

Package and approaches in areas of intense transmission of Ebola virus

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Introduction

Key information on Ebola virus disease (EVD)

Infection can result from direct contact through broken skin or mucous membrane exposure to the bodily fluids or secretions (blood, stool, urine, saliva, semen) of infected people. Infection can also occur if a healthy person's broken skin or mucous membranes come into contact with environments that have been contaminated with an Ebola patient's infectious fluids. These materials include soiled clothing, bed linen, and used needles.

Burial ceremonies in which mourners have direct contact with the deceased person's body can also play a role in the transmission of Ebola.

The incubation period - that is, the time interval from infection with the virus to the onset of symptoms - is 2 to 21 days. In the current outbreak in West Africa, 90% of patients have an incubation period of less than 15 days. Infected people are contagious when they show symptoms, and as long as their blood and secretions contain the virus.

The case fatality ratio for this outbreak is approximately 54.9%. The average time between symptom onset and death is 7 days (approximately 50% of patients), while the remaining 50% of patients have an average time of 15 days from symptom onset to recovery. Bed occupancy per patient is an average of 12 days.

The basic reproduction number (R_0) of an infection is the number of cases one case generates on average over the course of its infectious period, in an otherwise uninfected population. The R_0 for this outbreak ranges between 1.4 and 1.6 in Guinea, Sierra Leone and Liberia. This is similar to a 1995 Ebola outbreak in the Democratic Republic of Congo and lower than the 2000 outbreak in Uganda ($R_0 = 2.7$). It is also lower than most of the cholera outbreaks seen in the West African region in the past decade ($R_0 = 2.4$).

Ebola virus disease is often characterized by sudden onset of fever, intense weakness, muscle pain, headache and sore throat. This is followed by vomiting, diarrhoea, and in some cases both internal and external bleeding. The symptoms of EVD are not specific and can be easily confused with other endemic or epidemic tropical diseases such as malaria, typhoid fever or leptospirosis. This is why laboratory confirmation is key to monitor the disease and to guide the triage of patient in health care facilities in order to prevent cross infections in hospitalized patients.

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People at risk of infection

- People in direct contact with patients (health workers directly caring for patients, cleaners in Ebola treatment units, family members or others in close contact with infected people)
- Laboratory technicians handling samples from Ebola patients
- Mourners who have direct contact with the bodies of the deceased as part of burial ceremonies
- While most of the transmission occurs from person to person by direct contact, explosive transmissions have been seen in health care facilities through contaminated syringes or during traditional healing practices (scarification) with contaminated items not disinfected between patients.

Key features of the outbreak in West Africa

The current Ebola outbreak is characterized by a number of localized outbreaks ('hotspots' or hubs of transmission). The initial epicentre is in the forest region along the border areas of Guinea, Liberia, and Sierra Leone. Transmission is amplified by intensive commercial and social activities. To reduce further transmission of the disease, patients are asked to be isolated and to reduce contact with other people.

Other epicentres of intense transmission are in densely populated urban areas in Monrovia (Liberia) and Freetown (Sierra Leone), as well as various rural areas in the affected countries.

Ebola interventions

The intervention to combat Ebola aims to stop human-to-human transmission. The package is composed of five elements necessary to control the spread of the disease: care to patients, contact monitoring, safe burials, laboratory support and social mobilisation.

The key interventions to stop Ebola transmission are:

1. **Early isolation** of patients to prevent transmission at home and in the community. In addition to isolation, Ebola treatment units provide safe care and psychosocial support and contribute to surveillance by identifying contacts.
2. **Early detection** of new Ebola cases through close monitoring of contacts and isolation of contacts when they show symptoms.
3. **Safe burial** of the deceased to reduce transmission through contact with dead bodies, whether during preparation of the body for burial or during the funeral ceremony.

Laboratory diagnostic and social mobilisation are critical to support the above interventions.

Table 1: Summary of Ebola interventions

	Classic Ebola package	Community approaches
Patient care	<ul style="list-style-type: none">• Ebola treatment unit (ETU)	<ul style="list-style-type: none">• Community care centre (CCC)• Home care
Contact tracing and monitoring	<ul style="list-style-type: none">• Medical contact tracing	<ul style="list-style-type: none">• Community monitoring• Contact self-reporting
Safe and dignified burial	<ul style="list-style-type: none">• Supervised burial	<ul style="list-style-type: none">• Community burial• Safe family burial
Laboratory diagnosis	<ul style="list-style-type: none">• Blood samples	<ul style="list-style-type: none">• Swab samples
Social mobilisation	<ul style="list-style-type: none">• Dialogue with communities	<ul style="list-style-type: none">• Dialogue with communities

Patient care

Ebola treatment units

Early isolation of patients in Ebola treatment units (ETUs) is necessary to prevent transmission at home and in the community. Ebola treatment units also aim to provide safe care and psychosocial support and contribute to surveillance through the identification of contacts. With adequate supportive care (rehydration, treatment of superinfections), mortality can be reduced to 30%.

