



Safe and Dignified Burial

An Implementation Guide for Field Managers

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Foreword

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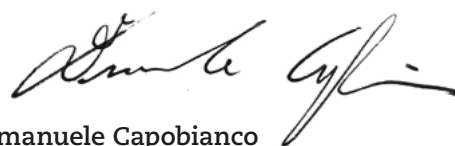
Trust is a word often used in public health emergencies; yet in life as well as death it can be the difference between stopping a deadly outbreak, or having it dangerously spiral out of control. Diseases like Ebola and Marburg that spread through contact with loved ones, including after death, threaten the bonds between individuals, communities, and the health system that serves them. The ability of interventions to involve local actors, who have unparalleled access to affected people and a deep understanding of the context, is therefore a critical element of any public health response.

It is equally critical to bury in a safe manner the bodies of people who die during outbreaks of these diseases. Safe burials prevent further transmission of the virus and therefore save lives. At the same time, burial and funeral practices are deeply personal, with profound meaning and far-reaching cultural, social and religious implications. Ensuring the balance between biomedical safety and the cultural, religious, social and personal needs of bereaved families and communities lies at the heart of the IFRC's approach to burials that are safe and dignified.

The IFRC's Safe and Dignified Burial (SDB) protocols call for the iterative assessment of communities' needs throughout an operation, and systematic engagement on a personal level with bereaved families and communities before and during each burial, to make sure that safe burial protocols are adapted to their needs. This approach recognizes the dignity and humanity of the deceased; it treats each burial as a family tragedy and respects the need for mourning. In this way, it helps communities to accept adaptations to their traditional burial practices that are essential to end an outbreak of a deadly disease.

The SDB approach is based on a task shifting model, which recognizes the critical role that local actors can play in carrying out this highly sensitive work. With high-quality training and sufficient support, teams of laypersons from affected communities can provide this essential, epidemic-ending service while using their knowledge and understanding of the local culture and social structures to ensure the sensitive act of burying the deceased meets the needs of the bereaved and is acceptable to them. National Red Cross and Red Crescent Societies are well placed to play this interlocutor role, either by providing technical support that is grounded in local needs, or directly running SDB operations during an outbreak.

This first edition of the SDB implementation guide provides practical and easy-to-follow guidance in how to establish and implement SDB programming during an outbreak of Ebola virus disease or similar diseases. It provides tools and guidance to ensure that SDB programming both meets the need to prevent and control infection, and respects the dignity and humanity of the deceased and their communities. The manual is not only a go-to guide for personnel who must rapidly establish a quality SDB system at the first declaration of an outbreak requiring such services, it is also a useful resource for emergency preparedness in countries at risk from these deadly diseases. Finally, information on ensuring the safety of those carrying out SDBs is included, recognizing that the crucial work carried out by these life-saving teams is often dangerous.



Emanuele Capobianco

Director of Health & Care Department, IFRC

Quick reference guide

1. Six key priorities for outbreaks of Ebola virus disease and Marburg virus disease

- Protect yourself and the community (Chapters 1 and 6).
- Involve the community (community engagement) (Chapter 3).
- Plan and set up the operational response (Chapter 4).
- Coordinate and communicate (Chapter 5).
- Recruit and train burial teams (Chapter 6).
- Conduct safe and dignified burials (SDB), including disinfection and decontamination in accordance with standard operating procedures (SOPs) (Chapters 6 and 7).

1.1 Protect yourself and the community

- Infectious diseases can be transmitted when the body fluids of an infected deceased person are in contact with a non-infected person.
 - Handling the body of a deceased person during outbreaks of Ebola virus disease (EVD) and Marburg virus disease (MVD) carries a high risk of transmission. To prevent disease transmission, it is necessary to wear FULL personal protective equipment (PPE).
 - Handling the body of a deceased person during a cholera outbreak also carries risks. However, it is not necessary to wear full PPE or to form specific safe and dignified burial (SDB) teams to prevent disease transmission.
- Train the team BEFORE conducting SDBs. Ensure that all members of the burial team are present, are familiar with the procedure, and know when and how to use all PPE.
- Be vigilant. Follow standard operational procedures (SOPs) for SDB at all times.
- Before departure, burial teams should assemble all the materials (PPE, disinfectants, other equipment) that are necessary for SDB procedures and check that they are in good working order. All damaged or non-functioning items should be replaced BEFORE starting the SDB procedure.
- Make sure that one member of the SDB team can explain the procedure clearly to the family of the deceased person and to the community. The team member should explain what the team will do, when it will do it, and why. This approach will help to ensure that the family and community support the SDB process.

- Decontaminate and disinfect the home and family environment of the deceased. Make sure that bedding is burned, and that waste is managed in accordance with SOPs.
- Make sure that PPE is removed in accordance with SOPs, guided by the hygienist/sprayer.
- Manage and report any breach of PPE immediately.
- Assist burial teams to stay healthy. Particularly during EVD and MVD outbreaks, be aware of the possibility that other illnesses may be present. In malarial areas, encourage teams to take malaria prophylaxis and follow national malaria prevention protocols (for example, to sleep under mosquito nets). Encourage good hygiene practices to avoid illness.
- Promote vaccination against EVD for front-line volunteers, staff, and at-risk communities.
- Pay attention to the well-being of the team. Psychosocial support (PSS) should be available for all members of a burial team.
- Ensure burial teams on duty have access to enough drinking water and food when on duty.

1.2 Involve the community (community engagement)

To be successful, an SDB strategy must be nested within a wider community engagement and accountability (CEA) strategy because understanding the community and effective communication are vital for community acceptance and success.

Before and during the entire response:

- Fear and distress, misinformation and misperceptions of EVD and MVD, and necessary control measures, may cause members of a community to reject SDBs. To secure community consent, community engagement volunteers employ a community engagement strategy that includes talking with members of the community and explaining both the disease and measures necessary to prevent it. Community engagement volunteers can give families and community members objective information about burial procedures, listen to their fears and misperceptions about handling the dead, and respond to them.
- If burial teams understand what factors cause a community to resist or accept SDB, they will be in a better position to adapt traditional funeral practices and apply SDB procedures in ways that families and affected communities find acceptable.
- Regularly collect and analyse community feedback, including feedback on SDB, to guide responses and service provision, and encourage community engagement.
- When a burial fails due to resistance, violence or lack of consent, complete the after-action incident report (Annex 11) included in the SDB reporting form, to facilitate learning and improve protocols for better community acceptance.

- Wherever possible, involve community and religious leaders, before, during and after SDBs. In some contexts, teams should contact local faith leaders, who can help to support families and perform substitution rituals if these are required.

At the time of the SDB:

- Show compassion for those who are mourning. Make sure that people have an opportunity to grieve for the person who has died and honour his or her life. The deceased and the bereaved should always be respected.
- Family members should be allowed to participate in SDBs, providing their participation does not compromise infection control.
- PPE should only be donned after SDB members have greeted the family of the deceased and offered their condolences. (SDB teams should NOT arrive wearing PPE.)
- Chlorine solutions should be prepared in the presence of community members to dispel myths and fears about the disinfection process.

1.3 Planning and setting up SDB operations

- SDB procedures should be incorporated in emergency preparedness and response plans for dealing with outbreaks of specific infectious diseases such as EVD and MVD.
- Many factors in addition to technical training need to be considered and prepared for before SDB operations can be implemented successfully. Planning is essential.
- Preparedness and planning involve:
 - Creating conditions that permit effective SDBs. For instance, it is important to define and establish the full SDB process. This includes: an alert system; steps to secure family and community acceptance; mobilization, management, support and supervision of SDB teams; training of SDB teams; logistics and transport for teams; ensuring teams have access to the materials they need; making provision for diagnostic sampling (for example, oral swabbing) and transport of samples for diagnosis (where required); ensuring burial arrangements respect tradition and social expectations (in terms of sites, coffins, etc.); managing infectious waste; establishing reporting systems and coordination; and linking appropriately to other response teams and programmes.
 - Determining the number of SDB teams required, based on epidemiological analysis. Decisions on how many teams to establish should consider the National Society's capacity to train, supervise, manage and support them and the presence of other partners involved in SDBs.
 - Determining whether SDB teams require an operational field base and, if so, where it should be located and how it should be set up.

- Establishing a logistics pipeline and arrangements for storage or warehousing and stock management. (Consider whether pre-positioned stocks are available and whether additional local or international procurement is required.)
- Ensuring that SDB teams have access to vehicles.
- Creating a human resources plan. This should assess the number of staff and volunteers, including support staff, that will be needed to manage, coordinate and implement the SDB response.
- Arrange volunteer management and supervision; supply food and water; arrange incentives (where appropriate); organize rosters; provide access to psychosocial support (PSS); and provide vaccinations (if applicable), etc.
- Determining whether additional operational resources and technical support are required and where these might be found.

1.4 Coordinate and communicate

During EVD or MVD outbreaks, keep in mind the National Response Strategy and standard public health actions recommended by the World Health Organization (WHO). These identify nine essential elements of a response to EVD or MVD:

1. Surveillance, including active case finding, case investigation, contact tracing, and points of entry (POE) surveillance.
 2. Case management.
 3. Risk communication, social mobilization and community engagement (RCCE).
 4. Infection prevention and control (IPC) at health facilities and in communities.
 5. Safe and dignified burials (SDB).
 6. Psychosocial support (PSS).
 7. Vaccination (if applicable).
 8. Diagnostics (laboratory).
 9. Coordination.
- Coordinate and communicate with other actors supporting the response at all levels (national, district, provincial). Understand the 4W (Who? What? When? Where?).
 - The lead organization responsible for SDB should take particular care to liaise with actors involved in surveillance, RCCE, PSS, diagnostics (laboratory), case management, and infection prevention and control (IPC), as well as with others who are implementing SDBs.

1.5 Recruit and train SDB teams

- Decide how many burial teams need to be established and recruit volunteers accordingly.
- Each burial team should have the following **core** members:
 - A team leader or technical supervisor (TL/TS).
 - 4 body handlers.
 - 1 Type-1 hygienist (sprayer in full PPE, to accompany the body handlers while securing the body).
 - 1 Type-2 hygienist (in partial PPE to support team members donning and doffing PPE).
 - 1 community engagement person.
 - 2 drivers.
 - 2-4 Type-3 hygienists (in partial PPE to protect from chlorine, who stay at the base).

Note. Where psychosocial support (PSS) is not provided by other actors, consider adding PSS to the competencies of SDB teams.

- Consider the gender, religious and cultural mix of teams to ensure they are culturally appropriate. It may also be necessary to evaluate the age of SDB team members. Some societies do not allow young people to perform burial rites.
- Ensure all burial team members are trained in SDB procedures and understand their roles and responsibilities.
- Ensure that all burial teams have received training in community engagement and accountability (CEA) and psychological first aid (PFA).
- Devote enough time and resources to training. Make sure that teams receive training and coaching of good quality. Provide consistent refresher trainings and practice scenarios to ensure that SOPs are followed and teams maintain high performance standards.
- Ensure that the support staff required are identified and trained and understand their roles and responsibilities.

1.6 Conduct safe and dignified burials in accordance with SOPs

1. Strict infection control procedures (ICP) need to be adopted when handling the bodies of those who die during an EVD or MVD. To prevent disease transmission, some traditional funeral rites and burials (which involve washing and touching the body, for example) may need to be replaced by SDBs until the Ministry of Health (MoH) officially declares that an outbreak has ended.
2. Follow all SDB SOPs: for donning and doffing PPE; for collecting diagnostic samples (e.g. oral swabs) when required; for disinfecting and decontaminating the household and personal items of the deceased; for managing infectious waste; and for decontaminating equipment and reusable materials.
3. SDB protocols can be modified to accommodate the religious and cultural beliefs and traditions of the family of the deceased, if infection prevention and control standards are not breached. To ensure that the family understands and supports the need for SDB, it is important to discuss this issue with family members.
4. All persons who handle the body of a deceased person, or who disinfect the environment around a deceased person, need to don PPE.
5. Family members of a deceased person should be allowed to participate in SDBs provided that infection prevention and control standards are not breached. SOPs must be strictly followed and supervised.
6. To prevent the spread of infection from contaminated fomites,¹ it is important to disinfect and decontaminate all items used by a deceased person prior to death, as well as his or her environment, in accordance with SOPs. This process should be coordinated with a process to replace destroyed items and/or provide a bereavement kit.
7. The safe disposal of infected or potentially infected waste and materials should be organized in accordance with SOPs and under close supervision.
8. SDB should be conducted as soon as possible after death. However, the family's permission should always be sought (where possible) before conducting a burial.
9. The bodies of deceased persons should always be handled with respect.
10. A trained supervisor or the SDB team leader should directly supervise all aspects of SDBs to ensure they comply with procedure.

¹ Fomite: a nonliving object or substance capable of carrying infectious organisms.

2. Introduction

The general term ‘infectious disease’ is used to describe illnesses that are caused by pathogenic microorganisms, such as bacteria, viruses, parasites, or fungi, that can spread, directly or indirectly, from one person to another. Some infectious diseases cause life-threatening illnesses that have high mortality rates. They can present a serious hazard to those who care for the sick, at home or in a health facility, and to those who participate in burials. Specific public health interventions, including isolation of infected persons and safe forms of burial, are required to reduce and control the transmission of pathogens.

Red Cross Red Crescent National Societies, with the support of the IFRC, often play an important role in SDBs. National Societies are frequently requested to manage SDBs, using their volunteer networks. In some contexts, National Societies are asked to take the lead role. In addition to conducting burials, a National Society may be asked to chair and coordinate SDB pillar meetings, develop a common SDB strategy, map the response, identify gaps, agree context-specific protocols, do advocacy, or manage information about SDB activities.

2.1 Objectives and purpose of the guide

This guide is designed to assist organizations to establish a systematic operational approach to managing the bodies of persons who have died during specific infectious disease outbreaks, in which safe handling of dead persons and SDBs are required, as a public health intervention, to reduce secondary infection and to control the disease and contain its spread.

Specifically, the guide indicates the best operational and management practices for safe handling of deceased persons and conducting SDBs during infectious disease outbreaks. It is designed for use by those who are setting up or managing SDB operations. The guide focuses on Ebola Virus Disease (EVD) and Marburg Virus Disease (MVD) whose infectiousness is such that it is necessary to handle the bodies of deceased persons with particular care before and during burial, in order to prevent disease transmission.

EVD and MVD are most frequently transmitted during unprotected caring for the sick and during preparation of deceased persons for burial. Safe and Dignified Burials (SDBs) modify traditional funeral ceremonies and burial practices. Their introduction at the start of specific infectious disease outbreaks has been shown to reduce secondary infection and helps to prevent disease transmission.

The guide focuses on management of the bodies of persons who die during Ebola and Marburg outbreaks. Suitably adapted, its guidance is also relevant to the management of deaths from other infectious diseases where safe procedures for handling and burying the dead are necessary. Relevant diseases include Crimean-Congo Haemorrhagic Fever and Plague.

Generic guidelines for managing dead bodies after disasters can be found at: <https://www.icrc.org/en/publication/0880-management-dead-bodies-after-disasters-field-manual-first-responders>.

2.2 Why do EVD and MVD require special procedures to manage the deceased

2.2.1 Ebola Virus Disease (EVD) and Marburg Virus Disease (MVD)

The Ebola and Marburg viruses belong to the Filoviridae family. They cause severe illness that is often fatal. The natural reservoirs of EVD and MVD are not fully known, but research suggests that certain species of fruit bat are the reservoir host,² transmitting the disease to other non-domestic animals, such as monkeys, apes, and duikers, which are hunted and eaten in many African countries.³ Initial animal-to-human infection by EVD and MVD occurs when hunting or when preparing infected bush meat.

EVD and MVD then spread through human-to-human transmission, via direct contact with the blood, secretions, organs or other body fluids of infected people, and via contaminated surfaces and materials (such as bedding and clothing). Health care workers, carers, and laboratory staff who handle specimens are at high risk of transmission. Burial ceremonies that involve direct contact with the bodies of persons who have died from EVD or MVD are also known to facilitate the transmission of these diseases.

A vaccine called rVSV-ZEBOV (still being tested) appears to be safe and has been shown to protect against the Zaire strain of the Ebola virus. The Strategic Advisory Group of Experts on Immunization (SAGE) recommends its use in Ebola outbreaks involving this strain.⁴

For more information on EVD, see: <http://www.who.int/news-room/fact-sheets/detail/ebola-virus-disease>.

For more information on MVD, see: <http://www.who.int/news-room/fact-sheets/detail/marburg-virus-disease>.

2.2.2 How EVD and MVD can be transmitted from the infected dead to the non-infected living

EVD and MVD. During the acute phase of both illnesses and after death, the virus is shed in a wide variety of human body fluids. Human to human transmission of both EVD and MVD takes place when unprotected physical contact occurs between a person infected with EVD or MVD and a person who is not infected. The uninfected person can be infected by touching the body of a deceased person—who is likely to have high viral loads at the time of death—during funerary rites or burial. In many cultures, it is customary to wash the body of the deceased before burial and to gather together as a community to pay respect to the dead. This unprotected contact (without PPE) with the sick and dead can lead to secondary transmission in the community.⁵

Mattresses, linen, shared eating utensils, and clothes that have been contaminated by the body fluids of an EVD/MVD patient can be a source of secondary infections. On dry surfaces, such as doorknobs and countertops, viral particles can survive for several hours. Given favourable conditions, both the EVD and EMD viruses can remain detectable on fomites for several days. The decontamination or safe disposal of all items that may have been contaminated with infectious body fluids is critical to prevent further transmission. The systematic provision of bereavement kits or the replacement

² Baseler L., D. Chertow, et al, "The Pathogenesis of Ebola Virus Disease", in *Annual Review of Pathology: Mechanisms of Disease*, 2017. Volume 12, pp. 387–418.

³ Pigs are suspected to have played a role during the outbreak of Ebola Reston. This has not been documented in outbreaks of other species of Ebola virus.

⁴ At: <http://www.who.int/csr/resources/publications/ebola/sage-vaccines-2017/en/>

⁵ At: <https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0005491>.

of destroyed items can increase the acceptability and lessen the impact of this process. In some settings, rumours may circulate that corpses are being bought. It may be wise to replace goods that have been destroyed, rather than offer cash compensation.

2.2.3 Preventing disease transmission due to unsafe management of the deceased or unsafe burial

The isolation of patients with specific infectious disease, and the introduction of SDB procedures, have both proved to be effective methods for controlling and containing EVD and MVD outbreaks.

Provision of SDBs is one pillar of the response strategy for EVD and MVD. Other key pillars include:

1. Surveillance, including active case finding, case investigation, contact tracing, and points of entry (POE) surveillance.
2. Case management.
3. Risk communication, social mobilization and community engagement (RCCE).
4. Infection, prevention and control (IPC) at health facilities and in communities.
5. Psychosocial support (PSS).
6. Vaccination (if applicable).
7. Diagnostics (laboratory).
8. Coordination.

Relatives and communities attach importance to traditional funeral rites and practices. When deaths are due to EVD or MVD, however, rites and practices must be adjusted or substituted to avoid further transmission of these diseases.

In previous outbreaks of Marburg and Ebola diseases, trained SDB teams were established to conduct SDBs. In some instances, the community considered SDB practices to be disrespectful, and felt SDB was being forced on them. Because relatives had not been allowed to witness burials, rumours and doubts arose over what had been done to the bodies of those buried.⁶ There were reports of mass burials in unmarked graves.⁷ Because traditional procedures honouring marriage and lineage lines were not followed, communities expressed anger and opposition to burial teams and the organizations for which they worked.

Research subsequently revealed that SDBs can be accepted, provided the community is properly consulted and burials are performed in a sensitive and respectful manner that honours the deceased, their families and their communities.⁸

6 Lee-Kwan, S. H., et al., "Facilitators and barriers to community acceptance of safe and dignified medical burials in the context of an Ebola epidemic, Sierra Leone, 2014", in *Journal of Health Communication*, 2017, volume 22 sup. 1, pp. 24-30.

7 At: https://www.concernusa.org/feature_story/fighting-back-the-unsung-heroes-of-the-battle-against-ebola/.

8 Nielson, C. F., et al., *Improving burial practices and cemetery management during an Ebola virus disease epidemic - Sierra Leone 2014*, Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report, 16 January 2015. At: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6401a6.htm>.

3. Community engagement during the SDB process

Aims

1. To make sure that families and communities fully understand, accept and support the SDB process before SDB teams arrive, as well as during and after the burial process.
2. To make sure that the bereaved are considered, involved and respected throughout the SDB process, and can raise their questions and concerns and see them addressed.
3. To alleviate confusion and fear of SDB procedures.
4. To involve bereaved families and communities in the burial of their loved ones.
5. To help communities deal with their loss, and reduce stigma, while helping family members and the community understand the risks of EVD and MVD.

