

Ebola Virus Disease: Personal Protective Equipment and Other Ebola-Related Supply Update

UNICEF Supply Division

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Ebola Virus Disease (EVD): Personal Protective Equipment and Other Ebola-Related Supply Update – 1 September 2014

A more recent note covering EVD exists. Please visit http://www.unicef.org/supply/index_54214.html

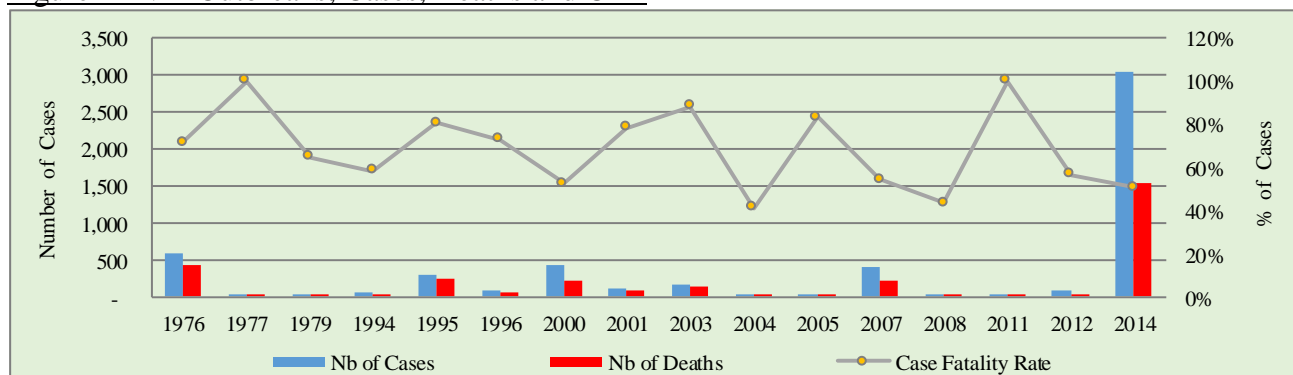
1. Summary

- The current EVD outbreak has reached five countries in West Africa, with 3,052 documented cases and 1,546 deaths (as of 29 August). A separate, unreported Ebola outbreak has also been reported in the Democratic Republic of the Congo.
- No *licensed* treatment currently exists for EVD. Only supportive care, containment and transmission prevention are the currently available interventions. UNICEF procures and stocks essential medical supplies and personal protective equipment for caregivers and patients. UNICEF is currently sourcing and procuring the necessary “high quality” personal protective equipment (PPE) and essential medical supplies in support of EVD outbreak response.
- UNICEF does not yet supply the full suite of PPE items required in the “high risk” Ebola setting (direct contact with cases and bodies), but is consulting with WHO, the Centres for Disease Control and Prevention (CDC), Médecins Sans Frontières (MSF) and other stakeholders to review and fully map PPE options appropriate for an EVD context. While some PPE can be used in both high and low risk settings, “category 3” (high exposure) overalls and coveralls, especially, are currently being sourced. UNICEF is developing product specifications of essential supplies to assist country offices (COs) in EVD planning, preparedness and response.
- UNICEF encourages partners to harmonise EVD response and supply content to ensure cost-effective and efficient outbreak response management.

2. Background

EVD (previously known as Ebola haemorrhagic fever) is one of the world’s most virulent diseases with a case fatality rate (CFR) that can reach up to 90%. The virus is transmitted through direct contact with infected human or animal bodily fluids, internal organs and skin tissue.¹ It is not transmitted through air, water or food.² EVD occurs primarily in remote areas of Central and West Africa. There have been 24 documented outbreaks since 1976, each averaging ~100 cases and a CFR of 66%. The current outbreak has reached 3,052 cases and 1,546 deaths (end-August)³, with a CFR of 51% (Figure 1). 26 million people, including 10.3 million children live in the areas affected by Ebola.

Figure 1 EVD Outbreaks, Cases, Deaths and CFR



Source: WHO.

¹ World Health Organization, [Ebola Virus Disease](#), WHO, Geneva, April 2014.

² Centers for Disease Control and Prevention, [Ebola](#), CDC, Atlanta, August 2014.

³ World Health Organization, [WHO: Ebola Response Roadmap Situation Report 1](#), WHO Geneva, 29 August 2014.

The incubation period from time of infection to onset of symptoms is between 2-21 days, and patients are only infectious when symptomatic. There is currently no licensed treatment or vaccine for EVD; only supportive care and intensive prevention through isolation and containment can be broadly provided.⁴

UNICEF is working closely with WHO, The Centres for Disease Control and Prevention (CDC), Médecins Sans Frontières (MSF) and the International Federation of Red Cross and Red Crescent Societies (IFRC), as well as other partners and communities on outbreak response as well as to share information on how to prevent the further spread of EVD and care for those already affected. The latest updated information and materials critical to assist countries dealing with EVD and outbreak response management is available [here](#).