When the spread of the disease is such that ETUs cannot be reached easily, referral centres should be established in strategic places so that patients can be easily isolated and cared for, before they can be transported for treatment. A referral system should be in place to ensure safe transportation of patients. Vehicles used to transport patients should be carefully disinfected.

Strict infection prevention and control measures should be implemented in ETUs and referral centres. Basic infection prevention and control measures should be reinforced in all health care facilities. Health care workers are particularly at risk. They should be trained to implement infection prevention and control measures at all times.

Governments should rapidly establish a comprehensive compensation package for frontline responders that defines the salary, hazard pay and – where appropriate – insurance/death benefit available to each category of worker required to contribute to the outbreak response.

Community care centre

Community care centres (CCCs) help to maintain the link between the patients and the community while reducing transmission. They are places in the community where Ebola patients can be isolated and provided with basic care (e.g. food, oral rehydration and symptomatic treatment). CCCs should be separated from primary health care facilities to allow normal health care activities to continue. Isolation conditions in the centres should be adequately comfortable and respectful of the patients and their families.

Patients can be attended by one family member who has been properly trained in infection prevention and control and who is supervised by a health care worker when putting on and taking off personal protective equipment (PPE).

Families with an Ebola patient should receive psychosocial support, hygiene kits and the information necessary to avoid further cases in the family.

Home Care

Home care is usually not recommended, as it is difficult to ensure isolation and safe care at home and the risk of infecting other household members is high. However in some circumstances home care may be the only option available. Some precautions are explained in the leaflet *Advice for Individuals and Families*¹.

All care givers in public and private clinics, pharmacists and traditional healers should receive a specific briefing on infection prevention and control practices as they are at higher risk of getting infected. Similarly ambulance and taxi drivers transporting Ebola patients should be informed on safe practices to protect themselves and decontaminate their vehicles.

Contact tracing and monitoring

Early detection of new Ebola cases, through close monitoring and isolation of contacts when they show symptoms, is key to stopping transmission. Patients are infectious only when they show symptoms and become more infectious as the disease develops. In the current West Africa outbreak, particular attention should be given to diarrhoeal symptoms that are frequent and of 'cholera-like' intensity.

Medical contact tracing

Specific surveillance teams are needed to establish a list of each patient's contacts and monitor each contact daily for 21 days, to identify the onset of the disease. When a contact becomes symptomatic,

¹ *Advice for Individuals and Families*. Geneva: World Health Organization; August 2014
(http://apps.who.int/iris/bitstream/10665/136474/1/WHO_EVD_Guidance_AdviceFam_14.1_eng.pdf)

he/she should be isolated and brought to an Ebola treatment unit or community care centre for testing and care.

It is particularly important to ensure close contact monitoring during the first 14 days after exposure, as 90% of infected persons will show symptoms during this period. Daily medical contact tracing can be challenging in certain circumstances. Other interventions such as community monitoring or contact self-reporting may also be used to reduce community transmission

Community monitoring

Community monitoring is undertaken by a person in the community trained to recognise the symptoms of the disease and tasked to report potential cases to health authorities. Reporting can be done by phone, SMS or when surveillance teams visit the community. Daily reporting is preferred, including zero reporting when no new potential cases have been identified.

Contact self-reporting

People who have been in contact with an Ebola case are informed that they are at risk to have the disease. They are briefed on the symptoms of EVD and provided with information on key measures to take should they begin to display symptoms, and the nearest ETU or CCC to go for treatment and isolation.

Safe and dignified burial

Burial ceremonies often carry a high risk of Ebola transmission as a result of direct contact with the body during its preparation for burial and the funeral ceremony itself, and the gathering of large numbers of people. It is essential to reduce transmission that may occur during burials through contact with dead bodies.

Supervised burial

Burials should be performed by a team trained in infection prevention and control measures. The team should have the necessary equipment such as PPE, body bags, disinfectant and transportation. Other considerations are incineration of bodies and adequate management of waste. The respect of cultural practices and beliefs is essential for the acceptance of supervised burial.

Community burial

Community burial teams should be trained in safe burial practices (see leaflet on safe burial) and receive equipment and incentives (such as hazard pay) for this activity. Community burial teams should be regularly supervised. In case of pluri-ethnic communities, community burial teams must know about and respect various cultural practices. The availability of support packages for affected families (food, clothes, etc.) can help to encourage communities to adhere to safe burial practices.