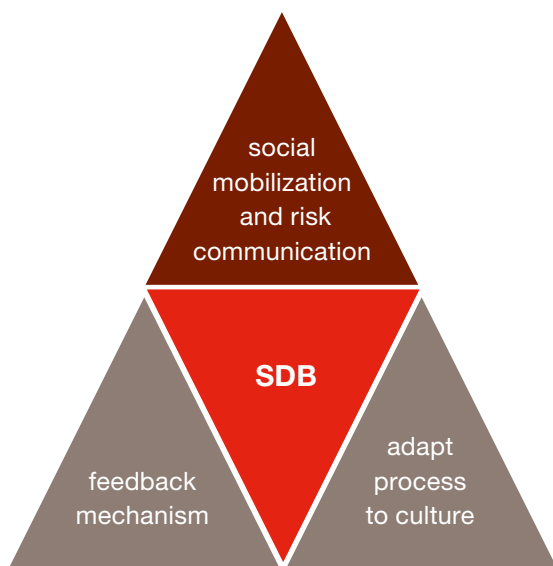
Overview

- An SDB program can only be successful if it is be imbedded in a larger community engagement strategy.
- Engage with the community from the start of a disease outbreak. Doing so helps the community to understand and support necessary health interventions, including SDB, use of PPE, and disinfection.
- Involve community and religious leaders, before, during and after SDBs take place.
- The deceased and those who are bereaved should always be respected. Show empathy for those who have lost a person they love. Assist people to mourn their loss and honour the lives of those who have died.
- SDB team members should greet the family of the deceased and offer their condolences before they put on PPE. SDB teams should NOT arrive wearing PPE.
- Chlorine solutions should be prepared in the presence of community members to dispel myths and fears about the disinfection process.
- Family members should be allowed to participate in the SDB process, so long as infection control is not compromised.
- Take steps to secure consent to SDB procedures. Their rejection can lead to social discontent and aggression towards SDB teams and organizations that support SDB.

3.1 Working with communities

An SDB program can only be successful if it is imbedded in a larger community engagement strategy.

Communities can be severely affected by EVD and MVD outbreaks. At individual level, people suffer grief at the illness and loss of their loved ones. The community suffers more generally from the stress and dislocation caused by widespread illness and loss of life. In addition, schools and businesses may close, and public activities cease. In many cases, there are economic consequences, and commodities may become unavailable or more expensive.



Fear and distress, as well as misinformation and misperceptions of EVD and MVD and measures to control them, may lead communities to reject SDB and associated health interventions. Explaining why restrictive interventions are necessary, and involving the community in their implementation, help to reduce fear, distress and misinformation, and increase social acceptance.

In this effort, community engagement volunteers play a vital role. They provide objective information and help members of the community to understand the disease and the importance of preventive measures. Equally vital, they gather community feedback on SDB which helps SDB teams to avoid giving offence and adjust their services appropriately.

Staff and volunteers responsible for risk communication and community engagement (also called social mobilization) brief communities on EVD or MVD, and their symptoms, and advise people on what they can do to protect themselves and their communities. Their work includes information on SDB. The teams reach out to community members through radio, posters, adverts, face-to-face visits, and community meetings. They may also collect information, to increase their understanding of the community and its concerns and help the response to adapt services to local expectations. SDB teams cannot work successfully without the community's support and acceptance. One SDB team member trained in CEA should be tasked to communicate with the family and community immediately before, during and after the SDB process.

Community engagement volunteers live and work in the communities they serve. They are respected by key members of the community, local leaders, and local faith-based and youth groups. They also speak the local language and understand the community's cultural and religious beliefs. They are perfectly placed to act as interlocutors between the community and SDB teams.

Effective community engagement occurs when volunteers liaise with their communities before SDB teams arrive, during the SDB procedure, and afterwards. To contain and control disease transmission, it is vital to involve communities at every stage of a disease outbreak.

Managing the bodies of those who die during infectious disease outbreaks can cause a variety of emotions and responses in a community. The reactions can include fear, uncertainty, panic, or anger. Affected families, health personnel and burial teams may be stigmatized, face discrimination, be perceived to “carry the disease”, even suffer aggression. Understanding a community’s fears and barriers, and what will help it to accept SDB, will assist burial teams to adapt traditional funeral practices and develop SDB procedures that are acceptable to bereaved families and their communities.

During the SDB process itself, community engagement volunteers provide information, remove barriers, and listen and respond to the fears and concerns that families and community members express about handling the bodies of those who have died. Community engagement volunteers should reassure communities that the bodies of those who have died will be respected and cared for with dignity at all stages of the burial procedure, and should explain to families how they can participate in the burial procedure.

3.2 Facilitating factors

Box 1 lists steps that can help communities to accept SDBs.

Box 1. Factors that facilitate SDBs

- Use information gathered from previous census data or from knowledge, attitudes and practices (KAP) surveys to understand the community’s cultural and religious beliefs and attitudes to SDB and traditional burial practices.
- Where KAP or cultural surveys are not available, community engagement volunteers can perform a rapid cultural or KAP survey. The baseline of information that is created can be used to adapt traditional funeral practices. Complement the information gathered by focus group and individual discussions with key members of the community. (See Annex 13.)
- In countries that have already experienced EVD or MVD outbreaks, ask survivors of the diseases to act as ambassadors, informing communities that these diseases are survivable and that SDB is an effective way to control and contain them.
- Talk with relatives and communities to understand what aspects of traditional burial procedures can and cannot be amended. Listen carefully to family concerns and always show respect.
- Before starting any procedure, the precise arrangements for SDB should be discussed and agreed with the family and community to ensure they support and accept them. Simply telling families what the procedure requires may lead them to reject it.
- Before donning PPE, the community engagement team member should explain to family and community members the purpose of PPE and the need to use a disinfection solution to prevent secondary infections.

- Allow amendments to the procedure that do not compromise infection prevention and control. For instance, provided they wear PPE, consider allowing family members to observe the procedure, view the deceased, dig graves, provide clothing for the deceased, prepare identification plaques for graves, recite prayers, and lower the coffin into the grave (if appropriate), etc.
- In certain instances, a faith leader may be permitted to perform ceremonies that involve direct contact with the body. In such cases, the individual **MUST** wear PPE, have been trained by the burial team beforehand, and have secured authorization from the SDB team leader. Once again, any such arrangement must not compromise the IPC protocol.
- Burial teams should never arrive wearing PPE. To avoid being alienated, the family and community members need to see 'the person and not the suit'. On arrival, members of the SDB team should greet and offer condolences to family members, then explain the purpose of PPE before donning it. Their explanations should match what community engagement volunteers have said.
- Bodies should always be handled carefully and with respect. Reassure family members that the body of the deceased will be respected at all times and that the family can observe the team's conduct.
- Explain to the family and community members what will occur after burial. (For example, if the deceased is confirmed to have had an infectious disease, his or her contacts will be traced.) Make sure to leave a contact address of the SDB team in case the family has questions.
- If diagnostic samples are to be taken, clearly explain how they will be taken, who will do this work, what will happen to the sample, and how the results will be communicated to family members. The consent of relatives of the deceased should be obtained before taking post mortem samples.

3.3 Addressing rumours

Identify and counter inaccurate rumours about SDB. It is important to establish two-way communication with community leaders and community members, not least in order to learn about rumours, myths and misperceptions, and the concerns and needs of the community. It is important not to dismiss misplaced perceptions, and to counter them with clear and accurate information. Research into the West Africa Ebola outbreak found that, when messaging was not updated to reflect public beliefs and perceptions, many people chose to die at home rather than attend an Ebola treatment centre.

4. Planning and setting up an SDB operation

Aims

To understand:

- What to bear in mind when setting up an SDB operation.
- Key logistical considerations for SDB operations.
- Key components of the management of SDB teams.
- The prerequisites for a quick and effective SDB response: preparedness and readiness.
- When and where additional support can be sought.

Overview

Red Cross Red Crescent National Societies, supported by Movement partners, often help to organize SDBs. Ideally, a pre-agreement or memorandum of understanding (MoU) between the Ministry of Health (MOH) and the National Society sets out the National Society's role in an outbreak response. In the absence of an agreement, the Ministry of Health may invite the National Society to organize and implement SDBs, or the National Society may itself offer to provide this service. SDB operations can be stand-alone or part of a wider National Society response to an outbreak.

EVD and MVD outbreaks can be challenging. Before establishing an SDB operation, National Societies should consider the context in which the infectious disease outbreak has occurred, and potential risks both for the organization and for staff and volunteers. Historically, countries that have experienced these diseases are under-resourced, have weak health systems and need substantial technical support. In many cases, they also face a complex emergency. National Societies are encouraged to carry out a rapid situational analysis and risk assessment and integrate the findings in their SDB programme planning and efforts to contain the disease.

When a National Society agrees to undertake SDB, it needs first to plan carefully and organize the operation. Ideally, planning should already be part of epidemic preparedness and contingency arrangements for specific infectious disease outbreaks.

Preparedness and planning require organizations to create the conditions for effective SDB operations.

- It is important to define and put in place the entire SDB process. It is necessary to:
 - Create an alert system.

- Take steps to secure the acceptance of families and the community, including a process to replace destroyed belongings.
 - Mobilize, manage, train, support and supervise SDB teams.
 - Provide logistics and transport for teams.
 - Ensure teams have access to the materials they need.
 - Make arrangements for diagnostic sampling (e.g. oral swabbing) and transport of samples for diagnosis, where required.
 - Adapt generic SOPs to the specific context and ensure that burial arrangements respect traditions and social expectations (in terms of sites, coffins, etc.).
 - Manage infectious waste.
 - Establish reporting systems.
 - Coordinate.
 - Link appropriately to other response teams and programmes.
- Determine the number of SDB teams required, based on epidemiological analysis by the MOH, WHO, or another relevant actor. When deciding how many teams to establish, the authorities and National Society should consider the National Society's capacity to train, supervise, manage and support teams (including in PSS, and in materials and logistics), the SDBs delivered by other actors, and the needs of the populations at risk.
- Determine whether SDB teams require an operational field base and, if so, where it should be located and how it should be set up.
- Establish a logistics pipeline and arrangements for storage or warehousing and stock management. (Consider whether pre-positioned stocks are available and whether additional local or international procurement is required.)
- Ensure that each operating SDB team has access to two appropriate vehicles.
- Create a human resources plan. This should assess the number of staff, including support staff, who will be needed to manage, coordinate and implement the SDB response.
- Make arrangements to:
 - Manage and supervise volunteers.
 - Supply food and water to on-duty volunteers.
 - Arrange incentives, where appropriate.
 - Organize rosters.
 - Provide access to psychosocial support.
 - Arrange vaccinations for team members (if applicable).
- Determine whether additional operational resources and technical support are required and where these might be found.

4.1 Key actions to be considered when setting up an SDB operation

Having decided to implement an SDB operation after the outbreak of an infectious disease, a National Society needs to determine where SDB teams will be based operationally. Ideally the base should be positioned as close as possible to communities that are likely to be affected, should possess adequate infrastructure and services, and should be near other partners involved in the emergency to facilitate coordination and cooperation. However, previous outbreaks of EVD and MVD have often started in rural areas that are hard to reach, where infrastructure is poor, and services imperfect. This can complicate the operational response and may mean that additional logistical support is required. The base should be large enough to accommodate the teams and have sufficient space to permit decontamination of reusable equipment and vehicles (unless there is a separate decontamination base), and house equipment and facilities for hygiene, training, communications and relaxation.

The following rule of thumb may be used for planning purposes, based on lessons learned from past outbreaks.⁹

- One burial team can normally complete a maximum of 5 SDBs per day.
- One burial team can normally complete between 1 and 2 burials a day if it needs to travel to remote locations.

Note. These numbers are for guidance only. Actual expectations should take account of the context.

⁹ Nielsen, C. F., et al., at <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6401a6.htm>.

Box 2. Key considerations when setting up and implementing SDB operations

Operational base (see Annex 14)

Choose premises based on the following criteria:

- **Suitability.** Appropriate floor and ground space; warehouse space; room for stand-by teams.
- **Condition.** The roof, walls, doors, etc. should be sound or repairable. Materials and skilled labour should be available locally for rehabilitation and repairs.
- **Utilities.** Should have sanitary facilities, water and electricity supplies, parking facilities.
- **Location.** Should be close to affected communities, a National Society branch, government offices, other organizations, and a co-ordination point.
- **Cost.** Should be affordable, allowing for materials, repair work, and rent.
- **Security.** Access to the base or compound should be controllable.

Plan the base, which should be able to deliver all required activities. This implies: a decontamination area; a staff area; dressing rooms; a training area; room for storage; a dependable water source; infectious waste management (including an incinerator); parking spaces, etc.

Human resource needs and management	<p>Allocate enough human resources to run an excellent, efficient operation.</p> <ul style="list-style-type: none"> • Prepare a staff structure (organogram) with reporting, communication lines and supervision responsibilities. Define management and coordination profiles, technical profiles, and support profiles. Note: if the SDB operation is part of a larger response, the human resources plan needs to take the overall operation plan into account. • Ensure all SDB teams have supervision (for quality and safety). • Recruit volunteers, applying the National Society's volunteer recruitment policies. Involve the local National Society branch. • Consider whether additional regional or global support is required. If support is necessary, request it through Surge human resources (HR) or a Public Health Emergency Response Unit (ERU) alert.
Volunteer management (section 4.4)	<ul style="list-style-type: none"> • Make yourself familiar with the National Society's volunteer management policy. • Set up a system to provide incentive payments for volunteers (if applicable). • Ensure all volunteers have been adequately trained and follow a regular drill or simulation schedule. (Recommendation: organize trainings once every two weeks in the preparedness phase, and once a month in the response phase.) • Set up a system for deploying SDB teams quickly when there is an alert. • Set up a roster (active hours and rest days). • Ensure that the affiliation of Red Cross Red Crescent staff and volunteers is visible. • Set up a system to provide daily meals and drinking water for volunteers on duty. • Organize and promote vaccinations for SDB volunteers. (Where applicable, take the context and disease strain into account.) If possible, arrange vaccinations when teams are first identified, before they are operational, so that fever following vaccination will not be mistaken for an acute infection. • Establish SOPs for responding to accidental exposure. • Organize regular debriefings. Ensure psychosocial support is available for SDB volunteers. • Ensure volunteer insurance is in place.
Training of SDB teams (Annex 12)	<p>Organize training for SDB teams (recommended duration: 3 days). Teams should be trained, at minimum, in the following topics:</p> <ul style="list-style-type: none"> • Basic characteristics of the disease in question (Ebola/Marburg/other). • The response structure. • Basics of infection prevention and control (IPC); preparing chlorine solutions. • SDB procedures and SOPs.

	<ul style="list-style-type: none"> • SDB team, roles in the team, and SOPs. • Diagnostic sampling (e.g., oral swabbing) and transport of samples (if applicable). • PPE (including practice in donning and doffing). • Decontamination of households. • Community engagement and working with communities. • Psychological first aid (PFA). • Simulation. (Note: Ensure that materials are available for training. See Annex 2.) • Volunteer management, support and well-being.
Infectious waste management (section 6.7)	<p>Set up a system for managing infectious waste (arrangements for safely disposing of infectious waste).</p> <p>Set up a decontamination site (temporary or permanent according to need). Note: the site should have access to water and a location to dry and store reusable PPE.</p>
Logistics (section 4.2, and Annex 2)	<p>Materials</p> <p>Estimate the materials required to implement SDB trainings and activities, and their quantities. Base the calculation on the number of SDB teams planned and the number of expected SDBs.</p> <p>Ensure SDB teams always have adequate materials. (Include reusable and disposable PPE; sprayers; chlorine; body bags; buckets to prepare chlorine; jerry cans; big buckets for decontamination; diagnostic sampling [e.g., oral swab] kits etc.).</p> <p>Consider: what materials are available in the country; contingency stocks available; local procurement possibilities; international procurement needs; estimated lead times.</p> <p>For convenience, IFRC has put together SDB kits which contain the necessary materials to start a team or to replenish. Some items need to be procured separately; these are indicated on the kit lists.</p> <p>Additional materials not on the kit lists that may need to be procured include:</p> <ul style="list-style-type: none"> • Bereavement kits. These replace goods destroyed in the decontamination process, if no partner is prepared to meet this need. • Warehouse materials. • Operational base materials. <p>Storage and warehousing</p> <p>Consider how much stock is planned and what warehouse/storage capacity is needed. Organize stock pipeline management. Appoint a stock manager, whose job includes ordering new stock, as required, in good time.</p> <p>Consider pre-agreements with local carpenters for coffins; grave diggers if these are organized by SDB teams.</p>

	<p>Vehicles</p> <p>Establish a system to provide SDB teams with vehicles when they need them.</p> <p>To be operational, an SDB team needs two vehicles (a land cruiser and a pickup per team). If the National Society or Movement partners do not have vehicles available in the operational area, consider renting them, or obtaining support from the Ministry of Health, or WHO or other partners, until vehicles are acquired.</p>
Burial procedures	<p>Find out whether SDB teams are expected to provide coffins or dig graves.</p> <p>Make sure that teams are aware of and understand local burial practices and traditions, so that they can avoid giving offence and adapt SDB practices appropriately.</p>
SDB process (Annex 1)	<p>Clarify the overall SDB process and all the different actors and pillars involved.</p> <ul style="list-style-type: none"> • How are deaths reported? To whom are they reported? (Surveillance system.) • How are cases investigated, to verify whether deaths may be due to the infection? Who investigates? (Investigation team.) • How is an SDB teams alerted? By whom? (Consider the creation of dedicated phones or phone numbers for SDB alerts. This will ensure that the number is stable through turnover of staff.) • Are PSS/CEA facilitating the arrival and acceptance of SDB teams? How is this organized and by whom? Ensure that coordination is good. • Clarify the diagnostic sampling process. Who is responsible for taking post-mortem samples? If SDB teams are expected to do it, who will train them? Where do teams send samples they collect? What forms need to be filled? Is the transport of diagnostic samples (e.g., oral swabs) secure (3-layered packaging)? • After burials, who informs the family of the test result? What follow-up action is taken when tests are positive? Who takes that action? • Who is responsible for replacing the deceased's personal items (mattress, etc), and what is the system for activating this service?
Reporting and information management (IM) (Annex 11)	<p>From the outset, train teams to report, preferably using mobile data collection. Make sure that reporting is done correctly. Identify a person from each SDB team to report daily to the National Society IM and/or IFRC IM, and from IM to the response coordination.</p> <p>Consider using GPS coordinates to produce community maps based on the data obtained. (The maps might indicate where SDBs have taken place, which communities have rejected SDBs, etc.) Mapping can assist operational planning.</p>

Security	<p>Establish a security plan and an evacuation plan (as appropriate).</p> <p>Put in place a clear system for managing security incidents that involve SDB teams. (These should make clear what teams should do and whom should contact if security issues arise during an SDB process.)</p> <p>Ensure that teams have access to an incident report template and know how and when to complete it. (See section 6 of Annex 11 for some elements that could be included.)</p>
Administration and finance	<p>Set up a finance system for the operation to ensure that teams have enough funding to carry out their activities.</p>
Coordination (Chapter 5)	<p>Ensure that the Red Cross Red Crescent participates appropriately and actively in SDB coordination structures. Monitor to ensure this is the case and that the structures are effective.</p> <p>Establish links and communications with all stakeholders that contribute to SDB processes, to ensure a smooth response. (Include surveillance, laboratory case management, RCCE, PSS, IPC.) Make sure that all parties understand their own roles and responsibilities, and those of other actors in the process. (See SDB process above, and Annex 1.)</p> <p>Regularly inform the overall response about SDB interventions (achievements, successes, challenges and plans).</p> <p>If a National Society or IFRC is responsible for SDB coordination, ensure that it creates separate human resources capacity to manage that function.</p>

4.2 Logistics

4.2.1 Burial sites

A person who has died from EVD or MVD may be buried in an existing public cemetery or community burial ground, provided the site has been planned and is legal. However, where mortality is expected to be high, local authorities and affected communities may assign specific areas in which to bury those who die. In some previous Ebola outbreaks, the dead have been buried in mass graves. This has caused unnecessary psychosocial problems for families who could not locate the graves of their loved ones. In addition, the practice led to unsafe burials performed ‘clandestinely and at night’ (Interview with a local volunteer during the 2014 Ebola outbreak in Sierra Leone). It is strongly recommended that persons who have died from EVD or MVD be buried with dignity and respect and laid to rest in an individual grave that is marked in accordance with the wishes of the family or relatives.

Burials increase the transmission of EVD and MVD because bodies are not handled safely. The virus can only be spread through direct contact, and there is no known risk of transmission of the virus after burial (for example, via contamination of soil or water). Bodies should be buried deep enough to prevent scavenging animals unearthing them. The following factors should be considered when burying infectious cadavers:¹⁰

- The body of the deceased should be placed in a culturally appropriate leak-proof body bag that meets WHO specifications. The bag should be sealed. (See Annex 2.)
- The burial site should be agreed with the family and surrounding community.
- Grave floors must be at least 2 metres deep, and at least 1.5 metres of soil should cover the coffin or body bag to ensure that animals cannot dig up the remains.
- A grave that is used to bury someone who has died of EVD or MVD should not be re-used later, even when burial space is extremely scarce.

4.2.2 Vehicle management

Each burial team should have access to two vehicles, each with a designated driver.

The hard-top vehicle should only be used to transport the burial team from their work base to the place that houses the deceased, then to the burial ground, and back to base. Relatives of the deceased should not ride with the coffin.

The pickup may be covered to provide privacy and show respect for the deceased, but this is not mandatory.

Vehicle requirements of an SDB team

One hard top, 4x4 (able to seat 8 persons).

One pickup, 4x4. The cabin of this vehicle is for the exclusive use of burial team members who do not need to don PPE. The back of this vehicle is used solely to transport deceased persons.

All vehicles must always carry spare PPE materials as well as first aid kits (see Annex 2).

All vehicles should be disinfected after a burial has taken place. (See Box 3 below.)

¹⁰ At: http://www.who.int/diseasecontrol_emergencies/guidelines/risks/en/.

Box 3. Disinfection of vehicles post funeral

- All vehicles must be cleaned and disinfected after use.
- Sprayers must wear PPE when they clean and disinfect vehicles.
- To decontaminate vehicles, use sprayers filled with 0.5% chlorine solution.
- Spray the area of the vehicle on which the body was placed with 0.5% chlorine solution.
- Let it soak for 10 minutes.
- Rinse the area well with clean water and leave the vehicle to air dry.