UNICEF has prepared a [field guide for UNICEF staff](#) to explain EVD epidemiology, describe UNICEF's roles and responsibilities, and what can be done to prevent and prepare for an EVD outbreak. The information and resources are in different languages and put on the UNICEF Ebola SharePoint for easy access.

UNICEF has also prepared a practical guidance tool to help country offices (COs) assess and mitigate the risks to health supply chains in a time of Ebola outbreak and is available [here](#). UNICEF is working on a list of supplies to be used in planning, preparedness and response.⁵

3. EVD Outbreak Medical Supplies and Personal Protective Equipment

In the absence of a harmonized EVD response kit, UNICEF has been identifying, sourcing and supplying personal protective equipment for use in outbreak response. A suite of PPE products should cover the needs of staff (both medical and non-medical) for use in all high- and low-risk treatment settings.

The selection of PPE depends on the risk hazard assessment identified by each treatment centre and the infectious agent transmission in each facility during medical intervention and care. “High-risk” areas include treatment or isolation facilities accommodating patients (suspected or confirmed), laboratories and morgues. “Low-risk” areas include facilities used for service preparation, stores, laundry and disinfection. UNICEF is working with WHO, CDC and MSF to identify appropriate PPE technical specifications, standards and guidance to determine and define appropriate context and end-use function of the equipment.

While universal precautions include protection for head, eyes, respiration, body, hands and feet, mucosal membranes in both high or low risk areas,



- In high-risk areas, precautions should include patient isolation and full protective clothing.
- In low-risk areas, partial protective clothing is required.

In emergencies, UNICEF provides essential medical supplies through basic unit IEHK (Table 1). Some of the items included in the kit (in addition to standalone items) may be used in a low-risk setting, but others are not appropriate for a high-risk setting. In particular, category 3 (i.e., high exposure) overalls and coveralls which are especially resistant to liquid or fluid penetration are still being sourced.

⁴ World Health Organization, [Frequently Asked Questions on the Ebola Disease](#), WHO, Geneva, August 2014.

⁵ The list is a working document and subject to review.

Table 1 Emergency Medical Supplies Currently Available through UNICEF

Products	Description	Image
<p>Personal Protective Equipment (principally for low-risk)</p>	<ul style="list-style-type: none"> - Gloves – surgical, gynaecological and examination. - Aprons – plastic - Safety Glasses - Masks – High filtration - Masks – Surgical disp. - PPE Kit – “Influenza risk 1”. Only for supportive use / no direct contact (i.e., can be used in “low risk). - PPE Kit – “Influenza risk 2”. Only for supportive use / no direct contact (i.e., can be used in “low risk) - Caps – surgical - Clogs – plastic - Coats – medical - Gowns – surgical and patient - Drapes – surgical - Trousers – surgical - Tunic – surgical - Stretcher – Foldable and with side rails - Body bags – Adult and child 	 <p>Source: UNICEF SD.</p>
<p>Interagency Emergency Health Kits (IEHK)</p>	<ul style="list-style-type: none"> - The basic unit IEHK contains essential medicines and medical devices (consumables and equipment) to treat 1,000 persons for a period of three (3) months. The kit contains essential medicines (non-injectables) and medical devices (essential dressing consumables and equipment). The kit can be used by healthcare workers with limited training. - The supplementary 2-equipment IEHK contains essential basic diagnostic and sterilisation equipment, utensils and minor surgical instruments sets. It also includes items to allow for the provision of clean water. The kit must only be used by physicians and other professional health. - The supplementary 3-renewable IEHK contains essential medical devices and consumables. Most of the items are single use and sterile. The kit must only be used by physicians and health care professionals. - The IEHK kits are modules of a Complete IEHK designed to meet the initial primary health care needs of a population of 10,000 persons for 3 months in absence of any medical facilities during emergency situations. 	 <p>Source: Basic IEHK UNICEF SD.</p>

Source: UNICEF Supply Division.

A supply list of available standard and non-standard medical equipment, consumables and renewables for use to manage EVD outbreak response is provided in the annex in the previously mentioned [UNICEF’s guidance note for UNICEF COs](#). The note identifies a non-exhaustive list of items that can be used for initial assessment designed to guide supply planning. The material codes and specification references for the catalogued items are available.