Safe family burial

In the absence of safe burial teams, families should be informed on how to carry out safe practices to bury their relatives and where to seek help if needed. Families should be encouraged to report deaths to health authorities and be given access to PPE, body bags, disinfectant and waste disposal bags.

Laboratory diagnosis

The confirmation of cases and deaths by a WHO-recognized laboratory is essential to monitor the outbreak and inform decisions on strategy. The symptoms of Ebola are not specific and therefore it is important to confirm a diagnosis by laboratory test to identify Ebola patients from non-Ebola patients.

The diagnosis is preferably made by collecting blood samples by phlebotomy, but it is also possible to collect saliva samples by swabs. Collecting saliva samples is less dangerous, but test performed has the disadvantage of being less sensitive. A diagnostic result can be obtained in six hours using the polymerase chain reaction (PCR) method.

When laboratory confirmation is not available, all suspected cases should be considered as Ebola cases and isolated to prevent further transmission.

Social mobilization

Ebola outbreaks cannot be controlled without engaging communities. Communities need to understand the disease, the mode of transmission and protective measures. Active social mobilization is also necessary to reduce fear, anxiety, discrimination and dangerous practices, such as unsafe injections of vitamins or antibiotics, and tattoos. Social mobilisation/community engagement should be embedded in all interventions: care, contact tracing, burials and laboratory testing.

Dialogue with communities is key for effective control of transmission and is different from risk communication or message spreading. Social mobilisers need to listen to communities to understand their concerns and fears. They then need to use this understanding to adapt their advice on protective health messages to existing community practices (e.g. for care or burial), to either modify dangerous practices or reinforce good ones.

Communication should be done through the most socially acceptable and effective channels such as through community leaders, religious leaders and traditional healers.

Special incentives for people actively contributing to the outbreak response and families complying with public health recommendations should be considered. Special attention should be given to reduce or counteract any discrimination experienced by Ebola patients, survivors and front line responders to the outbreak.

Approaches for intense transmission areas

The control of Ebola outbreaks is based on the implementation of a three-pillar approach to stop transmission of the virus:

1. Isolation of Ebola cases;
2. Early detection and isolation of contacts when they become symptomatic; and
3. Safe burials.

In the current outbreak in West Africa, the implementation of these interventions is sub-optimal due issues including treatment centres unable to cope with demand, lack of PPE in health care facilities, lack of staff for contact tracing, community resistance to contact tracing and a lack of cultural adaptation of safe burial recommendations. Incomplete implementation of the classic Ebola package of interventions has led to the continuous and exponential transmission, particularly in densely populated settings.

The magnitude of the outbreak and the limited resources available require the prioritization of **community approaches** and provision of the necessary resources and materials (e.g. PPE, disinfectant, food) to enable communities to safely implement interventions. These approaches include:

1. **Social mobilisation interventions** based on community dialogue are key to engaging communities and empowering them to control the outbreak.
2. **Safe and dignified burials** are critical to control transmission in areas with limited resources, as burials can be a major source of transmission for a large number of contacts. Accordingly, all deaths in communities experiencing intense transmission should be treated as potential Ebola deaths.
3. The isolation and treatment of patient in **community care centres** should be encouraged to rapidly reduce household transmission. Isolating patients in CCCs distributed throughout various communities or neighbourhoods reduces the movement of patients and families and also the need for risky transportation to large Ebola treatment units.

Community approaches will require the adaptation of local surveillance protocols to maintain the monitoring of the epidemic. Epidemiological surveillance of the disease will be less specific. This may pose a problem for exit screening as it is currently based on a list of cases and contacts not allowed to travel outside the country.

Resources

- Advice for Individuals and Families. Geneva: World Health Organization; August 2014 (http://apps.who.int/iris/bitstream/10665/136474/1/WHO_EVD_Guidance_AdviceFam_14.1_eng.pdf)
- Key messages for social mobilization and community engagement in intense transmission areas. Geneva: World Health Organization; September 2014 (<http://who.int/csr/resources/publications/ebola/social-mobilization-guidance/en/>)
- How to conduct safe and dignified burial of a patient who has died from suspected or confirmed Ebola virus disease. Geneva: World Health Organization; October 2014 (<http://www.who.int/csr/resources/publications/ebola/safe-burial-protocol/en/>)
- How to safely collect oral swabs from deceased patients suspected to be infected with Ebola. Geneva: World Health Organization; October 2014 (<http://who.int/csr/resources/publications/ebola/safely-collect-oral-swabs/en/>)

More information can be found at: <http://who.int/csr/disease/ebola/en/>