4.2.3 Materials and warehousing

Materials are an important consideration when planning SDB operations. To make burials safe, teams need access to sufficient materials at all times. Essential materials include PPE (re-usable and single-use), chlorine, body bags, diagnostic sampling kits (if applicable), sprayers, buckets, infectious waste bags, and other small items (see Annex 2 for full lists.)

After the EVD outbreak in DRC in 2018, the content of SDB kits was revised, based on user experience. (See Box 4 below and Annex 2.)

The kits can be used as contingency stocks, start-up stocks and as an initial supply. Where an SDB operation expects to continue for longer and has acquired a good understanding of consumption rates, the availability of local materials and the need for international procurement, it may be sensible to bulk order rather than use replenishment kits. International orders (in bulk or for kits) should take delivery times into account. IFRC logistics colleagues can provide estimated lead times.

Plan adequate warehouse space for SDB materials. Enough materials should *always* be available to SDB teams in their base. To achieve this, it may be necessary to establish a central warehouse and several logistics hubs in SDB bases, and a supply chain that links the central warehouse to the hubs. Stock managers should hold enough materials to supply the number of burials that SDB teams expect to conduct per day or week, allowing for the time required to resupply. As a rule of thumb, it is wise to stock, for each team, materials for at least 20 burials, though the actual amount required will depend on the context and should be assessed carefully. Reliable stock management is vital: each warehouse should monitor the stock it is holding and apply an alert system for re-ordering based on agreed thresholds. The estimated weight and volume of equipment is included in the SDB materials kits (Annex 2).

11 Note. The previous starter kit only included reusables and chlorine and needed to be completed.

Box 4. The content of SDB kits (2018 revision)

Starter kit.¹¹ (See Annex 2, blue section.)	<ul style="list-style-type: none"> Materials required by one SDB team to manage the first 20 burials (includes reusable and single-use items). Note. A separate order is needed for body bags and diagnostic sampling kits. Note. some local procurement is required, for instance of rubber boots and buckets.
Replenishment kit. (See Annex 2, green section.)	<ul style="list-style-type: none"> Replenishment of single-use items and consumables. Contains replenishment materials for 20 additional burials. Note. Additional re-usable items may be required. If they are, this needs to be organized separately.
Training kit. (See Annex 2, yellow section.)	<ul style="list-style-type: none"> Items for training two full teams (2 x 14 persons).
Items needed for one burial. (See Annex 2, red section.)	<ul style="list-style-type: none"> Items needed by each team for each burial.

4.3 Managing volunteers

To run smoothly, an operation needs to manage its volunteers. All volunteers should receive training in their roles and responsibilities (as laid out in their role profiles), and should agree to these. All volunteers should understand the risks associated with SDBs and the steps that must be taken to mitigate them.

SDB team leaders or supervisors are responsible, among other things, for:

- Ensuring that materials required to conduct SDBs safely are available.
- Monitoring security and making sure that all procedures comply with SOPs.
- Authorizing adjustments to SDB procedures in accordance with the wishes of the family of the deceased, while making sure that SDB team members remain safe and that infection control is not compromised.
- Monitoring the performance of SDB team members and their psychosocial wellbeing.

- Reporting on SDB activities.
- Ensuring that SDB team members are supported after critical incidents.
- Ensuring that all critical incidents are recorded and reported in accordance with SOPs. (See Annex 11, section 6.)

4.3.1 Promoting a healthy SDB team and working environment

All SDB team members should be vaccinated, in accordance with the local expanded programme on immunization (EPI) schedule, to reduce the risk of contracting vaccine-preventable diseases. During EVD outbreaks, an Ebola vaccine may be offered to SDB team members as part of the response strategy (if available for that specific strain of the Ebola virus and following WHO recommendations). SDB team members should be advised to take prescribed prophylaxis (where appropriate and as recommended by a medical doctor) and adopt recommended prevention measures to prevent malaria and other illnesses that may be confused with EVD.

Simple actions can be taken to create a positive working environment and improve the wellbeing of SDB staff. Some of them are listed in Box 5.

Box 5. Creating a positive working environment

- Provide adequate working space and areas for relaxation. SDB team members need to be able to rest and relax when they are off duty.
- Ensure staff are well nourished. Regular water and meals should be made available when they are off duty and between burials while on duty.
- Sanitation and decontamination facilities must be of a decent standard. They should have a constant supply of water and disinfection solutions.
- It is vital to keep staff in good health and mitigate their fear that they might become ill because of their work. In areas where malaria is endemic, team members should sleep under mosquito nets; mosquito repellents should be made available. Differential diagnosis should always be considered when team members fall ill.
- Temperatures should be recorded when teams come on duty.
- If a team member falls ill, he or she should inform the supervisor and seek medical assistance as soon as possible.
- Handwashing stations with soap and water (or 0.05% chlorine) must be available at all entrances to the base. Good hygiene practices should be encouraged at home. Consider providing hygiene kits.
- Staff should be offered refresher trainings, regular drills and simulations to maintain their skill levels, including during the readiness phase.

4.3.2 Promoting the mental health and psychosocial wellbeing of SDB team members

The psychological and psychosocial wellbeing of SDB teams is an essential component of a successful emergency response. SDB team members must be able to work in difficult circumstances, maintain their poise, and show respect to the deceased, their families and members of the community at all times. Handling the dead can be acutely distressing and may create panic and fear of contamination. Team members may experience anxiety, depression, paranoia, physical or psychological 'burn out', or post-traumatic stress disorder.

In previous EVD outbreaks, burial teams were reported to have struggled to cope emotionally with the scenes they witnessed. They were also stigmatized. Some said they had recurring mental images of dead bodies for months afterwards and others that they had been rejected by their families and communities.¹² SDB team members may face discrimination or even violence. Adopting positive coping strategies, and avoiding negative strategies,¹³ can mitigate emotional stress. It is equally important to adopt techniques for staying healthy, including techniques that promote psychological and psychosocial wellbeing.

¹² At: http://www.who.int/mental_health/emergencies/ebola_guide_for_planners.pdf.

¹³ At: <http://www.who.int/csr/resources/publications/ebola/psychological-first-aid/en/>.

Box 6. Coping strategies and promoting the psychosocial wellbeing of SDB team members

Positive coping strategies	Promoting psycho-social wellbeing
<ul style="list-style-type: none"> • Get enough rest and relaxation. • Eat as regularly as possible and keep hydrated. • Discuss problems, worries and fears with someone you trust. • Engage in activities that help you to relax (such as prayer, singing, walking, playing games and sports). • Take physical exercise. • If you are in a malaria endemic area, take prophylaxis as prescribed and apply recommended preventive measures (insecticide repellents, bed nets, etc.). • Ensure all your vaccinations are up to date. • Acknowledge what you were able to do to help the families of the deceased and support disease control efforts. 	<ul style="list-style-type: none"> • At the end of each day, discuss the day's events with the SDB team and supervisor. Reflect on and accept what went well and what did not go so well. Recognize the limits of what it was possible to do under the circumstances. • Plan as a team for the next day's activities. • Report any incidents of discrimination that the team encountered. • If you or a team member fall ill, seek immediate medical assistance and inform your team leader or supervisor. Team leaders and supervisors should monitor staff illness and immediately report all cases of staff sickness to their own supervisors.

Recognizing the warning signs of emotional stress can help staff to take steps promptly to protect themselves. All team members and volunteers should be made aware of the warning signs listed in Box 7 below and encouraged to seek psychosocial advice and support where necessary.

Box 7. Warning signs of stress, indicating the need to seek help

- I have upsetting thoughts or flashbacks of upsetting events.
- I feel nervous or extremely sad.
- I have trouble sleeping (including recurrent nightmares).
- I wake up in the morning and dread going to work.
- I drink a lot of alcohol or take recreational drugs.
- I isolate myself and withdraw from social contact.

4.4 Emergency preparedness: readiness to respond

National Societies in countries that are known to be at risk of EVD or MVD outbreaks should prepare for an emergency. Putting emergency preparedness arrangements in place will enable National Societies to detect and respond more quickly to infectious disease outbreaks, making it possible to contain and control them faster.

Box 8. Important components of SDB preparedness

- Agree a memorandum of understanding (MoU) with the Ministry of Health that defines the role that the National Society will play in an epidemic response and in SDBs.
- Prepare and test the National Society's emergency response plan for infectious disease outbreaks, including SDB, and prepare all relevant SOPs.
- Preposition essential materials and equipment (such as SDB kits) in preparation for starting a SDB operation.
- Clarify and communicate the lead time for delivery of items ordered from abroad. Establish what items can be procured locally.
- Establish and make ready emergency response teams. The staff responsible should have the skills and experience to set up and coordinate SDB operations, carry out SDBs in accordance with SOPs, and train local SDB teams.
- Update alert and mobilization systems for emergency response teams.
- Provide regular refresher courses and simulations for emergency response teams.

4.5 Additional support

Managing the response to an EVD or MVD outbreak usually involves the coordination of partners across several sectors, and can be complex, especially in areas that lack resources or infrastructure. The disease may have spread over a wide area, or may occur in a complex emergency setting (like the 2018-2019 outbreak in North Kivu, DRC). In other cases, the National Society may have no prior experience of such outbreaks and, to set up an SDB operation rapidly and achieve programme objectives, may require additional support from Movement partners and surge rosters. When planning for an infectious disease outbreak, consider what forms of additional support might be needed and find out how to request them. Some tools that may complement or support an SDB operation include technical support from water, sanitation and hygiene (WASH), public health in emergencies, and public health emergency response units (PH-ERU), and community-level work to support community-based surveillance (CBS) and epidemic control for volunteers (ECV).

5. Coordination

Aims

- To contribute effectively to the epidemic response.
- To promote effective leadership and coordination among key stakeholders, enabling all actors in the SDB pillar to plan and give safe and dignified burials to persons who have died or are suspected to have died from infectious diseases requiring SDB.
- To clearly establish the roles and responsibilities of all actors involved in SDB procedures.
- To ensure that all resources allocated for SDB are used effectively and efficiently on SDB activities.

Overview

As soon as an infectious disease outbreak has been declared, it is essential to integrate all elements of the response, including (disease specific) SDB procedures, and coordinate surveillance, case management, RCCE, and other pillars of the response through an established coordination structure (see Annex 1).

Red Cross Red Crescent National Societies, supported by the IFRC, often play an important role in SDBs. In some cases, they may be asked to take the lead role. In addition to conducting burials, this may require the National Society to: chair and coordinate SDB pillar meetings; develop agreed SDB strategies; map the response; identify gaps; agree protocols and good practice; provide guidance; carry out advocacy; and ensure that SDB activities are managed effectively. If asked to take a lead role in SDB, a National Society needs to consider these factors and their impact on its programming and human resources.

5.1 Effective coordination

Effective coordination mechanisms need to be established as soon as an infectious disease outbreak has been declared. Coordination should be inclusive, consistent and transparent and may need to be organized at national, district and other levels. It is important to ensure that involved actors share information and that communication takes place up and down the system.

The Government, normally led by the Ministry of Health in a health emergency, will usually establish a national task force to coordinate its response. Box 9 lists what are characteristically its main tasks.

Box 9. The main responsibilities of a national task force in a specific infectious disease outbreak

- Provide an effective, multi-sectoral and coordinated response to the outbreak.
- Support implementation of the International Health Regulations (IHR, 2005) with respect to the infectious disease in question.
- Establish programmatic responsibilities and coordination mechanisms in the country.
- Mobilize resources and coordinate multisectoral efforts to prepare for and respond to the emergency.
- Encourage international partners (development banks, donor countries, other multilateral agencies) to resource the response.
- Identify agencies to coordinate different response sectors, including management of the deceased. The selected agency must collaborate closely with the overall response structure, the Ministry of Health, local governments, and other key stakeholders.

Because they are present in and understand the communities they serve, National Societies are often asked to assist the Ministry of Health to control and contain outbreaks of EVD and MVD, and to manage SDB. At the onset of a health crisis, a National Society should meet the Ministry of Health or national task force as soon as possible to clarify its role and understand and agree what services it is expected to deliver.

Smooth coordination is vital to an effective response. It is important to clarify and agree the roles and responsibilities of the National Society and other key actors in the overall SDB process, with respect to investigation of deaths, burial procedures, disinfection and decontamination of households, contact tracing, PSS, and other aspects of SDB. (See Annex 1.)

An alert system needs to be established, capable of issuing ‘real time’ alerts of deaths. Arrangements must similarly be made which ensure that a surveillance unit investigates all suspected cases of EVD and alerts SDB teams to all cases that are validated.

Community engagement and accountability (CEA) is equally important, especially where communities are reluctant to report deaths. Community volunteers can help to explain to communities and community and religious leaders why SDB is important for their safety and encourage them to collaborate with SDB teams (See Chapter 3).

In a health emergency, successful modelling, projections, and strategic planning depend on access to sound and up-to-date data, including data on SDBs. Providing this should be a shared responsibility.

A formal reporting system should document SDBs and regularly provide information to central coordination and key actors and partners. Data collected by SDB teams also support epidemiological analysis and guide planning and decision-making.

The agency responsible for SDB pillar coordination should:

- Take steps to become familiar with the demography of the population as well as religious practices and cultural beliefs that are relevant to the conduct of funerals. To achieve this goal, the agency should advocate for or carry out a rapid cultural assessment or KAP survey, especially in areas that have not experienced previous epidemics. Having acquired a clear picture of the situation, it should then adapt its SDB processes to local cultural traditions in consultation with communities and religious leaders (see Annex 3). If anthropologists are available, their involvement in this process can be valuable (see Annex 13).
- The agency should ensure that sufficient burial teams are established to meet needs, and advocate for more resources if there are gaps.
- In close cooperation with coordination mechanisms and other relevant actors, it should:
 - Organize regular SDB pillar coordination meetings for all key actors.
 - Represent the SDB pillar in general coordination mechanisms and other strategic meetings.
 - Ensure that coordination and collaboration are effective and smooth, and that information flows easily between the different actors involved in SDB. For instance: investigation teams should alert SDB teams rapidly when confirmed or suspected cases require SDB; information should flow easily between RCCE, PSS and SDB teams, including for operational support to a burial and replacement of belongings destroyed during the SDB; communication between SDB teams and the laboratory that diagnoses swabs should be clear, and SOPs should be followed; when cases of death prove positive, PSS, IPC, RCCE, and vaccination teams should be notified quickly for follow up and contact tracing, where necessary, etc. (See Annex 1.)
 - Ensure that RCCE activities describe SDB accurately and emphasize its role in interrupting disease transmission.
 - Ensure that those who collect feedback from communities give attention to perceptions, rumours, myths, and concerns about SDB; and that feedback information is analysed and informs the content of public communications.
 - Make sure that reporting is effective and that information management systems capture sufficient SDB data accurately.
- Work closely with district authorities, and religious and community leaders, to identify burial grounds that can be used by all religious denominations.

6. Conducting safe and dignified burials

Aims

To understand:

1. Why SDB procedures need to be adopted, and their role in preventing secondary infection of certain infectious diseases.
2. What constitutes a safe and dignified burial.
3. When SDB procedures should be adopted.
4. Who should conduct SDBs.
5. Key features and elements of SDB, and how to take account of context and culture.
6. Management of infectious waste associated with the SDB process.

Overview

- Healthy people can be infected by EVD and MVD if they touch the bodies of people who have died from those diseases, as is the traditional practice in many cultures.
- To prevent the spread of EVD and MVD, dead bodies suspected of EVD or MVD should be handled as little as possible and bodies should be buried by SDB teams who are trained to do this work safely.
- A safe and dignified burial modifies traditional funeral and burial practices. The modifications should be adopted at the first onset of an infectious disease (such as Ebola or Marburg disease) whose infectiousness makes SDB necessary. (Other diseases, including plague and CCHF may also require SDB procedures, for which these guidelines may be adapted.) SDB procedures should be continued until the Ministry of Health declares that the outbreak is over.
- Death, mourning, and funerals need to be addressed in a sensitive manner and burial teams need to understand local norms and funeral practices, and what aspects of traditional funerals create a risk of disease transmission.
- SDB procedures will not be successful in stopping transmission and controlling outbreaks unless the community and families accept them.
- Where families perceive that deaths are being mismanaged, it can cause lasting mental distress for relatives and other members of a community, and sometimes social and legal problems as well. The resentments caused may lead the community to resist SDB and other initiatives to control the outbreak as well.
- It is important to promote and disseminate accurate and understandable information about SDB procedures that address the community's concerns and potential misperceptions. An objective, culturally sensitive approach should be adopted when informing communities about the risks of infection

when managing the dying and the dead, at home and in the community. The strategy should evolve as the epidemic does.

- Specific SOPs apply to the conduct of SDBs.
- Specific SOPs also apply to waste management. Procedures should be strictly followed in outbreaks of both EVD and MVD.

6.1 Safe and dignified burials - what, why, when and who?

What?

Some aspects of traditional burial practices must be adapted to prevent secondary infections during outbreaks of EVD, MVD, and certain other diseases. Prevention of secondary infection plays a key role in containing and controlling disease outbreaks. Funeral rites differ widely within and between communities. SDB teams therefore need to understand these rites and incorporate key components of them without compromising infection prevention and control measures. See Annex 13 for an example of how to gather and apply anthropological information to inform SDB adaptations that may be necessary. These will differ between and even within contexts. There may be partners in the field who can carry out anthropological assessments on behalf of or in collaboration with the National Society. Some of the main features of the SDB process can be found in the text box below.

Why?

SDB procedures are introduced to control and contain disease outbreaks. They prevent secondary infection in affected and non-affected communities by restricting unprotected contact with the bodies of people who have died, or may have died, from EVD or MVD. Secondary infection (human to human transmission) occurs during unprotected handling of body fluids as they leak from the nose, anus, mouth, skin, and other natural orifices while the body is being handled in the course of funeral rites performed by the family of the deceased or members of his or her community. In EVD and MVD infections, the viral load (the number of viral particles in a body) is highest at the moment of death and does not disappear when a person dies. The viremia (viral particles in the body) persist in body fluids and secretions. The virus can survive for several hours on dry surfaces and several days in body fluids at room temperature or in a corpse. Marburg viruses can survive 4-5 days on contaminated surfaces, longer in liquid.

To prevent these particularly infectious diseases from spreading, dead bodies should be handled as little as possible and burials should be conducted by teams who are protected appropriately and trained to prepare and bury the dead safely.

Box 10. Key components of the SDB process

- Before starting the SDB procedure, the SDB team seeks the consent of the family and the community. It explains that the procedure is essential to prevent the infection from spreading and to protect the community. It explains each step of the procedure, the roles of burial team members, and the reason for donning PPE and preparing chlorine solution.
- Trained SDB teams (wearing PPE) prepare the deceased person for burial in accordance with SOPs. They transport the body to the burial ground, and place it in the grave. These actions are done with the agreement of the family and community members.
- The dignity of the deceased person, and respect for the family, are maintained throughout the SDB process.
- Relatives of the deceased should not be rushed. Expressions of grief and the duration of ceremonies should be respected.
- Decontamination of the house and belongings of deceased persons should be organized as part of the SDB and in accordance with SOPs. SOPs should ensure that a system is in place to replace destroyed goods or provide a bereavement kit.
- It is important to listen to the family and the community, in order to understand the components of traditional funeral practices and determine which ones risk transmitting the disease. It is vital to respect the cultural and religious beliefs of the family of the deceased, to incorporate their beliefs and practices as far as possible in SDB procedures in discussion with the family, the community and religious leaders, and allow families and religious leaders to participate in the burial ceremony, provided always that infection control is not compromised.
- When the dead are handled with respect and dignity, and safe burials reflect the religious and cultural beliefs of the family of the deceased, communities are more likely to accept and adopt SDB procedures and to alert suspect community deaths to the appropriate authorities.
- Burial sites should be identified and agreed with local authorities and the community.
- Mass burials are not recommended during an infectious disease outbreak.

When?

When the first signs of a suspected infectious disease occur, explain to members of the community how they can care safely for the sick and dying and adopt precautions that will protect them from the disease and prevent its spread. To stop secondary infections, SDB procedures should be included in the response strategy and introduced as soon as an EVD or MVD outbreak has been confirmed.

Who?

Only personnel who have been trained and have the required materials should conduct SDBs for deceased persons who meet the WHO case definition for suspected EVD or MVD. National Society teams trained in dead body management (DBM) need additional training, and materials specific to burials for these diseases, before they can conduct SDBs.

The WHO case definitions for Ebola and Marburg can be found at: <https://www.who.int/csr/resources/publications/ebola/case-definition/en/>.

- Relatives and religious leaders may be authorized to witness or participate in an SDB. The SDB team should carefully brief all such persons on how they can participate in preparing the body, conducting the funeral ceremony, etc. The team should clearly explain their roles and responsibilities (for example, to wear PPE, dig the grave, recite religious texts, provide clothing, etc.).
- Infection prevention and control should never be compromised. All persons who handle or are required to touch the body of the deceased (for example, to perform the dry ablution of a Muslim) should be trained in how to don and doff PPE by a trained member of the SDB team. (See Annex 5.)

Box 11. Why are SDBs necessary?

- It has been shown that SDB procedures reduce the transmission of infectious diseases, from the bodies of those who have died from infection, to uninfected living persons.
- SDB procedures prevent secondary infections caused by unprotected handling of the bodies of individuals who have died from infectious diseases.