UNICEF has procured emergency medical and principally low-risk PPE supplies in response to EVD in Liberia and Sierra Leone, in addition to water treatment and temporary structures (Table 2). UNICEF has also been in close communication with manufacturers (Kimberly-Clark, DuPont and 3M) to source additional high-risk PPE, in particular to fill the gaps in high-risk product availability. Based on the high volume of demand and lack of manufacturer inventory and capacity, UNICEF is working with suppliers to identify lead times for delivery, and as a result, countries may also be asked to split deliveries over time. Body bags and coveralls designed for high risk and high exposure setting, in

particular, are in short supply owing to sudden high demand outside normal industry offtake. Body bags must meet the minimum specifications (300 microns and 250 x 120 cm for adults and 150 x 100 cm for children) to ensure the safe disposal of cadavres. Table 2 reports supplies delivered to Liberia and Sierra Leone to date.

Table 2 EVD Response Supplies Delivered to Liberia and Sierra Leone in August 2014

Medicines			
Items	Units	Items	Units
Amod 135mg+Arte 50mg tab	1,600	Metoclopramide 10mg tablets	10,425,000
Amoxici.pdr/oral sus 125mg/5ml/BOT-100ml	335,850	Metronidazol pdr/o.s.200mg/5ml/BOT-100ml	3,110
Amoxicillin 250mg disp.tab	923,000	Metronidazole 250mg tabs	2,900,000
Artesunate 50mg+SP 525mg tabs/6+2	50,000	Metronidazole inj 500mg/100ml vl	5,000
Artesunate pdr./inj 60mg vial	82,520	Morphine sulph.inj 10mg/ml 1ml	31,100
Ascorbic acid 250mg tabs	2,520,000	Multiple micronutrient pdr,sachets	90,000
Azithromycin 250mg tablets	540	ORS low osm. 10.2g/0.5L	90,000
Ceftriaxone pdr/inj 1g vial	836,240	ORS low osm. 20.5g/1L	349,600
Ceftriaxone pdr/inj 250mg vial	478,400	Oxytocin inj 10 IU 1ml amp	1,800
Chloramphenicol 250mg caps	450,000	Paracetamol 100mg tabs	1,000,000
Chloramphenicol pdr/inj 1g vial	90	Paracetamol 250mg disp. tabs	84,000
Chlorhexidine conc. sol. 5%/BOT-1000ml	180	Paracetamol 500mg tabs	177,300
Chlorpromazine inj 25mg/ml 2ml amp	18,000	Phenobarbital 30mg tabs	110,100
Ciprofloxacin 250mg tabs	1,800	Povidone iodine sol 10%/BOT-500ml	900
Dexamethasone inj 4mg/mL 1mL amp	9,000	Promethazine 25mg tabs	4,750,000
Diazepam 5mg tabs	90,000	ReSoMal,42g sachet for 1 litre	109,800
Diazepam inj 5mg/ml 2ml amp	49,940	Retinol 200,000IU soft gel.caps	100,000
Doxycycline 100mg tabs	900,000	Sod.lact.comp.inj 1000ml w/g.set	9,000
Epinephrine inj 1mg/ml 1ml amp	39,930	Sod.lactat.comp.inj 500ml w/g.set	18,000
Fe (as fum.)+folic 60+0.4mg tab	923,000	Sodium chl.inj 0.9% 500ml w/giv.s	340
Furosemide inj 10mg/ml 2ml amp	900	Sulf.100mg+Trimet.20mg disp.tab	18,000
Gentamicin inj 40mg/ml 2ml amp	106,000	Sulf.400mg+Trimet.80mg tabs	286,200
Glucose hyperton.inj 50% 50mL vl	37,120	Sulfadox+Pyrimeth 500+25mg tabs	70,000
Glucose inj 5% 500ml w/giv.set	1,800	Zinc 20mg tablets	280,000
Medical equipment			
Items	Units	Items	Units
Adhesive tape 5 m	20	Sphygmomanometers	1,075
Bandages 5m rolls	20,279	Stethoscope	3,275
Bedpans	100	Suction tubes	800
Cannulas	81,160	Surgical kits	5,253
Gauze	33,587	Syringes	2,229,500
Infusion sets	12,000	Thermometers	1,006
Kidney basins	25,000	Tongue depressors	3,000
Needles	2,786,000	Tourniquet	55
Scalpels	3,374	Urine bags	9,000
Personal Protection Equipment		Water, Sanitation and Shelter	
Items	Units	Items	Units
Aprons	4,023	Bottle, plastic,1L,w/screw cap	180
Body bags	11,622	Bucket, HDPE,with lid, 14 l	500
Glasses	6,000	Chlorine/pH, Pool Tester Kit for 250 tst	120
Gloves	201,413	Calcium hypochlorite 65-70%	34,515
Masks	213,180	Water floc. & disinfectant, pdr	879,120
Soap 110g	21,090	Tents	18

Source: UNICEF SD.

The table below describes the tentative country demand over the next 3 months for both high and low-risk PPE components to form the next series of shipments to countries engaged in EVD preparedness, planning and response.

