine solution and placed in a designated pit of appropriate depth (e.g. 2m or about 7 feet) and filled to a depth of 1–1.5 m (or about 3–5 feet) and burned. After burning each waste load/bags, the residual waste should be covered with a layer of soil 10 –15 cm deep.

When designing solid waste management pits in Ebola Care Centres/Units, it is important to consider the type of waste generated, wind direction, distance to Centre/Unit, type of geology and topography, distance to water source, availability and suitability of site and number of patient, staff and waste management technicians required.

In the event that local disposal of waste is not possible - due to high volumes or lack of physical space - more specific guidance is available from Supply Division on options and specifications for centralised and large scale incineration.

6. Latrines and Wastewater Treatment

Liquid waste such as urine or vomit should be disinfected by pouring 0.5% chlorine solution and safely flushed into the sewer system if there is an adequate sewage system in place. Where there is no adequate sewage system, urine and vomit should be decontaminated 0.5% chlorine solution or bleach prior to being flushed into a soak away pit.

Temporary pit latrines are acceptable and preferred if space and geology allow for site containment. Temporary pit latrines can fill up quickly so it is important to ensure you have enough space and resources to construct and decommission temporary latrines (dose the excreta with lime to increase pH to around 12, cover with soil and compact). It is important to mark decommissioned sites with durable signs. Pour flush latrines connected to stabilization ponds should be considered if construction of temporary pit latrines are not an option and if space and geology allow. It is recommended to construct separate latrines for workers, confirmed cases and suspected cases based on the ratio of one latrine drop hole for each category of persons.

In order to minimise the volume of liquid undergoing treatment, separate grey water from black water and dose the grey water with additional 0.5% chlorine solution before discharge into a soak away pit. Should space and geology allow, construct a simple wastewater treatment unit/stabilization pond (with at least 1 hour retention time) with large volume sludge tanks with about two month capacity to maximise value. If possible, it is recommended to de-commission full sludge tanks on site and construct new ones to avoid high cost incineration of the sludge. If on site de-commissioning is not possible, ensure sludge has a high pH to accelerate the destruction of the virus before considering off site transportation/digestion/treatment. Common methods and agents for disinfection include sodium hypochlorite (NaOCl), chlorine dioxide (ClO_2), ozone (O_3) and ultraviolet (UV) light[1].

When designing wastewater management units in Ebola Care Centres/Units, it is important to consider alternative off-site disposal and treatment, distance to Centre/Unit, type of geology and topography, distance to water source, viral load, availability and suitability of site and numbers of patient, staff and waste management technicians required.

7. Management of corpses

Management of corpses requires specialised expertise and should not be undertaken without the full evaluation of risks and access to relevant expertise.

Access to corpses awaiting transportation for burial needs to be kept under strict control and should strictly follow WHO, CDC and MSF guidelines and protocols for safe Ebola body management. Corpses should be contained in sealed, leak-proof cadaver bags (or double bags to ensure that there is no leakage as per WHO recommendation). After placing the corpse in the cadaver bag, the bag is to be sealed and surface sprayed with 0.5% chlorine before being moved to a mortuary or for burial.

8. References

1. Centres for Disease Control and Prevention, World Health Organization, *Infection Control for Viral Haemorrhagic Fevers in the African Health Care Setting*, WHO, Geneva, December 1998.

[1] See reference 9, 10 and 11 for detailed guidance

2. Medicines Sans Frontières, *Ebola Outbreak Preparedness and Management*, 2001.
3. Médecins Sans Frontières, *Filovirus Haemorrhagic Fever Guideline*, 2008
4. Médecins Sans Frontières, *Household Protection Kit Leaflet*, 2014.
5. Médecins Sans Frontières, *Training for Isolation Unit, 2014*
6. World Health Organization, *Infection Prevention and Control Guidance for Care of Patients in Health-Care Settings, with Focus on Ebola*, WHO, Geneva, August 2014
7. World Health Organization, *Practical Guidelines for Infection Control in Health Care Facilities.* (No. 41), 2004
8. World Health Organization, *Domestic water quantity and health*, 2003
9. World Health Organization, *Essential environmental health standards in health care*, 2008
10. World Health Organization, Guidelines for drinking-water quality. 2011
11. World Health Organization, I*nfection Control in Screening Ebola Suspected Cases and Contacts in Health Facility Entry Clinics, 2011*
12. World Health Organization, *Safe Management of waste from health-care activities,* 2nd ed., 2014
13. World Health Organization, *Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings, with Focus on Ebola*, 2014