6.2 Understanding and respecting the cultural and traditional funeral practices of affected communities

Communities may be reluctant to change their practices and the imposition of SDB procedures may cause hostility, or even violence, against SDB burial teams or the organizations they work for. Draw on available survey data and focus group discussions with key community members to work out how funeral procedures can be modified to meet SDB standards in ways that will be acceptable to the community. Adopt a consultative approach to secure acceptance of SDBs. If survey data are unavailable, it is recommended to perform a rapid KAP survey (see Annex 3).

6.3 Post mortem diagnostic sampling for EVD and MVD

Several tests are currently available that help determine cause of death post mortem. They include some rapid diagnostic tests (RDTs). As of 2019, oral swabbing is recommended for post mortem diagnosis of EVD and MVD. Samples can be taken by trained SDB team members and transmitted to a laboratory for analysis (see Annex 6). In some cases, sampling will be done by an investigation team member or a laboratory technician. It is important to be clear on the expectations and role of SDB teams who collect diagnostic samples.

Before taking diagnostic samples, teams should obtain the informed consent of a member of the family of the deceased. Strong coordination is required to ensure that sampling methods are appropriate, that information is sent promptly to the laboratory and surveillance teams in accordance with established biosafety measures, and, most important, that results are shared swiftly with the family. Where the deceased is shown to have died from MVD or EVD, tracing needs to occur as well as intensified RCCE, IPC, and vaccination (if applicable). The family and community should be given access to psychosocial support (PSS).

The person who communicates diagnostic results to the family of a deceased person should be able to answer any medical questions the family may have. Where additional invasive diagnostic tests are required (such as blood sampling), these must be taken **ONLY** by a medical professional and with the family's consent.

6.4 The SDB team's composition and responsibilities

An SDB team has approximately ten members, who include:

- 1 team leader or technical supervisor (TL/TS).
- 4 body handlers (depending on the size and weight of the deceased).
- 1 Type-1 hygienist (sprayer).
- 1 Type-2 hygienist (for donning and doffing).
- 1 community engagement person.
- 1 person to provide psychosocial support (preferred).
- 2 drivers.
- 2 Type-3 hygienists (to perform decontamination at the operational base).

The roles and responsibilities of each position are described in Annex 4.

6.5 SOPs for disease, and SDB procedures with respect to religious practices

Key considerations

- The bodies of persons who have died from EVD or MVD are highly contagious: manipulate them as little as possible.
- SDBs should be conducted by trained personnel only and in accordance with SOPs.
- All persons who handle a dead body at any stage of the SDB procedure must wear recommended PPE.
- All steps of the SDB procedure should occur in the proper sequence and should be directly supervised.
- Use recommended strengths of chlorine to disinfect and decontaminate during the SDB process.

- Decontaminate the family environment of the deceased person with the recommended strength of chlorine solution.
- Safely disinfect or dispose of all materials that are potentially contaminated (including the belongings of the deceased and waste generated by the SDB process).
- Decontaminate re-usable materials (including PPE and vehicles) after each SDB.
- Collect diagnostic samples carefully and transport them in accordance with SOPs to the relevant laboratory for diagnosis, if applicable.
- Do not compromise infection control procedures at any stage of the process.

Safe and dignified burials are conducted by trained burial teams. Some team members wear specific protective clothing (see Section 6.6). They use chlorine-based solutions to prevent contamination and halt transmission of the disease (see Annex 7).

SOP-SDB procedures for persons who have died from suspected or confirmed Ebola or Marburg virus disease.

To bury a person who has died from EVD or MVD, follow the standard SDB procedure explained in Annex 8.

6.6 Personal protective equipment (PPE)

Key points

The principles of PPE remain the same for all diseases.

- PPE is specialized clothing and equipment that individuals wear to protect themselves against infectious materials or pathogens such as the Ebola virus. They form a barrier that prevents the infected body fluids of a deceased person from transmitting an infectious disease to uninfected persons during burial or preparation for it.
- Only members of the burial team or members of the community who handle the deceased need to wear PPE.
- PPE should be donned and doffed under close supervision and in accordance with SOPs for the disease in question (as set out in SDB SOPs: see Annex 5).
- All items of PPE must be intact before use and must remain intact when donned and doffed.
- Reusable PPE should be decontaminated and checked for holes, cracks and tears after every use. Items with holes, cracks or tears must be replaced.
- If there is a breach of PPE, doff PPE immediately. Follow the accidental exposure protocol (Annex 9) and report the incident using the accidental exposure reporting form.

- The purpose of PPE must be properly explained to members of the family of the deceased and to the community. Burial team members should not arrive at the home of the deceased wearing PPE, because this can frighten people. PPE should be donned after team members have introduced themselves, greeted members of the family and community, and explained the SDB procedure.

6.6.1 PPE composition

Scrub suits, operating theatre (OT) trousers, and shirt (reusable or single-use)

- Personal clothing should not be worn under PPE.
- Scrub suits are provided so that burial teams do not wear their personal clothes when performing SDB.
- Washable cotton scrub suits can usually be made locally.

Mask (disposable)

- Must be a fluid resistant medical or surgical mask.
- Must be designed not to collapse against the mouth. (It may have a duck-billed or cup-shaped structure, for example.)
- Can incorporate a filter or respirator.

Goggles or face shield (reusable after disinfection)

- Must fit comfortably and securely.
- Must be fog proof; or an anti-fog spray should be applied before goggles are donned.
- Must be decontaminated after each use.
- Should not have ventilation.

Hooded head cover (disposable)

- Hoods with integrated mask and lateral ties are recommended.

Gloves (inner layer disposable; outer layer reusable after disinfection and heavy duty)

- The inner layer is a single nitrile glove (not latex due to chlorine exposure).
- The outer layer is a rubber glove, nitrile (due to chlorine exposure). It must be resistant to water and penetration.
- Double-gloving makes it easy to remove cross contamination when doffing PPE.

Protective body wear: coveralls with or without hood (disposable)

- Should cover the body completely (from neck to boots and front to back); should have long sleeves.
- Should be made of fabric that is tested for resistance to penetration by blood, body fluids, or blood-borne pathogens.
- Thumb hooks can be useful to help secure the cuff of the gown or coverall, but they are not mandatory. If desired, thumbs can be used to poke a hole

in the appropriate spot near the cuff of the suit to ensure coverall sleeve stays covered by inner glove.

Apron: heavy duty waterproof apron (reusable after disinfection)

- Should be wide enough to extend around the back of the body and long enough to extend from the neck or upper chest to boot tops.
- Single-use (thin) aprons should only be used by Type-2 and Type-3 hygienists for protection from chlorine.

Footwear (reusable after disinfection)

- Personal footwear should not be used.
- Wear rubber boots OR closed puncture- and fluid-resistant shoes and overshoes.
- Footwear must be decontaminated after each use.

‘Donning full PPE’. This term is used when all PPE items are worn together.

BE AWARE

- The eyes, nose and mouth are the most vulnerable parts of the body. Make sure that masks and goggles fit correctly.
- Condensation is a major problem when wearing goggles. It can impair the wearer’s vision and increases the risk of contamination (for example, if goggles are repositioned while handling a deceased person). Use anti-fog spray to prevent condensation.
- A person who is unable to fit mask and goggles correctly must not handle bodies.
- Hooded head covers should be worn in conjunction with coveralls to ensure the head is fully covered.
- If PPE is breached accidentally by injury or a tear, follow the instructions in Annex 9 and report as indicated.

6.6.2 Use of PPE by members of the community

Members of the family of a deceased person, and members of the community, can be upset by an SDB procedure. In order to calm fears, overcome distrust and accommodate religious, cultural or personal needs, members of the family, or religious or community leaders, can be involved in the burial or may witness the team securing the body. This need can be accommodated by dressing the designated family/religious/community representative in PPE and allowing him or her to enter the red zone with the SDB team. Before dressing a family/community member in PPE, the person must first understand the purpose of PPE and be prepared to doff it correctly – coached and guided by the Type-2 hygienist. It may be helpful to show family members each item of the PPE suit so that they can understand its function. The full SDB process must be explained to an accompanying member of the public before he or she may enter the red zone. He or she should be instructed not to touch the body. If any manipulation of the body (for example, symbolic washing) must be done, the procedure should be agreed, in detail, before donning PPE.

6.6.3 Who needs to don full or partial PPE? Who does not need to don PPE?

Only persons who **handle** (come into physical contact with) the body of a person fitting the case definitions of **EVD or MVD**, or who enter an area considered to be contaminated, should don **full PPE**.

Persons, including burial team members, **are NOT required to don PPE if they do not handle** (do not come into physical contact with) the body of a person fitting the case definitions for MVD or EVD. Similarly, persons who do not enter a contaminated area are **NOT required to don PPE**. **A coffin containing a body in a body bag which has been treated according to SDB protocols is not considered contaminated, and can be handled without PPE.**

Box 12 shows the precautions that should be taken when handling a person who has died from EVD or MVD, and the PPE required in each instance.

Box 12. Who needs to don what PPE and when?

Precaution to be taken	Deceased from EVD or MVD (suspected or confirmed)
Touching or handling the deceased: always don PPE: <ul style="list-style-type: none"> • All body handlers. • Hygienist who enters a contaminated area (for example, the room in which the deceased is lying). • Religious leader who touches the body. • Family member who is authorized by the team leader to observe the SDB procedure. 	YES Full PPE <ul style="list-style-type: none"> • Rubber boots. • Coverall/hood suit. • Apron. • Mask (no filter). • Goggles. • Head cover. • Double gloves.
Persons who do NOT handle the deceased AND DO NOT ENTER a contaminated area: light PPE is to be donned by the following: <ul style="list-style-type: none"> • Type-2 hygienists who supervise and assist donning and doffing. 	Partial PPE The main aim is to protect from handled or sprayed chlorine. <ul style="list-style-type: none"> • Gown (surgical). • Mask and goggles. • Gloves. • Rubber boots.
Use of body bag.	YES (single)

Disinfection of the body with chlorine solution.	RECOMMENDED ¹⁴ With 0.5% solution.
Disinfection of interior of body bag before body is placed inside, and of exterior of body bag once it is sealed.	YES With 0.5% chlorine solution.
Disinfection of a deceased person's clothing, bedding, utensils, etc.	YES Disinfect clothing, bedding and utensils with 0.5% chlorine solution. Bag and bury or burn all clothing items. Burn sleeping mattress.
Destruction or re-use of items that have been disinfected.	Destroy (by burning or burying) disinfected clothing and bedding; burn mattresses. Disinfected utensils may be reused.
Block body orifices with cotton wool soaked in 2% chlorine solution.	NOT REQUIRED
Empty intestines.	NOT REQUIRED
Immediate burial (within 12-24 hours).	YES As soon as possible.
Environmental considerations with respect to burial site.	NO
Burial conducted by SDB team.	YES

6.6.4 What to do if PPE is breached

To protect the wearer against contact with infected pathogens or materials, PPE MUST remain intact at every stage of the SDB process. PPE must also be donned and doffed correctly and must be disinfected at every stage of the doffing process in accordance with SOPs.

Any person whose PPE is breached at any time during an SDB process, leading to his or her exposure (for example, due to a tear, puncture, during doffing, or following repositioning of garments, etc.), should inform the team leader or supervisor and the hygienist responsible for donning/doffing, discontinue work, and proceed to the doffing stage immediately. After doffing, the individual who has potentially been exposed should be given support as soon as possible in accordance with the relevant SOPs for management of a PPE breach. The incident should be recorded and reported without delay and the affected person should be monitored and should receive support and guidance. (See Annex 9.)

¹⁴ There is no evidence for or against spraying the body. This is current practice for RC/RC SDB, and recent outbreaks have shown that it can reduce SDB volunteers' fear when handling the body. WHO recommends limiting manipulation of the body. This should be determined locally. If there are no strong cultural reasons against and until the evidence has strengthened, the IFRC recommends spraying the body.

6.7 Waste management

All infectious waste products in the environment of a person who has died from suspected EVD or MVD, and waste generated during the SDB process, need to be disposed of in a safe and responsible manner.

All waste from the place of death (usually items in the home) is considered highly contaminated. Waste must be safely collected, handled, and transported to a secure location, and disposed of. Every effort must be made to minimize risks to the community and to those who handle the waste. Members of burial teams must wear PPE when they manage waste.

PPE is also infectious waste and needs to be disposed of safely. Used PPE should be incinerated and reusable PPE properly decontaminated. Take particular care when transporting highly infectious waste from the scene of the SDB to the waste management site. Double bag contaminated items of PPE and transport them in a container with a lid (e.g., plastic garbage bin).

6.7.1 Waste segregation and disinfection

Sharps

Medical sharps (needles) pose a high infection risk to the living and must be disposed of in a safe manner.

- All sharps found at the place of death must be disposed of in a puncture-resistant waterproof sharps container.
- Disinfect all sharps with 0.5% chlorine solution before handling them.
- Sharps containers should be disposed of in agreement with the local authorities. (They are usually taken to the district hospital and incinerated.)

Disposal of used PPE

- In the community or at the graveside, an incineration hole may be dug and used to dispose of waste. Burn used, decontaminated and bagged PPE and all waste collected from the house of the deceased. Alternatively, used PPE can be burnt responsibly and safely at a distance from structures; or taken back to the operational base or hospital for incineration. (Note. The facility in question must consent to such action in advance.)

Liquid waste

- Liquid waste products (vomit, diarrhoeal stools, saliva, etc.) may be released from the orifices of a deceased person who is being handled and poses an extremely high risk of infection. All body fluid spills should be dealt with in a responsible manner (see text box below) and only handled by persons wearing the appropriate PPE, as described in Section 8.3.

Box 13. Flow chart for management of liquid waste

Use a 0.5% chlorine solution for EVD and MVD to clean up ALL liquid spills (body fluids: diarrhoea, blood, saliva, urine) that result from moving a deceased person.

Use a 0.5% chlorine solution for EVD, MVD to disinfect the areas in which spills occurred.

Dry waste

During outbreaks of EVD and MVD, all clothing, bed linen, towels, sleeping mattresses, and sheets that have been in contact with the deceased must be decontaminated, placed in a plastic bag and burned at a safe distance from the house of the deceased and other dwellings. Follow the flowchart below for steps on dry waste management.

To ensure consent, it is essential to explain to the family of the deceased why these items must be disposed of.

Box 14. Flow chart for dry waste management of household items belonging to a person who has died from suspected or confirmed Ebola virus disease or Marburg virus disease

- Disinfect and decontaminate all household items used by the deceased before his or her death. Use 0.5% chlorine concentrate.
- Place all dry waste in a plastic bag. Seal the bag.
- Spray the outside of the sealed bag with a 0.5% concentrate of chlorine. If the waste needs to be transported, the sprayed bag should be placed in a second bag (double bagging) to provide extra protection.
- Place the disinfected bag inside the coffin or grave and bury it with the dead **OR**
- Burn the disinfected bag at a distance from built structures and close to where the body was interred.
- Make arrangements to reimburse the family of the deceased for household items that have been incinerated or otherwise destroyed **OR**
- Replace the household items that have been destroyed **OR**
- Contact the agency responsible for replacing household items or providing bereavement kits.

6.8 When is it appropriate to revert to traditional burials?

Once the Ministry of Health has officially declared that an infectious disease outbreak is over, communities may be able to perform traditional funeral rites and burials again. However, it is important to continue active disease surveillance and observe strict infection control procedures.

- WHO criteria for declaring the end of an Ebola or Marburg outbreak can be found at: <http://www.who.int/csr/disease/ebola/declaration-ebola-end/en/>.
- WHO guidance on how to conduct safe and dignified burials of persons who have died from suspected or confirmed EVD or MVD can be found at: <https://www.who.int/csr/resources/publications/ebola/safe-burial-protocol/en/>.

7. Cholera

Cholera victims do not need to be buried by an SDB team and burials of cholera victims require fewer precautions than deaths from Ebola or similar diseases. However, the body of the deceased must be prepared for burial in a safe manner and specific infection control measures must be followed.

Resources

IFRC

<http://pscentre.org/resources/training-ebola/>

<http://pscentre.org/topics/resources-reports/>

<https://media.ifrc.org/ifrc/what-we-do/community-engagement/cea-ebola/>

<https://media.ifrc.org/ifrc/2018/04/18/communities-agents-change-five-things-weve-learned-ebola-response/>

https://www.ifrc.org/Global/Documents/Secretariat/201601/Beyond%20Ebola%20report-EN_LR.pdf

World Health Organization (WHO)

<http://www.who.int/csr/disease/ebola/resources/en/>

<http://www.who.int/knowledge-transfer/online-learning-resources-for-ebola/en/>

<https://openwho.org/courses/knowledge-resources-ebola>

Centres for Disease Control (CDC)

<https://www.cdc.gov/vhf/ebola/resources/posters.html>

<https://www.cdc.gov/vhf/ebola/resources/factsheets.html>

<https://www.cdc.gov/vhf/ebola/resources/factsheets.html>

<https://www.cdc.gov/vhf/ebola/resources/index.html>

Médecins Sans Frontières (MSF)

<https://www.msf.org/ebola>

British Medical Journal (BMJ)

<https://www.bmj.com/ebola>

<https://bestpractice.bmj.com/topics/en-us/1210/guidelines>

Ebola Communications Network

<https://ebolacommunicationnetwork.org/about-the-ebola-communication-network/>

Annexes

Annex 1. Simplified SDB process description

Several intervention pillars are involved in the SDB process at different times. Examples are shown in the process chart below.

Notification of community death	Investigation	SDB alert
<ul style="list-style-type: none"> A system established to receive alerts of deaths in the community. (Surveillance.) Communities understand the importance of signalling all deaths. They realize that SDB is an important public health intervention for stopping transmission. (RCCE.) 	<ul style="list-style-type: none"> The investigation team confirms that the suspected case requires SDB. (Surveillance.) Note. Due to the scale of the West Africa Ebola outbreak, every community death warranted SDB without investigation. Locally determined community case definitions for suspect deaths should be used. Note. Rapid diagnostic test (RDT) may be used if it is applicable. 	<ul style="list-style-type: none"> A system to alert SDB teams is established. (Surveillance, SDB.) The consent of families and the community to SDB is obtained. Steps are taken to reduce their fears, concerns and misconceptions about SDB. (RCCE, PSS.)

Preparation and deployment	SDB	Post-SDB
<ul style="list-style-type: none"> SDB teams are on stand-by for deployment. (SDB.) The materials and transport required for SDB are organized and made ready before departure. (SDB.) Key information about the deceased and the burial are obtained (the name and location of the deceased, his or her religious or cultural needs, special requests, contact details of the family focal person, location and readiness of the burial site, etc.). (Surveillance, RCCE, SDB.) 	<ul style="list-style-type: none"> The SDB team carries out the SDB in accordance with SOPs. (SDB.) SDB teams are familiar with the context, cultural expectations and traditional burial practices, and take account of them without compromising infection prevention and control. (SDB.) The team takes a diagnostic sample (e.g., oral swab) according to agreed SOPs, if applicable. (SDB, lab.) The team decontaminates the site: household and personal items of the deceased are decontaminated or destroyed; arrangements are made to replace the items destroyed. 	<ul style="list-style-type: none"> Samples, if any, are transported to the laboratory for diagnostics. (SDB, lab.) PPE is disinfected or disposed of safely. Vehicles are disinfected. (SDB.) A report on the SDB is written and shared using an agreed reporting format. (SDB.) The diagnostic result is registered (positive or negative). (Lab, surveillance.) The family is informed of the test result. (Surveillance.) If the result is positive, follow up actions are initiated: contact tracing, PSS, intensified RCCE, IPC, and vaccination if applicable. (Surveillance, PSS, RCCE, IPC, vaccination.)

Annex 2. SDB kit contents and technical checklist

Instructions: A starter kit requires three separate logistics requests, one local and two international. KMREZFCH0001 (LR #1), for international procurement, can be purchased as a single unit with all the contents listed here. LR #2 for international procurement, items can be purchased separately using the codes in the list below. For items procured locally (LR #3), each item can be sourced individually in the local market.

SAFE & DIGNIFIED BURIAL – STARTER KIT for one team, 20 burials (KMREZFCH0001, international procurement logistics request #1)

Consumable items contained in Starter Kit

	Item	Recommended specifications	UOM	
1	Masks FFP2	Particle filtration efficiency: PFE (0.1 micron) > 99% - Bacterial filtration efficiency: BFE (0.3 micron) > 99% without valve. Duckbill type-2 elastic.	pcs	
2	Gloves examination disposable nitrile not sterile, size large.	100% nitrile, non powdered. Ambidextrous. Cuff: straight or rolled edge. Coloured light blue or purple (preferred). Comply with norms EN 455-1-2-3-4/2001-2007-2009. Classification according to Directives 93/42/EC class I non sterile.	pcs	
3	Protective gown disposable, length 150cm, size large (for partial PPE-hygienist)	Gown single use, disposable non-woven material, opening in the back, neck ties and waist band, wrist with elastic, high resistance to penetration by fluid and bacteria, back overlap, lateral ties. To meet ISO 22610 standard resistance to wet microbial penetration and ISO 22612 resistance to dry microbial penetration.	pcs	
4	Coverall hooded - size L/XL	Hooded coverall, with overtaped seams and cuffs, ankle, facial and waist elastication. Zip flap with adhesive closure. Finger loops. Comply with EN14126, EN 13982-1 (type 5), EN 13034 (type 6), EN 14605 (type 4). To comply with requirements for category III personal protective equipment according to European legislation or equivalent USA legislation.	pcs	
5	OT set trousers and T-shirt, size L/XL.	Made of fluid repellent, breathable non-woven fabric, with high resistance to penetration, disposable non sterile.	set	

	Qty. per 1 burial	Notes regarding quantities per burial	Qty. in stock for 20 burials per team	Notes regarding quantities to have in stock for 20 burials/1 team
	8	5 team members in full PPE, 3 for contingency.	120	Not all reserved for contingency/ burial will be used; calculation based on 5 people in full PPE x 20 burials + 20 as contingency. This principle applies to all consumable PPE below.
	40	6 pairs for PPE (5 full, 1 partial), 14 pairs contingency.	1000 (10 x box of 100)	Glove consumption is usually high. It is good to have an adequate buffer stock.
	2	1 for partial PPE, 1 contingency.	25	As above.
	8	5 team members in full PPE, 3 for contingency (tear during dressing, family member dressing up, etc.).	120	As above.
	12	Depending on size of team. All members should have scrubs.	360	Scrubs for one (1) 12 person team per month (1 scrub-set per day per person). Switch to cotton scrubs, washable locally, as soon as possible.