Table 3 Current PPE Pipeline for Ethiopia, Ghana, Liberia and Sierra Leone for next 3 months

Overview requested PPE items Ghana, Ethiopia, Sierra Leone			
Cat.	Item Description	Unit	Quantity
PPE	Adhesive Tape	Unit	3,700
PPE	Apron – disposable	Unit	60,000
PPE	Apron - heavy duty plastic, reusable	Unit	180,000
PPE	Apron - heavy duty, plastic or rubber	Unit	1,190
PPE	Bio-Hazard Plastic Bags	Unit	304,500
PPE	Body Bag / Cadavre – adult	Unit	32,822
PPE	Body Bag / Cadavre – child	Unit	17,000
PPE	Boots - rubber, reusable	Unit	33,271
PPE	Coverall - with attached elasticated hood, cuffs and ankles, non-sterile, single use	Unit	183,228
PPE	Coveralls - M, X, XL	Unit	298,000
PPE	Face Mask – disposable	Unit	360,000
PPE	Face shield	Piece	273,180
PPE	Gloves - Exam, nitrile, non-sterile, L, M, S	Unit	180,000
PPE	Gloves - heavy duty disposable	Unit	330,972
PPE	Gloves - surgical (S, M, L), disposable	Unit	174,240
PPE	Goggles – disposable	Unit	93,000
PPE	Hair Covers – disposable	Unit	60,000
PPE	Hand Sprayer (1.5L) - re-usable	Bottle	14,200
PPE	Head Covers - M, L	Unit	300,000
PPE	Hoods – disposable	Unit	60,000
PPE	Mask - surgical, disposable	Unit	178,840
PPE	Overalls – disposable	Unit	60,000
PPE	PPE Influenza Kit Risk I	Unit	281
PPE	Shoe Covers	Unit	300,000
PPE	Sprayer - backpack, disposable	Unit	200
Med	Alcohol - (Isopropyl) 70%	Bottles	1,000,000
Med	Bleach (Concentrated)	Gallon	5,000
Med	Dressing Trolley	Unit	100
Med	EVD Detection Kit	Unit	1,000
Med	Forceps	Unit	100
Med	Gallipots	Unit	1,000
Med	Gloves - surgical (L, M)	Unit	200,000
Med	Goggle Antifog Spray	Bottle	15,900
Med	Gown - surgical, sterile	Unit	61,000

Med	Hand sanitizer	Bottles	1,006,000
Med	Hospital Beds and Mattresses	Unit	200
Med	Injection Tray	Unit	100
Med	Kidney Dish	Unit	100
Med	Oxygen Masks	Unit	100
Med	Procedure Trolley	Unit	100
Med	Screens	Unit	200
Med	Sharp Containers	Unit	1,000
Med	Sphygmomanometer	Unit	100
Med	Sprayer - 16 litre capacity	Unit	410
Med	Sputum Mugs	Unit	1,000
Med	Stethoscopes	Unit	100
Med	Suction Machine	Unit	200
Med	Suction Tubes	Unit	200
Med	Talcum powder - 1 kg	Unit	180
Med	Tents - isolation ward equipment	Unit	100
Med	Thermometer – digital	Unit	1,000
Med	Thermometer – infrared	Unit	600

Source: UNICEF SD

4. Next Steps

- UNICEF is continuing to place emergency purchase orders (POs) for key essential items requested to meet personal protective equipment requests, including high filtration and surgical masks, infusion giving sets, disposable aprons and body bags.
- UNICEF is working with partners and suppliers to establish a list of essential supplies to be used in response to EVD outbreaks. The list will address preparedness planning, response and improve health system strengthening. As UNICEF makes further progress in identifying additional manufacturers and supply sources, particularly for PPE designed for the high risk setting, this note will be updated accordingly. UNICEF will continue to work with the main PPE manufacturers (DuPont, 3M and Kappler) and seek to ensure increased supply and reduced lead times for delivery. A separate note identifying potential pipeline interventions will likely follow.
- UNICEF Supply Division staff have been deployed to Liberia to meet with partners and work on strengthening in-country coordination and the different roles and responsibilities.
- UNICEF is contacting CDC to seek technical guidance and advice on PPE content.

For further questions or additional information, please contact:

Helene Moller
Chief, Health Technology Centre
UNICEF Supply Division
+45 45 33 55 85
hmoller@unicef.org

Etleva Kadilli
Contracts Manager
UNICEF Supply Division
+45 45 33 55 89
ekadilli@unicef.org

Shauna Mullally
Technical Specialist
UNICEF Supply Division
+45 45 33 58 44
smullally@unicef.org

Aadrian Sullivan
Information Management
UNICEF Supply Division
+45 45 33 57 68
asullivan@unicef.org

Other UNICEF information notes can be found at http://www.unicef.org/supply/index_54214.html.