>> Continuation of the table on page 54

	Item	Recommended specifications	UOM	
6	Hoods with integrated mask, lateral ties.	According to EN 14126 (Indutex Cleanguard).	pcs	
7	Disposable apron.		pcs	
8	NaDCC 8.68 grams tabs.	Dispersible chlorine, tabs, tube of 60 tabs.	Tube of 60	
9	Bag plastic, biohazardous material, thickness 0.05 mm, capacity 60 litres or more.	Please source larger size, durable quality.	Each	
10	Anti-fog spray		Bottle	

Reusable Items - Contained in Starter Kit

	Item	Recommended specifications	UOM	
11	Goggles, unvented.	Goggles, plastic for eye protection, unvented, polycarbonate lens, neoprene, elastic strap.	pcs	
12	Apron, heavy duty reusable.		pcs	
13	Nitrile gloves chemical protection, Number 7.	Nitrile, thickness 0.40mm approx., length 30 cm approx. Comply with EN420/2004, EN 374-1/2004, protection against mechanical risks. Cut resistance: minimum class 1 (of 5), puncture resistance minimum class 1 (of 4). Resistance to water and air penetration NQA 0.65%, or performance.	pair	
14	Stretcher foldable lengthwise.	Folding aluminium stretcher, canvas sheet, washable and resistant to chlorine.	pcs	
15	Rope, 2 pieces of 10 metres.	Rope, polypropylene, flat lashing straps.	metres	
16	Sprayer	12 litres, polypropylene tank, backpack model.	pcs	

	Qty. per 1 burial	Notes regarding quantities per burial	Qty. in stock for 20 burials per team	Notes regarding quantities to have in stock for 20 burials/1 team
	8	5 full PPE team members, 3 for contingency.	120	As above.
	2	1 for partial PPE, 1 contingency (mixing chlorine).	25	Note: Comes in pack of 100.
	1	Assuming 60L/burial at 0.5% concentration + decontamination of materials at the base.	30	
	10	Bag plastic, bio-hazardous material, thickness 0.05 mm, capacity 60 litres or more.	200	
	1		3	

	Qty. per 1 burial	Notes regarding quantities per burial	Qty. in stock for 20 burials per team	Notes regarding quantities to have in stock for 20 burials/1 team
	8	5 full PPE team members, 3 for contingency.	10	Numbers can be adjusted based on unit of measure. Small buffer ordered in case of breakage.
	8	5 full PPE team members, 3 for contingency.	10	Note: consider also local procurement/ tailoring for additional items.
	8	5 full PPE team members, 3 for contingency	10	
	1		1	
	20	For lowering body bag/coffin into grave.	20	
	3	2 for use + 1 as backup.	3	1 spare. Normally sprayers should last a minimum of 20 burials.

1 kit as per quantities here (estimated): Weight 185-190 kg, volume 1.4 cbm, cost €2,500-2,700.

ITEMS NEEDED TO SUPPLEMENT STARTER KIT for one team, 20 burials (Individual international procurement LR #2)

Separate international procurement - Starter Kit

	Item	Recommended specifications	UOM	Qty.	Notes regarding quantities per burial	Qty. In stock for 20 burials per team	Notes regarding quantities to have in stock for 20 burials/1 team
17	Body bag (WSAN BODHW) ¹⁵	White, leakproof with handles.	pcs	2	1 for use, 1 for backup.	25	For replenishment, do not need 2/burial as there should be remaining contingency stocks. Approx 10 kg, EUR 500 total.
18	Swabs	Specs to be obtained from lab if swabbing taken care of by SDB teams.	pcs	3	If expected to do swabbing, 3 in case of error/loss.	30	Potentially possible to send by DHL if urgently required for start-up.
19	Hand sanitizer - alcohol-based (HHGYZFCH0020) hand sanitizer (60% to 95% ethanol or isopropanol) (HHYG). Calculate 20-40 x 100 ml hand sanitizer / SDB starter kit.		Make separate order. Hand sanitizers are not included as part of the kit to avoid delays. Hand disinfection with alcohol can be an issue for emergencies as it travels in different packaging with separate AWB and acceptance by aircarrier depends on the pilot. It is also the only 'medicine' in the list and could require additional permits if a state of emergency is not declared.				

¹⁵ Clearview body bags (WSANZFCH0010) with a transparent "window" are available if culturally required.

ITEMS NEEDED TO SUPPLEMENT STARTER KIT for one team, 20 burials (Individual local procurement LR #3)

A92 Local procurement - Starter Kit

	Item	Recommended specifications	UOM	Qty.	Notes regarding quantities per burial	Qty. in stock per 1 team	Notes regarding quantities to have in stock for 20 burials/1 team
20	Tarpaulin, reusable.	Large, for setting up donning/doffing base at the burial site.	pcs	2		2	
21	Boots	Rubber.	pair	12	All team members.	12	
22	Bucket with tap	20 litres.	pcs	1	For handwashing.	3	
23	Trash bin	60 litres, plastic with lid.	pcs	3	For transporting contaminated waste.	3	
24	Bucket with tap	15 litres, plastic with handle.	pcs	2	For mixing chlorine solution.	4	
25	Container	1 litre, plastic (can be any plastic container with lid).	pcs	1	For transporting swab (3rd layer).	2	
26	Jerry can		pcs	3	Water for preparing chlorine solution.	5	
27	Matches				For burning waste, if appropriate.		
28	Gasoline						
29	Detergent				For disinfection of household items.		
30	Sharps container	Puncture-resistant, waterproof and closeable container.			For operational base.		
31	First aid kit				For operational base.		
32	Vinegar				For operational base.		To clean the sprayer.
33	Tooth-brush				For operational base.		To clean the sprayer.
34	Drying rack				For operational base.		To hang dry boots, PPE and materials.

Instructions: A replenishment kit requires two separate logistics requests for international procurement. KMERZFCH0002 (LR #1) can be purchased as a single unit with all the contents. LR #2 items can be purchased individually using the codes as available.

SAFE & DIGNIFIED BURIAL – REPLENISHMENT KIT for one team, 20 burials v.2019 (KMERZFCH0002, international procurement LR #1)

Consumable items - Replenishment Kit

	Item	Specifications	
1	Masks FFP2	Particle filtration efficiency: PFE (0.1 micron) > 99% - Bacterial filtration efficiency: BFE (0.3 micron) > 99% without valve. Duckbill type-2 elastic.	
2	Gloves, examination, disposable nitrile not sterile, size large.	100% nitrile, non powdered. Ambidextrous. Cuff: straight or rolled edge. Coloured light blue or purple (preferred). Comply with norms EN 455-1-2-3-4/2001-2007-2009. Classification according to Directives 93/42/EC class I non sterile.	
3	Protective gown, disposable, length 150cm, size large (for partial PPE – hygienist).	Gown single use, disposable non-woven material, opening in the back, neck ties and waist band, wrist with elastic, high resistance to penetration by fluid and bacteria, back overlap, lateral ties. To meet ISO 22610 standard resistance to wet microbial penetration and ISO 22612 resistance to dry microbial penetration.	
4	Coverall hooded – size L / XL.	Hooded coverall, with overtaped seams and cuffs, ankle, facial and waist elastication. Zip flap with adhesive closure. Finger loops. Comply with EN14126, EN 13982-1 (type 5), EN 13034 (type 6), EN 14605 (type 4). To comply with requirements for category III personal protective equipment according to European legislation or equivalent USA legislation.	
5	Hoods with integrated mask, lateral ties.	According to EN 14126 (Indutex Cleanguard).	
6	Disposable apron.		
7	NaDCC 8.68 grams tabs.	Dispersible chlorine, tabs, tube of 60 tabs.	
8	Bag plastic, biohazardous material, thickness 0.05 mm, capacity 60+ litres.	Please source larger size, durable quality.	
9	Anti-fog spray.		

	UOM	Notes regarding quantities per burial	Qty. in stock per team	Notes regarding kitting
	pcs	5 team members in full PPE team members, 3 for contingency.	120	
	pcs	6 pairs for PPE (5 full, 1 partial), 14 pairs contingency.	1,000	
	pcs	1 for partial PPE, 1 contingency	25	
	pcs	5 team members in full PPE, 3 for contingency (tear during dressing, family member dressing up, etc.).	120	
	pcs	5 full PPE team members, 3 for contingency.	120	As above.
	pcs	1 for partial PPE, 1 contingency (mixing chlorine).	25	Note. Comes in pack of 100.
	Tube of 60	Assuming 60L/burial at 0.5% concentration + decontamination of materials at the base.	30	
	pcs	4 bag for reusables, 4 for consumables. Quantity depends on size of bags. Ideally purchase larger bags.	200	Comes in roll of 100 pcs.
	Bottle		3	
1 kit as per quantities here (estimated): Weight 105-110 kg, volume 1 cbm, cost €1,500-1,700				

ITEMS NEEDED TO SUPPLEMENT REPLENISHMENT KIT for one team, 20 burials (international procurement LR #2)

Consumable Items - Replenishment, separate procurement, if needed

	Item	Specifications	UOM	Notes regarding quantities per burial	Qty. in stock per team	Notes regarding kitting
10	OT set trousers and T-shirt, size (MDLIZFCH0001 size L) / MDLIZFCH0002 size XL)+A4.	Made of fluid repellent, breathable non-woven fabric, with high resistance to penetration, disposable, non sterile.	set	Depending on size of team. All members should have scrubs.	120	Only if required and cotton scrubs have not been locally sourced. Approx. 20 kg and EUR 198.
11	Swabs.	Specs to be obtained from lab if swabbing taken care of by SDB teams.	pcs	If expected to do swabbing, 3 in case of error/loss.	30	
12	Body bag (WSANBODHW).	White, leakproof with handles.	pcs	1 for use, 1 for backup.	25	Approx. 10 kg and EUR 500.
13	Hand sanitizer - alcohol-based (HHGYZFCH0020) hand sanitizer (60% to 95% ethanol or isopronanol).		Bottle 100 ml	5 team members in full PPE, 3 for contingency (tear during dressing, family member dressing up, etc.).	20	

Note. Replacements for reusables (goggles, heavy duty aprons, heavy duty gloves, rubber boots, etc.) may also be needed at some point due to wear and tear, and need to be considered separately.

Instructions: A training kit requires two separate logistics requests for international and local purchase. KMREZFCH0003 (LR #1), for international procurement, can be purchased as a single unit with all indicated contents. For items procured locally (LR #2), each item can be sourced individually.

SAFE & DIGNIFIED BURIAL – TRAINING KIT for two teams, 25 participants (KMREZFCH0003, international procurement LR #1)

Consumable items contained in Training Kit

	Item	Specifications	
1	Masks FFP2.	Particle filtration efficiency: PFE (0.1 micron) > 99%. Bacterial filtration efficiency: BFE (0.3 micron) > 99% without valve. Duckbill type-2 elastic.	
2	Gloves, examination, disposable, nitrile not sterile, size large.	100% nitrile, non powdered. Ambidextrous. Cuff: straight or rolled edge. Coloured light blue or purple (preferred). Comply with norms EN 455-1-2-3-4/2001-2007-2009. Classification according to Directives 93/42/EC class I non sterile.	
3	Protective gown, disposable, length 150cm, size large (for partial PPE – hygienist).	Gown single use, disposable non-woven material, opening in the back, neck ties and waist band, wrist with elastic, high resistance to penetration by fluid and bacteria, back overlap, lateral ties. To meet ISO 22610 standard resistance to wet microbial penetration and ISO 22612 resistance to dry microbial penetration.	
4	Coverall hooded – size L/XL.	Hooded coverall, with overtaped seams and cuffs, ankle, facial and waist elastics. Zip flap with adhesive closure. Finger loops. Comply with EN14126, EN 13982-1 (type 5), EN 13034 (type 6), EN 14605 (type 4). To comply with requirements for category III personal protective equipment according to European legislation or equivalent USA legislation.	
5	OT set trousers and T-shirt, size L/X.	Made of fluid repellent, breathable non-woven fabric, with high resistance to penetration, disposable non sterile.	
6	Hoods with integrated mask, lateral ties.	According to EN 14126 (Indutex Cleanguard).	
7	Disposable apron.		
8	NaDCC 8.68 grams tabs.	Dispersible chlorine, tabs, tube of 60 tabs.	
9	Plastic bag, biohazardous material, thickness 0.05 mm, capacity 60 litres or more.	Please source larger size and durable quality.	
10	Anti-fog spray.		

	UOM	Qty. per 1 team	Notes regarding quantities per burial	Qty. 25 pax	Notes re. training quantities
	pcs	15	All participants to practise donning and doffing PPE + few extras.	30	1/participant plus 5 extra for instructors or additional participants.
	pcs	30	All participants to practise donning and doffing PPE + few extras.	60	1 pair/participant (25) plus 5 pairs for instructors/additional participants. Note: Could send 100 if they come in boxes of 100.
	pcs	5	Only a few people practise in partial PPE.	10	1/participant plus 5 extra for instructors or additional participants.
	pcs	15	All participants to practise donning and doffing PPE + few extras.	30	1/participant plus 5 extra for instructors or additional participants.
	set	15	All participants to practise donning and doffing PPE + few extras.	30	1/participant plus 5 extra for instructors or additional participants.
	pcs	15	All participants to practise donning and doffing PPE + few extras.	30	1/participant plus 5 extra for instructors or additional participants.
	pcs	5	Only a few people practise in partial PPE.	10	Have at training for demonstration/ex-planation only. Comes in pack of 100 pcs.
	Tube of 60	1	Assuming 60L/burial at 0.5% concentration + decontamination of materials at the base.	1	1 tube is sufficient to demonstrate mixing various concentrations of chlorine.
	pcs	4		10	Can reuse, no need to send 1/participant. Comes in roll of 100 pcs.
	Bottle	1		1	To familiarize team with product.

Reusable Items – Contained in Training Kit				
	Item	Specifications	UOM	
11	Goggles, unvented.	Goggles, plastic for eye protection, unvented, polycarbonate lens, neopropene, elastic strap.	pcs	
12	Apron, heavy duty reusable.		pcs	
13	Nitrile gloves, chemical protection, Number 7.	Nitrile, thickness 0.40mm approx, length 30 cm approx. Comply with EN420/2004, EN 374-1/2004, protection against mechanical risks. Cut resistance: minimum class 1 (of 5). Puncture resistance: minimum class 1 (of 4). Resistance to water and air penetration NQA 0.65%, or performance.	pair	
14	Stretcher, foldable lengthwise.	Folding aluminium stretcher, canvas sheet, washable and resistant to chlorine.	pcs	
15	Sprayer.	12 litres, polypropylene tank, backpack model.	pcs	
16	Body bag.	White, leakproof with handles.	pcs	

	Qty. per 1 training	Notes regarding quantities / training	Qty. 25 pax	Notes regarding training quantities
	12	5 full PPE team members, 3 for contingency.	15	Working in pairs, 50% of participants at a time.
	12	5 full PPE team members, 3 for contingency.	15	Working in pairs, 50% of participants at a time.
	12	5 full PPE team members, 3 for contingency.	15	Working in pairs, 50% of participants at a time.
	1		2	2 teams practising.
	2		4	2 teams practising.
	1	1 for use, 1 for backup.	6	For demonstration and 1/5 participants.
Consumables (estimated): weight 25-28 kg; cost EUR 400-450; volume 0.3 cbm.				
Reusables (estimated): 48-50 kg; cost EUR 750-800; volume 0.5 cbm.				

TRAINING KIT for two teams, 25 participants (local procurement LR #2)

Separate local procurement – Training Kit

	Item	Specifications	
1	Boots.	Rubber.	
2	Bucket with tap (or other handwashing option).	20 litres.	
3	Trash bin.	60 litres, plastic with lid.	
4	Bucket with tap (or other handwashing option).	15 litres, plastic with handle.	
5	Plastic container, with lid.	For transporting swab (3rd layer).	
6	Jerry can.	25 litres.	
7	Tarpaulin, reusable.	Large.	

Separate local procurement – Additional items specific to training

	Item	Specifications	
1	Notebook.	50 pages, lined.	
2	Pen.	Ballpoint.	
3	Flipchart paper.	Pad, 25 pages.	
4	Large markers/felt tip pens.	Pack of 5, various colours.	

	UOM	Qty. per 1 team	Notes regarding quantities / training	Qty. 25 pax	Notes regarding training quantities
	pair	12	All team members.	30	1 pair/participant plus 5 pairs for instructors/additional participants.
	pcs	1	For handwashing.	1	To familiarize team with product.
	pcs	3	For transporting contaminated waste. Can be used for decontamination of reusable materials.	3	To simulate field, practise putting in cars.
	pcs	2	For mixing chlorine solution.	2	2 teams practising.
	pcs	1	For transporting swab.	2	To understand/practise handling and transporting sample.
	pcs	3	Water for preparing chlorine solution.	6	1 per 5 participants plus 1 for demonstration.
	pcs	2		2	For setting up donning/doffing base at the burial site.

	UOM	Qty. per 1 team	Notes regarding quantities / training	Qty. 25 pax	Notes regarding training quantities
	pcs			30	
	pcs			30	
	pcs			1	
	pcs			1	

FIELD CHECKLIST FOR 1 BURIAL

Items with quantities to take to the burial site

	Item	Unit of Measure	Quantity 1 burial	Confirmation of item. Please check box
1	Coverall hooded, size L/XL.	pcs	8	
2	Masks FFP2.	pcs	8	
3	Hoods with integrated mask, lateral ties.	pcs	8	
4	Gloves, examination, disposable, nitrile, non sterile, size large.	pcs	40	
5	Apron, heavy duty, reusable.	pcs	8	
6	Goggles, unvented.	pair	8	
7	Nitrile gloves, chemical protection, Number 7.	pair	8	
8	Protective gown, disposable, length 150 cm, size large (for partial PPE - hygienist).	pcs	2	
9	Disposable apron.	pcs	2	
10	Body bag.	pcs	2	
11	Swabs.	pcs	3	
12	Sprayer.	pcs	3	
13	NsDCC Chlorine tabs 8.68 g.	Tube of 60	1	
14	Bag, plastic, for biohazardous material, thickness 0.05 mm.	pcs	10	
15	Hand sanitizer (if available)	Bottle 100 mL	1	
16	Anti-fog spray.	Bottle	1	
17	Stretcher, foldable lengthwise.	pcs	1	
18	Bucket with tap for hand washing.	pcs	1	
19	Trash bin with lid to transport infectious waste.	pcs	3	
20	Bucket to prepare chlorine (0.5% and 0.05%).	pcs	2	
21	Container to transport swab (3rd protective layer).	pcs	1	

	Item	Unit of Measure	Quantity 1 burial	Confirmation of item. Please check box
22	Jerry can to bring water for chlorine preparation.	pcs	3	
23	Tarpaulin, reusable, for setting up the donning/doffing station.	pcs	2	
24	Rope, 10 metres, for lowering the coffin.	pcs	2	
25	Matches for starting fire, to burn infectious materials.			
26	Gasoline, for starting fire, to burn infectious materials.			
27	OT trousers and t-shirt (sets).	Worn by each team member before departure		
28	Rubber boots (pair).			
29	Work gloves, leather or other sturdy material.	pairs	6	
30	Detergent (for household disinfection)	bottle	1	

Annex 3. Survey processes for agreeing appropriate substitution rituals for safe and dignified burials

Survey process to identify substitution rituals for SOPs, incorporating rapid cultural assessments, KAP, and lessons learned.

1. DESK STUDY	
1.1 Analyse basic demographic, social, religious and cultural data.	Identify key characteristics, population numbers, ethnicities, cultural practices, different religions practised and their locations, age, sex, literacy rates, access to information, channels the community uses and trusts.
1.2 literature review of available research.	Identify previous outbreaks, resources available for managing the dead, relevant bylaws, previous cultural/KAP surveys performed in the area.
2. CONSULTATION	
2.1 Identify potential stakeholders.	Information on funeral procedures should be sought from a range of people in different communities, including faith and community leaders, women, agents of change, elders, traditional healers, and local authorities (see annex 13). Find replacement rituals or procedures that comply with religious and cultural practice but do not breach infection controls. These can be used when traditional funeral procedures cannot be performed.
2.2 Contact and consult stakeholders.	Plan your consultation carefully. Consider religious and cultural sensitivities; community hierarchies; the community's fears and concerns, and rumours.
3. DOCUMENTATION	
3.1 Describe the purpose of a rapid cultural or KAP survey.	Tell stakeholders that the aim is to understand local funeral practices, religious beliefs and local community structures, in order to take account of these when substitution rituals are adopted as part of a control and containment strategy during MVD or EVD outbreaks.
3.2 List and describe key cultural practices of the community.	Ask stakeholders to describe the values they attach to cultural practices during funerals and deaths (for example, marriage and lineage rights). Ask which practices may be incorporated in substitution rituals and which should be deferred until the outbreak has ended. Be aware that cultural values and practices may vary from one community to another within the same outbreak area.
3.3 Summarize key findings.	Summarize. What values are important? Have substitution rituals been adopted in the past? If they have not, what substitution rituals will be acceptable?
3.4 List and describe key religious practices in the communities.	Ask stakeholders to describe the values they attach to funeral practices. Ask which substituted practices are acceptable to the community, and which are not.
3.5 Summarize key findings.	Summarize. If certain religious practices during funerals were substituted in the past, were these substitutions acceptable? If not, what rituals or practices would be more acceptable to the community?
3.6 Copy supporting documents.	Make copies of relevant documents, recordings, videos, etc.
4. ACTION	
4.1 Recommend substitution rituals that will be acceptable during the outbreak.	Document your findings. Where the community has experienced MVD or EVD in the past, suggest how substitution rituals and SDBs can be improved. What lessons can be drawn? Where there has not been an outbreak in the past, propose substitution rituals that you believe the community will find acceptable.
4.2 Revert to traditional burial rituals once the outbreak is officially declared over.	Collect together the information that has been assembled, on previous MVD or EVD outbreaks; lessons learned; how the dead were buried; how the dead were reported/referred to SDB teams; SOPs and guidelines.

Annex 4. Roles and responsibilities of burial team members

Composition of core burial team

- A team leader or technical supervisor (Team Leader/Team Supervisor).
- 4 body handlers.
- 1 Type-1 hygienist (sprayer in full PPE, to accompany the body handlers while securing the body).
- 1 Type-2 hygienist (in partial PPE to support team members donning and doffing PPE).
- 1 community engagement person.
- 2 drivers.
- 2 to 4 Type-3 hygienists (in partial PPE to protect from chlorine, who stay at the base).

Note. In specific contexts and where psychosocial support is not provided by other partners, consider adding a team member responsible for psychosocial support (PSS).

Role descriptions should be prepared for each job profile. They should take account of the context and the needs of the project. All team members should agree and understand their roles and responsibilities.

Responsibilities of all team members

- All burial team members should understand the risks associated with their work.
- All members of the team, except the drivers, wear scrub suits and boots (or closed, waterproof shoes) when they leave the operational base to conduct a burial.
- All team members who don PPE at the scene of the burial do so AFTER their arrival, after meeting the family, community, and religious or other local leaders as necessary, and having discussed with them the burial protocols and why PPE is required.
- All members of the team are responsible for checking the condition of their reusable equipment after each use (goggles, boots, aprons, thick gloves – after decontamination) and indicating whenever items need to be replaced.
- All team members are required to follow SOPs at all times.

Responsibilities of the technical supervisor or team leader

Before leaving the base:

- Obtains all required information before the burial and communicates it to the team; determines that it is safe to conduct an SDB.
 - Ensures that all materials required for the SDB and for waste management are ready and available (using the checklist) and that the burial site has been selected and is prepared.
-

- Ensures that spare PPE kits and supplies are ready and loaded in the vehicles.

Before the team begins the SDB (and before the team dons PPE):

- Ensures that family members have been briefed by the community engagement focal point.
- Confirms that the family understands and has consented to the SDB procedure, and that specific needs have been identified and discussed with the burial team before the team dons PPE.
- Leads the team. Ensures that all team members are present and briefed. Makes sure that all members understand their roles and responsibilities, and what they should and should not do.

During the SDB process:

- Ensures that all PPE is donned and doffed correctly and in accordance with SOPs.
- Ensures that all SDB procedures are conducted safely and in accordance with SOPs.
- Ensures that all breaches in PPE are reported and resolved immediately in accordance with SOPs.
- **Note.** The team leader or supervisor is authorized to adapt SOPs providing ICP is not breached.

At all times:

- Is responsible for the safety and security of all team members.
- Ensures that security protocols and burial/disinfection SOPs are followed.
- Records and reports daily on the team's SDB activities in compliance with the reporting protocol. Reports the details of each successful and unsuccessful burial performed each day and the reasons why any burial is unsuccessful (such as family refusal, etc.).
- Debriefs every day with the team. Discusses how the day went, what went well and what could be improved.
- Monitors the psychosocial wellbeing of team members, including issues that volunteers may face when returning to their communities (such as stigmatization or rejection). Raises any concerns with his or her line manager or the PSS focal person (where applicable).

Responsibilities of the community engagement volunteer

Before the team dons PPE:

- Works closely with the team leader to ensure that an appropriate representative of the family has been identified and is present at the burial.

- Together with the team leader ensures that, if requested by the family, a local faith representative or community leader is present.
- Ensures that the family's cultural and religious beliefs are considered and included in the SDB procedure, where possible and provided ICP is not breached. Consults the faith representative on religious ceremonies that should be included in the procedure (where possible).
- Ensures that faith representatives and family members who wish to participate in the burial ceremony are aware of their roles and responsibilities (when they perform dry ablutions, anoint the body, dig the grave, close the lid of the coffin, carry the coffin, recite sermons, etc.) and don PPE if appropriate. Informs the team leader that this preparation work has been done and what adjustments of procedure team members need to allow for.
- Liaises, as appropriate, with the agency responsible for providing a bereavement kit to the family or community, especially if household items (such as mattresses) have been destroyed as part of the SDB or decontamination procedure.

During the SDB process:

- Is the direct link between the family of the deceased person and the SDB team. Ensures that the family representative and other family members fully understand what happens at each stage of the SDB procedure and have an opportunity to ask questions and raise concerns.
- Supports the family throughout the SDB procedure. Collaborates with agencies that employ PSS focal persons and/or the PSS team member (where available) to help and support bereaved families.

At all times:

- Collects information on rumours and concerns about SDB in the community, and potential barriers to SDB acceptance, and communicates these to the team, enabling it to analyse them and take steps to make SDB procedures more acceptable.
- Liaises with the RCCE team as needed. Ensures that all actors involved in the response have a clear understanding of SDB procedures.

Responsibilities of PSS team member

- To be well informed about local cultural beliefs, local religious beliefs, and the overall context.
- Provides psychosocial support to the bereaved family and to the community during the SDB process.
- Helps other actors to provide support and assistance to bereaved families.

Responsibilities of Type-1 hygienist

The hygienist, in full PPE, works with the body handlers to disinfect the area and secure the body. Is the first person to enter the building in which the body of the deceased person lies.

- Disinfects the entrance to the building and the area surrounding the deceased. Opens windows and doors (if applicable) to maximize light and ventilation.
 - Disinfects the pathway from the green area to the site of the deceased, and the area around the body.
 - Explains to other team members the layout of the room in which the deceased lies and any potential hazards.
- *After a diagnostic swab has been taken and secured in triple packaging (where required), uses a 0.5% chlorine solution to spray the body of the deceased, the bed or bed mat and bedclothes on which the deceased is lying, and other potentially contaminated items near the body.*
- *Sprays the inside of the body bag before the body of the deceased is placed in it.*
- *Sprays the outside of the body bag (especially the handles) after the body handlers have placed the deceased in the body bag and zipped it closed.*
- *Using the sprayer:*
 - Disinfects the hands of the body handlers and any other contaminated areas of their PPE after each step of the procedure.
 - Disinfects the coffin (where applicable) after the body has been placed in it.
 - Disinfects the outside surfaces of bags that contain waste products.
 - Disinfects the outside packaging for swabs, so that they can be transported safely, making sure that no chlorine touches the swab itself.
- *Disinfects the living area of the deceased:*
 - Sprays all annexes and rooms in the house that the deceased person may have used before death. Focuses especially on bedrooms, bathrooms, toilets, etc. that are soiled by blood, nasal secretions, sputum, urine, stools, or vomit.
 - Sprays utensils that the deceased may have used (such as cups, plates, cutlery).
 - Sprays all bags due for disposal that contain potentially contaminated items (such as bed linen and clothing). Ensures that all bags due for disposal are sealed (tightly closed) after spraying.
- *Is the last person to leave the house of the deceased. Disinfects the way out; closes the door; disinfects the path taken by the SDB team; disinfects the sprayer's own path until he or she reaches the green area.*

Responsibilities of Type-2 hygienist

The hygienist, in light PPE, assists teams to don and doff PPE correctly.

Before the SDB:

- Dons PPE only after family and community consent have been obtained
- Prepares chlorine solution **in the presence of the family and community members:**
 - 0.5% chlorine solution for decontaminating the body of the deceased, as well as surfaces, materials and PPE.
 - A bucket with 0.05% chlorine solution for hand washing (skin contact).
- **Note.** Is responsible for ensuring that the containers of decontamination solution and handwash solution are clearly distinct.
- Prepares 2 backpack sprayers with 0.5% chlorine solution in the presence of the family and members of the community.
 - 1 pack is for the type-1 hygienist who enters the room with the body handlers, all wearing full PPE.
 - 1 pack is for the type-2 hygienist who is responsible for liaising with team members and supervises them when they don and doff PPE.
- Prepares additional chlorine solutions as and when required.

During the SDB:

- Assists donning and doffing.

Responsibility of Type-3 hygienists

The hygienist, in light PPE, supports decontamination and maintenance of PPE materials at the operational base.

- Monitors PPE stocks (equipment and disinfectants).
- Ensures that all reusable PPE is disinfected on return to base.
- Ensures that all the single-use equipment used is properly disposed of on return to base.
- Ensures that all vehicles used are decontaminated on return to base.
- Ensures that all spraying equipment is correctly maintained in accordance with the SOP for sprayer maintenance (see Annex 10).
- Ensures that a new materials pack is ready and available for the next SDB.

Responsibilities of a body handler

Before the SDB:

- Dons PPE only after family and community consent have been obtained.

During the SDB process:

- Carries out appropriate post-mortem diagnostic test (e.g. oral swab) before body has been touched by any chlorine solution.
- Shrouds the body of the deceased, if this is culturally appropriate.
- Sprays the body with 0.5% chlorine.
- Dresses the deceased person, if the family so request, after the body has been sprayed (manipulating the body as little as possible). Where possible, team leader negotiates to put the deceased person's clothing with the body inside the body bag, without dressing the person (to reduce manipulation of the body).
- Correctly places the deceased person in a body bag, following training procedure and SOPs.
- Zips the body bag closed, once the body is in it, and ensures the outside of the bag is sprayed thoroughly.
- Carries the body bag outside. Places the body bag in a coffin (if culturally appropriate). If family members wish to see the deceased person, the body handlers may open the body bag.
- Transfers the sprayed coffin or sprayed body bag to the vehicle (this may be done by family members wearing gloves), and places the bag/coffin in the vehicle.
 - Packs potentially contaminated items (such as used clothing and bed sheets) in bags and disposes of them in accordance with the SOP for disposal. (According to circumstance, bags are placed in the coffin or the body bag and buried with the body, or incinerated.)
 - Burns the sleeping mattress of the deceased and other bagged disposable items, in accordance with the SOP for disposal.

At the cemetery:

- Unloads the coffin or body bag. (This may also be done by family members wearing work gloves.)
- Carries the coffin or body bag to the graveside. (This may also be done by family members wearing work gloves.)
- Lowers the coffin or body bag into the grave. (This may also be done by family members wearing work gloves.)

Responsibility of drivers

- To remain in their vehicle at all times.
- To drive carefully and slowly at all times. To avoid sirens and honking.
- To ensure the vehicles they drive are maintained and ready for use at all times.
- To park vehicles in positions that permit a swift and straightforward departure.

Annex 5. How to don and doff PPE.

Steps to put on personal protective equipment (PPE) including coverall

- 1** Remove all personal items (jewelry, watches, cell phones, pens, etc.)



- 2** Put on scrub suit and rubber boots¹ in the changing room.

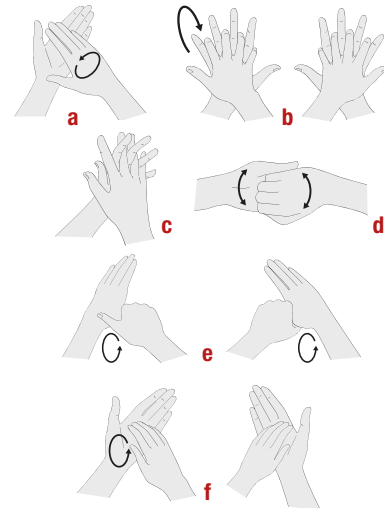


- 3** Move to the clean area at the entrance of the isolation unit.

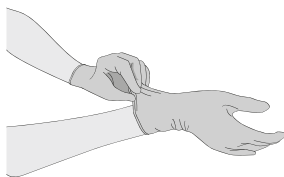
- 4** By visual inspection, ensure that all sizes of the PPE set are correct and the quality is appropriate.

- 5** Undertake the procedure of putting on PPE under the guidance and supervision of a trained observer (colleague).

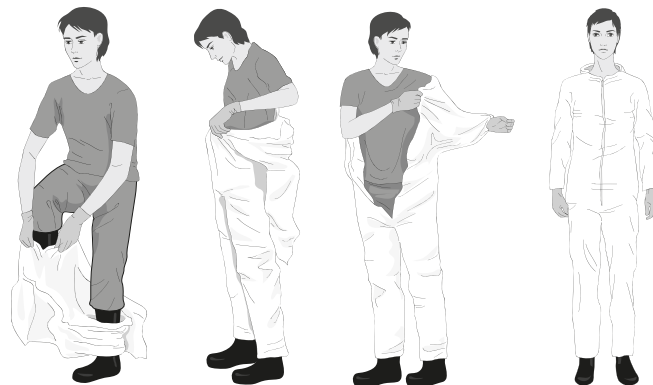
- 6** Perform hand hygiene.



- 7** Put on gloves (examination, nitrile gloves).



- 8** Put on coverall.²



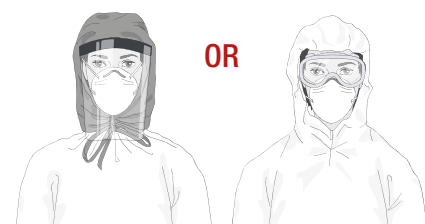
- 9** Put on face mask.



- 10** Put on face shield OR goggles.



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



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









- 13** Put on second pair of (preferably long cuff)² gloves over the cuff.



¹ If boots are 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)

² Do not use adhesive tape to attach the gloves. If the gloves or the coverall sleeves are not long enough, make a thumb (or middle finger) hole in the coverall sleeve to ensure that your forearm is not exposed when making wide movements. Some coverall models have finger loops attached to sleeves.

Steps for doffing PPE.

<p>A. Disinfect boots without removing them</p> <p>B. Remove apron</p> <ol style="list-style-type: none"> 1. Untie the apron, remove it and discard into infectious waste bag for disinfection 2. Wash outer gloves <p>C. Remove outer gloves</p> <ol style="list-style-type: none"> 1. Remove outer gloves 2. Wash inner gloves <p>D. Remove coverall</p> <ol style="list-style-type: none"> 1. Take Hood off 2. Pull zip down 3. Wash inner gloves 4. Remove coverall suit, from inside, peeling it off 5. Dispose the coverall suit in the infectious waste bag for destruction 6. Wash inner gloves 	<p>E1. Remove goggles from behind Place it in a waste bag for disinfection. Wash inner gloves</p>  <p>E2. Remove mask from behind Place it in waste bag for destruction Wash inner gloves</p>  <p>F. Remove inner gloves</p> <ol style="list-style-type: none"> 1. Grasp the outer edge of the 1st glove and peel it off. 2. Hold the 1st glove in the gloved hand and drag a bare finger under the 2nd glove. 3. Remove 2nd glove from the inside, creating a "bag" for both gloves and throw it in waste bag for disposal.   <p>G. Wash hands</p> 
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Annex 6.



World Health
Organization

INTERIM GUIDANCE

How to safely collect oral swabs (saliva) from deceased patients suspected to be infected with Ebola

2014

Step 1: Before entering patient room, assemble all equipment

Step 1a: Assemble equipment for collecting oral swabs

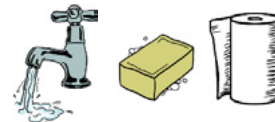
- ☐ Viral transport medium (VTM) collection tubes stored at 4°C or room temperature
- ☐ Individually wrapped sterile swabs with break point
- ☐ Plastic leak-proof primary container
- ☐ Waterproof marker



Step 1b: Assemble equipment for preventing infections

For hand hygiene

- ☐ Alcohol-based handrub (recommended) **OR**
- ☐ Clean running water, soap and disposable (paper) towel **OR**
- ☐ Chlorine solution 0.05% (when options above are not available)



Personal Protective Equipment (PPE)

- ☐ Several pairs of disposable gloves (non-sterile, ambidextrous, single layer)
- ✓ One pair for sample collection
- ✓ Additional pairs as a replacement if they become damaged or contaminated
- ☐ Disposable coverall suit and plastic apron
- ☐ Face protection: Face mask and goggles
- ☐ Footwear: Rubber boots or shoes with puncture-resistant soles with disposable overshoes secured around the shoes to prevent direct contact with ground and infected bodily fluid spills



Disinfectant and waste management materials

- ☐ Disinfectant
 - one hand sprayer (0.05% chlorine solution)
 - one back sprayer (0.5% chlorine solution)
- ☐ Leak-proof and puncture-resistant sharps container
- ☐ Two leak-proof infectious waste bags
 - one for disposable material (destruction)
 - one for reusable materials (disinfection)



Step 1c: Fill out patient documentation

- ☐ **Label VTM collection tubes** with date of collection, patient name, and his/her identifier number
- ☐ **Do NOT forget to fill out required laboratory forms and epidemiological questionnaire**
- ☐ **Create a line list if several patients have to be sampled in the same place or during the same investigation.** One patient per line. The list should include: patient name, identifier number, sex, date of birth, clinical information: symptoms, date of onset, date specimen was collected, type of sample taken and travel history.

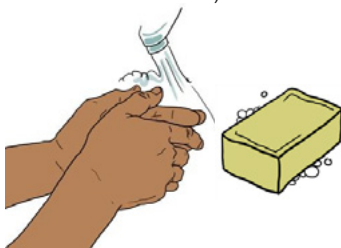


Step 2: Put on all personal protective equipment (PPE)

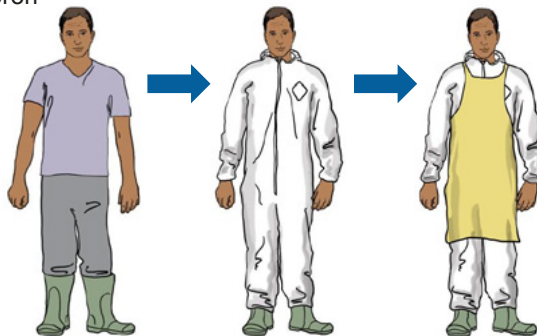
DO NOT ENTER THE PATIENT AREA IF YOU DO NOT HAVE ALL PROTECTIVE GEAR ON

Step 2a: Perform hand hygiene

- ✓ Alcohol-based handrub (20-30 sec) **OR**
- ✓ Soap and water (40-60 sec) **OR**
- ✓ Chlorine solution 0.05% (when options above are not available)



Step 2b: Put on boots, then coverall suit and apron



Step 2c: Put on face protection

- ✓ Put on face mask



- ✓ Put on goggles



Step 2d: Put up hood

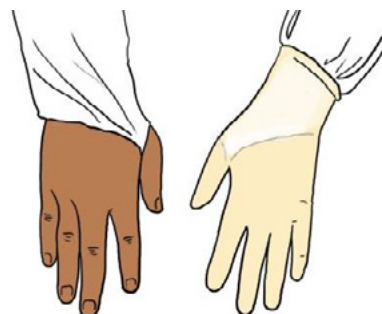


Step 2e: Put on gloves (over cuff)

- ✓ Create thumb holes on the cuff of the coverall suit



- ✓ Push thumb through hole and then put on glove

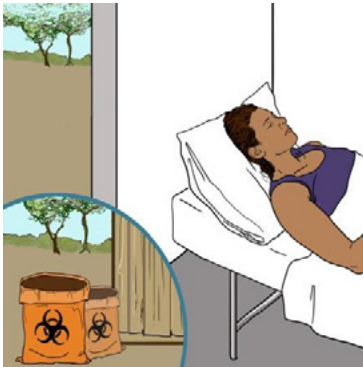


Important: A designated Assistant wearing gloves should be available to help you. This person should stand outside the patient room. He/She will help you prepare the sample for transport. He/She will assist you with putting on the personal protective equipment. He/She will provide any additional equipment you may need.

Step 3: Collect oral swab from deceased patient

Step 3a: Prepare waste bags

- ✓ Infectious waste bags should be placed outside the house in a safe place under the observation of the medical team



Step 3b: Enter patient room

- ✓ Take sample collection material
- ✓ Enter into the room where the deceased person is



Step 3c: Open the oral swab pouch

- ✓ Do not remove the swab from the packaging



Step 3d: Open the mouth

- ✓ Place the palm of hand onto the chin and press down firmly to open the mouth slightly



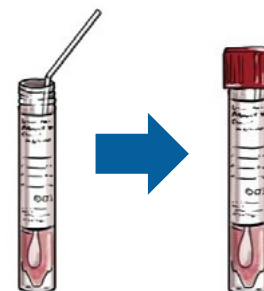
Step 3e: Swab the mouth

- ✓ Remove swab from packaging and insert into the side of the cheek
- ✓ Using circular motions swab the inside of the cheek to collect saliva and epithelial cells
- ✓ Swab right side
- ✓ Swab left side



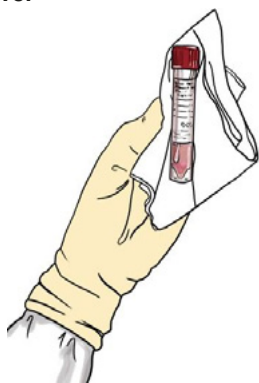
Step 3f: Place the swab into VTM collection tube

- ✓ Snap off the end of the swab at the ribbed breakpoint and close the tube



Step 4: Prepare VTM collection tube for transport

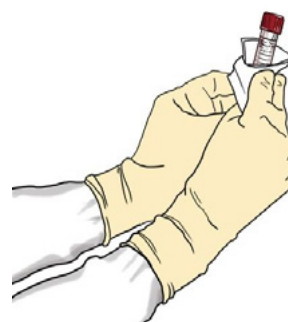
Step 4a: Wipe the VTM tube with a disposable paper towel



Step 4b: Place all items that came into contact with the VTM tube into the infectious waste bag for destruction



Step 4c: Protect the sample from breaking or leaking during transport by wrapping the VTM collection tube in a paper towel



Step 4d: Ask the designated assistant to approach the patient room, without entering

- ✓ This person should have gloves on
- ✓ This person should come close to you holding the open plastic leak-proof packaging container
- ✓ This person should **not** enter the patient room



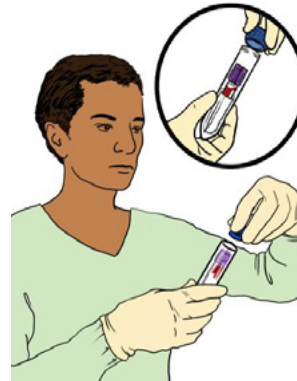
Step 4e: The person who has collected the VTM tube should put the wrapped TVM tube of blood into the plastic leak-proof packaging container

- ✓ Be careful not to touch outside of leak-proof packaging container with gloves



Step 4f: Have the gloved assistant tightly close the top of the plastic leak-proof packaging container

- ✓ Disinfect the outer side of the plastic leak-proof packaging container with a disinfectant



Step 4g: The assistant removes gloves and performs hand hygiene

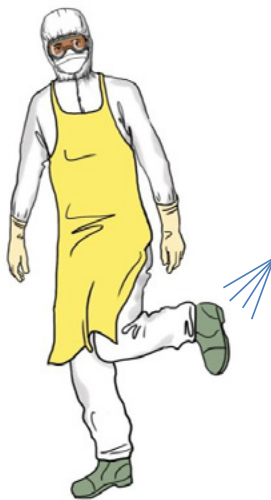
Note: The sample is now ready for shipment to the National Central Laboratory. Follow Sample Shipment packaging requirements for infectious substances.

- ☐ Store samples at room temperature for up to 24 hours. If you need to store the sample for one week before shipping, store between 0-5° Celsius.
- ☐ If you need to store the sample for more than one week before shipping, store at -20 ° Celsius (or better at -70 ° Celsius if available). Avoid freeze-thaw cycles.

Step 5: Remove Personal Protective Equipment (PPE)

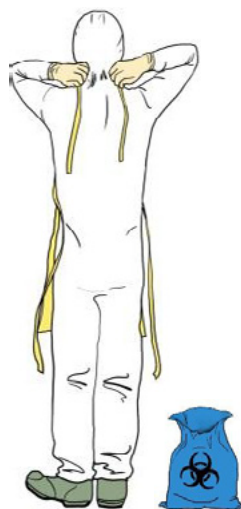
Step 5a: Disinfect boots

- ✓ While still in full PPE, disinfect boots with 0.5% bleach solution sprayed by an assistant
- ✓ Do not remove boots



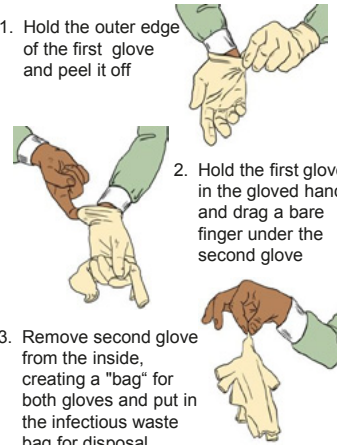
Step 5b: Remove apron

- ✓ Disinfect apron
- ✓ Untie the apron at the waist. Start by removing from the head
- ✓ Place in bag for reusable materials (disinfection)



Step 5c: Remove gloves

1. Hold the outer edge of the first glove and peel it off
2. Hold the first glove in the gloved hand and drag a bare finger under the second glove
3. Remove second glove from the inside, creating a "bag" for both gloves and put in the infectious waste bag for disposal

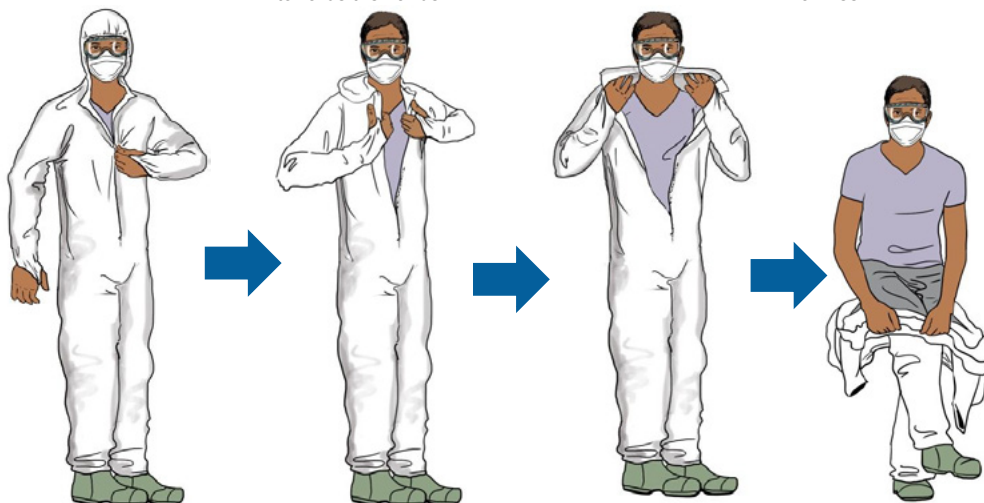


Step 5d: Perform hand hygiene

- ✓ Alcohol-based handrub solution (20-30 sec) **OR**
- ✓ Soap and water (40-60 sec) **OR**
- ✓ Chlorine solution 0.05% (when options above are not available)

Step 5e: Remove coverall suit

1. Unzip the suit starting from the neck moving to the waist
2. Remove the hood, then place hands on the inside of the suit against the chest area and carefully remove the suit from the shoulders towards the hands
3. Remove thumbs from the thumb holes and remove hands from the suit
4. Place hands on the inside of the suit, careful not to touch the outer exposed side. Push the suit down towards the boots to just above the ankles.



Step 5: Remove Personal Protective Equipment (PPE)

Step 5f: Remove coveralls



1. With the boots still on, step out of the coveralls. Do not use your hands to remove the coveralls from the bottom of the boots.



2. The gloved assistant discards the coveralls into the infectious waste bag

Step 5g: Perform hand hygiene

- ✓ Alcohol-based handrub solution (20-30 sec) **OR**
- ✓ Soap and water (40-60 sec) **OR**
- ✓ Chlorine solution 0.05% (when options above are not available)



Step 5h: Remove face protection

- ✓ Remove goggles from behind
 - If reusable goggles, place it in an infectious waste bag for disinfection
 - If disposable goggles, place it in an infectious waste bag for destruction

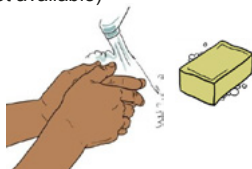


- ✓ Remove the medical mask from behind, starting with the bottom strap, and place it in an infectious waste bag for destruction



Step 5i: Perform hand hygiene

- ✓ Alcohol-based handrub solution (20-30 sec) **OR**
- ✓ Soap and water (40-60 sec) **OR**
- ✓ Chlorine solution 0.05% (when options above are not available)



Quick Tips

- Place all reusable equipment into a separate infectious waste bag for disinfection

When collecting swabs from multiple patients

- **Change gloves between each patient**
- **Wash hands between each patient**
- **DO NOT WASH GLOVED HANDS**
- **DO NOT REUSE GLOVES**

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Annex 7. SOP for preparing chlorine solutions for EVD and MVD¹⁶

Aim

- To safely prepare and dispose of chlorine solutions for disinfection and decontamination purposes during all stages of SDB procedures.
- To understand the uses and applications of chlorine solutions.

Overview

Two strengths of chlorine solution are used during SDB procedures for EVD and MVD:

- 0.5% chlorine to disinfect cadavers, body bags and objects.
- 0.05% chlorine for hand hygiene and laundry.
- All chlorine solutions should be prepared daily. Chlorine solutions to be used while securing a body for SDB should be prepared in front of the family.
- Chlorine is a very aggressive and corrosive chemical. Safety precautions must be taken when preparing and using it.
- Chlorine products need special storage and good ventilation. Temperature, sunlight, and length of storage can affect their strength.

Use and application of chlorine solutions for EVD and MVD

Chlorine is the main disinfectant used in outbreaks of viral haemorrhagic fever. It is easy to reconstitute and use. However, it is corrosive and an irritant and should be prepared and used with caution (see the section below on precautions).

When prepared and used correctly, chlorine will reduce the risk of infection and contamination by EVD and MVD.

The table indicates the recommended strength of chlorine solutions for different purposes

¹⁶ Adapted from Thomson, P., *Ebola and Marburg Outbreak Control Guidance Manual*, Version 2.0 (MSF, 2007), p. 202.

Strength of chlorine solution	Application	Uses
0.5%	12-16 litre back sprayer	To disinfect: <ul style="list-style-type: none"> • Body fluids (stool, vomit, etc.). • Dead bodies, as a replacement for ablution rituals. • Body bags after bodies have been placed in them. • Floors, walls, beds. • Other contaminated items. • PPE (boots, goggles, household gloves). • Latrines and showers. • Soil. • Beds and mattresses.
0.05%	1 litre hand sprayer, bucket with tap, bucket	To disinfect: <ul style="list-style-type: none"> • Bare hands and skin. • Plates and eating utensils. • Work clothes.

Preparing 0.5% and 0.05% chlorine solutions

Follow the instructions below to prepare solutions using HTH granules with 65-70% active ingredients, and sodium dichloroisocyanurate or NaDCC tablets (1.5 g active chlorine). Typically, large volumes of chlorine solution are needed and must be prepared daily.

1. To prepare 0.5% and 0.05% solutions with NaDCC tablets (8.68 g active ingredient, included in the IFRC SDB starter, replenishment and training kits).

Volume	0.5% solution	0.05% solution
1 litre	1 tablet	
10 litres	10 tablets	1 tablet
20 litres	20 tablets	2 tablets

Preparation:

1. Fill a non-metallic container with clean water.
2. Place the required number of tablets in the container.
3. Ensure that tablets fully dissolve before use.
4. Prepare a fresh solution daily.
5. Dispose of unused chlorine solution safely.

2. To prepare 0.5% and 0.05% chlorine solution with HTH (70% chlorine) granules.

Volume of clean water	0.5% solution		0.05% solution	
1 litre	0.5 tbsp*	7.5 g		0.7 g
10 litres	5 tbsp	75 g	0.5 tbsp	7.5 g
20 litres	10 tbsp	150 g	1 tbsp	15 g

*Tbsp = tablespoons. Use the spoons supplied with the kit or soup spoons.

Preparation:

6. Fill the container with clean water.
7. Pour in the required amount of HTH and stir.
8. Allow the white sludge to settle and use the resulting clear liquid.
9. Each time the container is refilled, discard the white sludge in a sewer or drain.

Other products

NaDCC or HTH are recommended chlorine products: both are very stable and their strength is not affected by the environment as readily as other products. However, in certain circumstances it may be necessary to prepare chlorine solutions using products other than HTH-70% or NaDCC, such as household bleach. In such cases, the strength of the product **MUST** be checked and known prior to preparation.

The strength can be tested. If you calculate the strength based on the manufacturer's declaration:

- The product must be no older than 3 months.
- The storage and transportation history of the product should be known.

Once the percentage strength of the chlorine product is known, the following formulae can be used to calculate the dilution proportions for preparing chlorine solutions.

$$\text{Quantity of chlorine product (g)} = 10 \times \frac{100}{\text{Product strength \%}} \times \text{solution strength required (\%)} \times \text{volume required (l)}$$

$$\text{Grams / litres} = \frac{\% \text{ of active chlorine in the desired solution}}{\% \text{ of active chlorine in the product}} \times 1000$$

To illustrate, the calculation below shows how to prepare 10 litres of 0.5% solution with household bleach at 4% strength.

$$\begin{aligned} \text{Quantity of household bleach (g)} &= 10 \times \frac{100}{4\%} \times 0.5(\%) \times 10 \text{ (l)} \\ &\longrightarrow 10 \times 25 \times 0.5 \times 10 \\ &1,250\text{g or } 1.25 \text{ litres of household bleach} \end{aligned}$$

Storage and precautions

Chlorine is extremely corrosive and is an irritant. Chlorine solution can weaken latex and rubber household gloves. Follow the storage and safety precautions below:

- Store chlorine products and solutions in closed plastic or plastic-lined containers.
- Store chlorine products and solutions in a cool, shaded (and ideally dark) area.
- Always wear rubber boots, an apron, and gloves when handling chlorine solutions.
- Try not to splash chlorine. Vigorous spraying of contaminated surfaces or cadavers can also create aerosols.
- Always prepare and transport chlorine with caution.
- Always prepare solutions in a ventilated area, preferably outdoors.
- Prepare solutions with clean water.
- Avoid inhaling vapours and dust (wear an appropriate mask).
- Do not mix chlorine with detergents or acid solutions.

- Full PPE should be worn whenever chlorine is employed in the context of SDB procedures.
- Avoid all direct contact of chlorine with the eyes and skin, because chlorine is very corrosive.
- When chlorine is applied on metal objects (cars, bed frames, etc.), rinse the objects at least 3 times with clean water.
- Chlorine-based products gradually lose their strength over time. Do not keep solutions for more than 24 hours.
- Dispose of excess solutions responsibly. Use a soakaway, latrine, or sewage drain.

Annex 8. SOP for SDB procedures for persons who have died from MVD and EVD (suspected or confirmed)¹⁷

STEP 1. Pre-departure: team composition

- A team leader or technical supervisor (TL/TS).
- 4 body handlers.
- 1 Type-1 hygienist (sprayer, in full PPE, to accompany the body handlers while securing the body).
- 1 Type-2 hygienist (in partial PPE, to support team members when donning and doffing PPE).
- 1 community engagement person.
- 2 drivers.
- 2 to 4 Type-3 hygienists (in partial PPE, to protect from chlorine, who stay at the base).

Note. In specific contexts and where psychosocial support is not provided by other partners, consider adding a team member responsible for psychosocial support (PSS). Role descriptions should be prepared for each job profile. They should take account of the context and the needs of the project. All team members should agree and understand their roles and responsibilities.

Burial team members should NOT wear PPE when they arrive at the place of death. PPE should only be donned at step 4.

All SDB team members should be clear on their roles and responsibilities (see Annex 4).

STEP 2. Pre-departure: assemble all necessary equipment

- See the equipment checklist in Annex 2.

STEP 3. Alert phase

When the SDB team receives a Dispatch Alert from the surveillance/ground team, they:

- Report the time when the alert was received (see annex 11).
- Obtain as much information as they can on the situation:
 - What is the name, age and sex of the deceased?
 - Where is the body located?
 - Has an investigation team validated the case? (Is it validated as meeting the case definition for EVD or MVD?)
 - Has PSS been activated?

¹⁷ Adapted from *How to conduct safe and dignified burial of a patient who has died from suspected or confirmed Ebola or Marburg virus diseases*, at: <http://www.who.int/csr/resources/publications/ebola/ppe-guideline/en/>.

- Are community engagement and accountability (CEA) personnel active in the community? Are they informed and mobilized to support the burial?
- Have the family and community agreed to an SDB?
- Has the family been briefed on the SDB process? By whom?
- Who is the family contact person? What is his or her phone number?
- Is a coffin required?
- Where is the burial site? Has the grave been dug?
- Does a religious or community leader or representative need to be present? Has the person been notified?
- Has the family made other special requests that the team should try to accommodate?
- **The team proceeds** if and when:
 - All necessary information has been received.
 - The family and the community have given their consent.
 - Coffin and burial arrangements have been agreed
 - The team and all equipment have been checked and are onboard (Steps 1 and 2).

STEP 4. Deployment. Prepare the burial with the family and evaluate risk

- Before the SDB team leaves the base, the team leader (TL) or technical supervisor (TS) must brief the team about the information gathered in Step 3 (dispatch alert).
- The SDB team arrives at the location of the death. **Team members should NOT be wearing PPE on arrival.**
- The TL/TS introduces the burial team to the family. Members of the team offer their condolences before they unload materials from the vehicles.
- The TL/TS and community engagement volunteer should ensure that the family representative and other family members have understood the SDB procedures. They must **obtain the formal agreement** of the family's representative before proceeding.
- The team explains that a diagnostic sample must be taken (if one is necessary) and asks the family for its consent to take one. They explain how the test result will be communicated to the family, and what will happen if it is positive.
- The team asks whether the family or members of the community want any specific rituals or actions to be included in the burial and explains that these will be included provided they do not put infection prevention and control (IPC) at risk. If the request cannot be accommodated due to risk of infection, this should be clearly explained to the family and an alternative solution sought. The family should also decide what to do with the personal effects of the deceased (burn, bury in the grave, or disinfect).

- The team asks family members if they would like the deceased to be covered in, or buried with, a particular piece of clothing.
- It asks whether one or two family members would like to witness the preparation of the deceased person's body for burial, on behalf of other family members. If family members wish to be involved, they are instructed in the donning and doffing process, and their role is explained clearly.
- It identifies which family members will participate in burial rituals (prayers, orations). If the family has prepared a coffin, it identifies four relatives to carry the coffin. (Once the SDB system is fully operational, this information is gathered during the pre-dispatch phase.)
- It verifies that a grave has been dug in a place agreed by local authorities and neighbours. If a grave has not been dug, it organizes the digging together with the family and community. (Once the SDB system is fully operational, this information is gathered during the pre-dispatch phase.)
- It allows the family representative and family members to take pictures of the burial and preparation for burial.
- It asks the family whether it wants to prepare a civil, cultural or religious item (such as an identity plaque, cross, or picture of the deceased) to identify the grave. (Once the SDB system is fully operational, this information is gathered during the pre-dispatch phase.)

Step 5. Preparing a burial plan, the 'green area', and preparation of chlorine solutions.

1. The team evaluates the environment.

- It locates the home or room in which the body of the deceased is lying, and identifies windows and doors that require opening to maximize light and ventilation.
- It evaluates the size and weight of the deceased in order to select a body bag of the right dimensions. It determines how many body handlers are required to move the body safely. The bag needs to be opaque.
- If a coffin is to be used, it places the coffin outside the house.
- With the family, it identifies all the rooms and annexes (bathroom, toilet) that the deceased person used, because these need to be cleaned and disinfected.
- The TL/TS prepares a plan. This sets out how the SDB process will unfold, taking into consideration the family's requests for religious or cultural rituals or activities. (See the text box in this Annex for guidance on modifying SDB procedures to take account of the deceased person's religious or cultural beliefs.)
- The TL/TS briefs the team on the SDB plan.
- The community engagement volunteer or team leader informs the family that the burial team will now don PPE.

2. The team prepares the ‘green area’ where donning and doffing take place.

- A tarpaulin is placed in an appropriate location near the entrance to the room where the deceased is lying.
- Only the team members who will wear PPE should enter the tarpaulin or ‘green area’. They should not do so until their boots have been sprayed.

3. The Type-2 hygienist (in light PPE) prepares the chlorine (0.05% and 0.5%).

- The Type-2 hygienist dons light PPE (surgical gown, gloves, mask and goggles).
- The Type-2 hygienist prepares chlorine solution in buckets, at 0.5% and 0.05% concentration, in accordance with the team’s needs.
- The Type-2 hygienist fills two backpack sprayers with 0.5% chlorine solution.
 - One is for the Type-1 hygienist (in full PPE) who, with the body handlers, will enter the room where the deceased is lying.
 - One is for the Type-2 hygienist (in light PPE) responsible for donning and doffing of team members.
- The Type-2 hygienist should be prepared to make more 0.5% chlorine if the sprayers run out.
- The Type-2 hygienist makes ready 0.05% chlorine for hand washing before donning and after doffing (in small hand sprayers or a bucket).
- The Type-2 hygienist makes sure that the different solutions are clearly distinct to avoid confusion.

STEP 6. Donning personal protective equipment (PPE).

The burial management team puts on personal protective equipment in the presence of the family, following the recommended procedure.

- Start by putting on a scrub suit and rubber boots.
- Perform hand hygiene.
- Put on face mask.
- Put on inner gloves (under cuff).
- Put on coverall suit.
- Slip thumb hole in suit over thumb (if present).
- Put on separate hood.
- Put on outer gloves (over cuff).
- Put on apron.
- Put on safety goggles (after de-fogging).
- Put on heavy-duty gloves.
- The Type-1 hygienist (in full PPE) takes up the backpack sprayer full of 0.5% chlorine solution.

- The body bag is made ready.
- 3 waste bags are made ready for (a) soiled materials, (b) pieces of the deceased person's clothing, and (c) trash collected from the deceased person's room.
- A post-mortem diagnostic sample kit (for example, oral swab) is made ready, if relevant. The team ensures that the collection tube is labelled correctly before taking it into the room where the deceased is lying. (The label should indicate the name of the deceased and the date and time of collection.)
- A plastic bucket or box with lid is made ready, in which to place the post mortem sample for transportation to the lab.
- The TL/TS and the Type-2 hygienist make a final check of PPE donned.

STEP 7. Decontamination, collection of the post mortem oral swab, and placement of the body in a body bag (by 2 to 4 body handlers and a Type-1 hygienist, all in full PPE).

- The Type-1 hygienist is the first person to enter the room in which the deceased is lying. The hygienist sprays the entranceway and the windows and doors, before opening the windows and doors to maximize light and ventilation.
- Three of the four body handlers enter the room after the hygienist has sprayed. One body handler is responsible for collecting the oral swab and brings in a **correctly labelled** swabbing kit. (This role is agreed before the team enters the room.)
- The hygienist sprays the area surrounding the deceased person with 0.5% chlorine solution but does **not spray the body**.

1. Collection of the diagnostic sample. Example scenario for oral swab (See Annex 6 as well):

- The swab taker opens the oral swab pouch **but does not remove** the swab from the packaging.
- The swab taker opens the mouth of the deceased person by placing the palm of his or her hand on the chin and pressing down firmly, opening the mouth slightly.
- The swab taker swabs the mouth. He or she:
 - Removes the swab from its packaging and inserts it into the mouth, along the side of the cheek.
 - Using circular motions, swabs the inside of the cheek to collect saliva and epithelial cells.
 - Swabs the right side.
 - Swabs the left side.
- The swab taker places the swab in the collection tube (VTM), then snaps off the end of the swab at the ribbed breakpoint and closes the tube. The hygienist sprays the tube from outside.
- The swab taker places the tube in the zip-lock bag and seals the bag. The hygienist sprays the zip-locked bag.

- A body handler in full PPE is waiting with a plastic box or bucket with a lid at the entrance of the room where the deceased is lying. The swab taker takes the zip-locked bag containing the sample and places it in **the plastic box without touching the sides of the box**.
- The swab taker returns to where the deceased person is lying and joins the other body handlers.
- The body handler who carries the plastic box containing the sealed bag with sample places a lid on the box and takes it back to the 'green area' (where the hygienist for donning and doffing is waiting). The body handler then returns to join the other body handlers in the room where the deceased person is lying.
- The Type-2 hygienist for donning and doffing, in light PPE, sprays the closed plastic box or bucket that contains the plastic bag with the sample. The sample is now ready for transporting to the designated laboratory for testing.

2. Placing the body of the deceased in a body bag.

- The hygienist/sprayer who entered the room first now sprays the area around the body of the deceased person thoroughly with 0.5% chlorine solution, and sprays the body (excluding the face).
- The body handlers place the body bag alongside the deceased person and open the body bag.
- The Type-1 hygienist sprays the inside of the body bag with 0.5% chlorine solution.
- The body handlers lift the deceased person safely into the body bag and close the bag.
- The Type-1 hygienist sprays the outside of the body bag with 0.5% chlorine solution, paying particular attention to the bag's handles.
- The Type-1 hygienist sprays the gloved hands of all the body handlers with 0.5% chlorine solution.
- The body handlers carry the body bag outside and place it in the coffin (if a coffin is required).
- If family members wish to view the deceased person:
 - The coffin or body bag should be placed in a decontaminated area. If in doubt, spray the area with 0.5% chlorine solution before placing the coffin or body bag in the viewing area.
 - A body handler, still in complete PPE, may open the body bag to expose the face of the deceased person.
 - Family members should not be allowed to touch the face or the body bag.
 - Give family members enough time to view the deceased person. Do not rush them.
- After viewing, a body handler zips the body bag closed.

- The Type-1 hygienist then resprays the closed body bag (already in the coffin if there is a coffin) with 0.5% chlorine solution.
- The Type-1 hygienist sprays the gloved hands of the body handlers with 0.5% chlorine solution.
- If there is a coffin, the body handlers close the coffin lid. Alternatively, family members wearing gloves may close the coffin lid if they wish to do so.
- The Type-1 hygienist sprays the top of the closed coffin with 0.5% chlorine solution.

When this step is completed, the coffin is decontaminated and ready to be transported.

Important notes

- At all stages of the SDB process, SDB team members should be mindful that family members are grieving. The role of the community engagement volunteer is critical during this stage.
- The body of the deceased should be manipulated as little as possible.
- The diagnostic sample that is collected must be correctly labelled and safely prepared for transportation to the lab.

STEP 8. Body handlers and the Type-1 hygienist, in full PPE, sanitize the family environment.

Soiled objects are collected, disinfected if necessary, or burned. The environment (rooms, house, bathroom) are cleaned and disinfected. All team members involved in these tasks wear full PPE.

- The Type-1 hygienist and one body handler return to the rooms used by the deceased before death.
- After spraying them with 0.5% chlorine solution, they collect any sharps that might have been used on the patient and dispose of them in a leak-proof and puncture-resistant container.
- The Type-1 hygienist then sprays, with a 0.5% chlorine solution, all rooms and annexes of the house that may have been infected by the deceased person. The hygienist pays particular attention to areas that have been soiled by blood, nasal secretions, sputum, urine, stools or vomit.
- The team cleans with water and detergent all objects (such as cups, cutlery and dishes) that may have been infected by the deceased person, then disinfects them by spraying them with a 0.5% chlorine solution.
- After spraying them with 0.5% chlorine solution, the team gathers any bed linen, clothes or other objects of the deceased that were not placed in the coffin to be buried with the deceased. They are placed in a plastic bag.

- The team makes sure the bag is tightly closed. The Type-1 hygienist sprays the outside of the bag with 0.5% chlorine solution.
- The Type-1 hygienist is the last person to exit the rooms. The hygienist sprays his or her path while leaving the building and closes the door.
- After spraying them with 0.5% chlorine solution, mattresses and bed mats that are soiled by the body fluids of the deceased person **should be burned** at a distance from the house. The team should make sure that the family have consented to the destruction of these and any other items that are burned.
- **The burial team or another designated agency must replace burned items.**

Important note

After this operation and before they remove PPE, the team should ask:

- Did the burial team disinfect or place in a disinfected bag all the deceased person's potentially infected belongings?
- Did the burial team burn the mattress and bedclothes contaminated by the deceased?
- The body of the deceased should be manipulated as little as possible.

On completion of this step, all places in the home have been disinfected.

STEP 9. Removing PPE (doffing), waste management, and hand hygiene.

- The Type-2 hygienist, in light PPE, and team leader guide the doffing process.
- 2 waste bags are made ready at the green area. One biohazard waste bag is for (single use) items that are to be destroyed or incinerated. The other is for re-usable materials which will be decontaminated at the base.
- Waste bags should not be overfilled. When bags become full, teams should use new ones.
- Using 0.5% chlorine solution, the Type-2 hygienist:
 - Sprays the front and back of every team member before they start to doff PPE.
 - Sprays outer gloves and removes them. The Type-2 hygienist places the outer gloves in the waste bag for reusables.
 - Sprays his or her own gloved hands.
 - Removes the team member's apron (avoiding contact with the front of the apron during its removal). Places the apron in the waste bag for reusables.
 - Sprays his or her own gloved hands.
 - Removes the team member's goggles slowly. Places the goggles in the waste bag for reusables.
 - Sprays his or her own gloved hands

- Removes the team member's hood (avoiding contact with the outside of the hood during its removal). Places the hood in the waste bag for consumables.
- Sprays his or her own gloved hands.
- Removes the team member's second pair of gloves. Places the gloves in the waste bag for consumables.
- Sprays the inner gloves.
- Removes the team member's coverall (avoiding contact with the outside of it). Places the coverall in the waste bag for consumables.
- Sprays his or her own gloved hands.
- Removes the team member's mask. Places the mask in the waste bag for consumables.
- Sprays his or her own gloved hands.
- Removes the team member's inner gloves. Places them in the waste bag for consumables.
- Sprays the team member's boots.
- After doffing, all team members wash their hands in a 0.05% chlorine solution.
- Having assisted all team members to correctly doff, the type-2 hygienist sprays his or her own gloved hands, and removes his or her light PPE, placing the disposable gloves and mask in a separate bag for destruction. (Do not re-open a bag containing contaminated PPE from other team members.) The hygienist places his or her surgical gown and goggles in another, separate bag for reusable items, and then washes his or her hands in a 0.05% chlorine solution.
- When all team members have been doffed, all infectious waste bags are closed and sprayed thoroughly.
 - The infectious waste bag for destruction is burned.
 - The infectious waste bag for decontamination (reusables) is taken back to base for proper disinfection/decontamination.
 - Infectious waste bags are placed in an appropriate location in a vehicle (preferably a designated box/bucket).

On completion of this step, the burial management team have removed their PPE (except their rubber boots and scrubs) and have performed hand hygiene. Waste has been collected properly and prepared for safe transportation.

STEP 10. Transporting the coffin or body bag from the house of the deceased to the cemetery.

- The team distributes household (work) gloves to all family members who will carry the coffin or body bag.
- Members of the SDB team or family members may lift and carry a coffin or body bag which has not been contaminated provided they wear household gloves.

- The rear of the pickup truck serves as a hearse.
- The coffin or body bag is placed (delicately) on the platform of the car, usually head towards the front.
- The family may need to grieve. The team should respect this. The family may wish to speak about the deceased person, or sing or chant religious songs to aid his or her departure to the cemetery.
- Only the burial management team, without PPE, has the right to sit in the cabin of the SDB vehicles. No family member should sit in the SDB vehicle cabins.
- Expressions of pain and sadness (shouting, crying, singing, weeping) should be respected.

On completion of these steps, the coffin has safely reached the cemetery.

STEP 11. Burial at the cemetery: placing the coffin or body bag in the grave.

- The body handlers or relatives of the deceased manually carry the body bag or coffin to the graveside, wearing household gloves. If the body is very heavy, a stretcher may be used.
- The team places ropes (or string or lianas) around the coffin or body bag in readiness for lowering it into the grave
- The body bag or coffin is lowered slowly into the grave, held either by ropes or by individuals wearing gloves who step into the grave.
- All bags with clothes and objects belonging to the deceased (which were not previously burnt) are placed in the grave, with the coffin or body bag.
- Teams should respect local rituals or customs to liberate the spirit of the deceased (throwing soil into the grave, opening a node of the closed coffin, pulling the ropes from the grave, etc.), so long as the body bag remains closed.
- Similarly, the team should permit members of the family to perform any rituals they desire, and allow time for prayers and funeral speeches, provided these do not put IPC at risk.

STEP 12. Burial at the cemetery: closing the grave and bringing the community together to pay its respects or pray.

- Praying together dissipates tensions and increases peace of mind.
- Respect the time required for prayers and funeral speeches.
- Family members and their assistants should be allowed to close the grave.
- A religious leader can offer spiritual consolation, lead prayers, or read scriptures.
- Special attention should be given to the first shovel of earth. In general this is done carefully around the head area.
- Place an identifier on the grave (the name of the deceased and the date). A religious symbol may also be added, if the family requests it.

- Recover all household gloves and place household gloves in an infectious waste bag for disinfection.
- The burial team attends the funeral and members of the team offer their condolences to the family.
- All members of the family and community wash their hands with disinfectant after the burial (using chlorine solution 0.05%, or an alcohol-based hand rub solution). Members of the burial team also do so.
- The burial team thanks the family.

STEP 13. Return to base; arranging to send the diagnostic sample to the laboratory.

- Post-mortem diagnostic samples are sent to the laboratory team **with appropriate documentation. Do not forget to fill in the required forms.**
- The team incinerates single-use (disposable) equipment and sharps containers at the hospital, operational base or in a place designated for safely burning such materials.
- Re-usable equipment is decontaminated and dried. It should be placed in 0.5% chlorine solution in a large bucket or container and soaked for 10 to 15 minutes. The person responsible (Type-3 hygienists at the base) should wear light PPE.
- Vehicles used for funerals must be disinfected (especially the rear area of the vehicle).
- At the end of the working day, before going off-duty, each team member should take off his or her rubber boots and disinfect them with 0.5% chlorine solution. Rubber boots should be kept at the operational base.
- Scrubs should also be removed before leaving the base. If reusable scrubs are employed, they should be removed for washing and drying. The team should organize a central washing place for this task.

Modifying SDB procedures to accommodate the religious and cultural beliefs of families of the deceased (examples).

Christian faith

- Give the family an opportunity to view the body. As an alternative to touching or bathing the deceased person, allow members of the family to sprinkle water on the body or read from the scriptures or place a verse from the Bible on the body of the deceased before closing the body bag or coffin.
- Provide a symbol of dignity, such as a white cloth.
- Invite members of the family to identify an object to bury with the deceased. It is placed with the body before closing the body bag or coffin.
- Invite a religious leader to say prayers or blessings and sprinkle blessed water on the body (without touching it).
- Identify a burial site that is acceptable to the family. Make sure the grave is appropriately labelled. Invite the family to prepare and place a personal or religious symbol at the grave, such as a photograph or a cross.
- Ask family members if they would like to prepare the grave.
- Invite family members to throw the first handfuls of soil on the grave, if this is their tradition.
- Encourage the family to plan a memorial service.

Muslim faith

- Muslims should not be cremated or placed in a body bag naked.
- Ask the family if it wishes to perform a dry ablution on the deceased person or shroud the body before burial.

Dry ablution

- Dry ablution should only be conducted by a Muslim or Muslim religious authority, in the following manner:
 - o A short prayer of intention is said over the deceased person.
 - o The Muslim team member (if present) or Muslim faith representative, in full PPE, softly strikes his hands on clean sand or stone and then gently passes his hands over the hands and then face of the deceased. This represents the ablution that would normally have been done with water.
 - o A short prayer is said over the deceased.
- The body bag is closed if shrouding has not been requested.
- A dry ablution can also be performed over the body bag containing a deceased person if a Muslim SDB team member or Muslim PPE representative is not present.

Shrouding

- The deceased person is shrouded by wrapping the body in a plain white cotton sheet and then knotting it at both ends before placing it in the body bag.
 - o Use a plain stitched white cotton sheet.
 - o The burial team lifts the body of the deceased person and places it gently on top of the shroud.
 - o The extended side edges of the shroud are pulled over the top of the body of the deceased to cover the head, body, legs and feet.
 - o Three strips cut from the same fabric are used to tie and close the shroud. One ties the head, one ties below the feet, and one ties around the middle of the body.
 - o If they are present, female members of the SDB team should shroud the body of a deceased woman or girl.
 - o The shrouded body is placed in the body bag.
 - o The body bag is then closed.

Annex 9. SOP for managing accidental injury or exposure (breach of PPE)

Definition of injury/exposure resulting in breach of PPE

1. Needle stick injury OR other puncture, laceration or abrasion caused by a potentially contaminated object.
2. Unprotected contact with the body fluids of a deceased person (saliva, blood, urine, faeces, vomit, diarrhoea), or with other potentially contaminated material (bed linen, clothing, utensils, etc.).

Aims

- To react promptly.
- To minimize the risk of infection.
- To monitor and support the person affected.

Risk

Categories of risk of transmission of Ebola or Marburg Virus following potential exposure		
Potential exposure event	Example scenario	Risk of Ebola Virus transmission
No direct contact with a patient (alive or dead) with Ebola virus disease or their bodily fluids. Breach of personal protective equipment without risk of contamination.	Breach of personal protective equipment without risk of contamination.	Low
Intact-skin-only contact with a patient (alive or deceased) who has suspected or confirmed Ebola virus disease, or with their bodily fluids.	Clinical assessment of an individual with suspected Ebola virus disease before diagnosis without appropriate personal protective equipment.	Medium
Broken skin or mucous membrane contact with a patient (alive or deceased) who has suspected or confirmed Ebola virus disease, or with their bodily fluids; penetrating sharps injury from used device; or contact through contaminated gloves or clothing.	Bodily fluid in direct contact with eyes, nose, or mouth; penetrating sharps injury from a used needle or other sharp object.	High

Adapted from Fischer et al, reference at the end of this Annex.

Procedure

STAY CALM. Try to remain calm and take the following steps:

1. Procedure in case of accidental exposure while wearing full PPE:

- (a) Stop working and inform the team.
- (b) Exit the red area.
- (c) Start doffing PPE right away.
- (d) Follow all standard procedures during doffing with extra guidance from the team leader and/or Type-2 hygienist.
- (e) The team leader should help the potentially exposed person to remain calm and focused on correctly doffing PPE.
- (f) After doffing, proceed immediately to wash the exposed area (see below).

2. Needle stick injury or other puncture, laceration or abrasion injury caused by a sharp or potentially contaminated object.

- (a) Immediately immerse the exposed site in 70% alcohol for 30 seconds; OR immerse in 0.5% chlorine solution for 3 minutes.
- (b) Thoroughly wash the affected area with soap and water.
- (c) Flush the affected area with clean running water for 30 seconds.
- (d) Apply a dressing if required.
- (e) Inform the SDB base leader and the person responsible for staff health.
 - The person should be offered Ebola vaccination (where available) if he or she is not already vaccinated.
 - If advised to do so by staff health, the person affected should also be offered HIV post-exposure prophylaxis (PEP).
 - The person affected should be offered psychosocial evaluation and support.
- (f) Complete an accident exposure/injury incident report form.
- (g) Monitor and record twice daily the temperature of the affected person for 21 days.

3. Unprotected contact with bodily fluids from a person who is or was a suspected, probable, or confirmed case of Ebola or Marburg virus disease.

(a) Contact with eyes.

- Immediately flush the affected eye with copious amounts of clean water, Ringer's lactate solution (also known as 'sodium lactate solution' or 'Hartmann's solution') or normal saline solution.

(b) Contact with the mouth or nose.

Immediately rinse the mouth or nose with 0.05% chlorine solution. **DO NOT swallow the chlorine solution.**

Rinse the mouth or nose thoroughly with clean water.

(c) Contact with broken skin.

- Rinse the affected area with 0.5% chlorine solution.
- Thoroughly wash the affected area with soap and water.

(d) Inform the burial team leader and staff health.

- The person should be offered Ebola vaccination (where available) if he or she is not already vaccinated.
- If advised to do so, the affected person should take HIV post-exposure prophylaxis (PEP).
- The affected person should be offered psychosocial evaluation and support.

(e) Complete an incident report form.

(f) Monitor and record twice daily the temperature of the affected person for 21 days.

Note.

- **Vaccination of asymptomatic people who have already been infected with Ebola-Zaire appears to lessen the severity of EVD.** If the exposed person has not been vaccinated, offer immediate vaccination, where possible.
- **Consider the exposed person to be a contact.** Monitor and record his or her temperature daily, for 21 days. Inform the surveillance and contact tracing team.
- **Identify the cause of the incident.** Take corrective action to prevent the same kind of accident from occurring again.

Management of a potentially exposed volunteer

- All details must be written down in an incident report and immediately sent to the SDB coordinator.
- The coordinator must inform the surveillance and contact tracing team.
- For the following 21 days, the exposed person is to be followed as a contact.
- The exposed volunteer should be given oral and written information on the IPC procedures to be followed in the home.
- The exposed person is given material (soap and water) for good hand hygiene in the home.
- The volunteer should not go to work (and should not work as a volunteer for the Red Cross Red Crescent during the observation period).
- The volunteer should be compensated for income lost during the three weeks of observation.

- If a vaccine is available and the exposed person is not vaccinated, he or she should be offered it immediately (within the first 24 hours). In cases of high-risk exposure, the person should be offered experimental medicine if it is available, as per current local prophylactic treatment standards..
- The exposed person should be informed about EVD symptoms and given the contact number of a medical contact person in case he or she displays relevant symptoms. Be aware that other diseases have the same clinical presentation as EVD.
- The person and family should be offered psychosocial support during the observation period and if need for a longer follow-up period.
- All volunteers must have insurance to cover medical expenses.

References

- WHO, 'Notes for the record: Technical Elements to Consider for the use of Investigational Therapeutics and Investigational Vaccine for Post-Exposure Prophylaxis for Frontline Healthcare Workers Potentially Exposed to Ebola virus in the Current Outbreak Involving the Eastern Democratic Republic of Congo'.
- Fischer, W. A., Vetter, P., Bausch, D. G. et al, 'Ebola virus disease: an update on post-exposure prophylaxis', in *The Lancet Infect Dis.* 2018 Jun, 18 (6). At: <https://www.ncbi.nlm.nih.gov/pubmed/29153266>.
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Annex 10. SOP for maintaining chlorine sprayers¹⁸

Aim

- To understand how and when to safely maintain chlorine sprayers.

Overview

- Some parts of a sprayer are metal and corrode in contact with chlorine solutions.
- The calcium in HTH granules can solidify and block a sprayer's pipes and fittings.
- Sprayers should be cleaned once every week with vinegar.

Materials needed

- Clean water.
- Vinegar (undiluted).
- Tooth brush.
- Small plastic container.

Procedure

1. Wear gloves. Empty the sprayer of any remaining chlorine solution. Dispose of the solution in a soak away pit, sewer, or toilet.
2. Rinse the sprayer with clean water. Rinse the inside of the pipes by spraying clean water through the sprayer.
3. Empty the water out and dispose of it in a soak away pit, sewer, or toilet.
4. Dismantle the main parts of the sprayer: pipes, nozzles, etc.
5. Submerge all the parts in a container of pure vinegar.
 - (a) Leave to soak for 5 minutes.
 - (b) Brush with a toothbrush.
6. Fill 1/3 of the sprayer's reservoir with clean water. Then:
 - (a) Add 1 litre of vinegar.
 - (b) Shake.
 - (c) Leave to soak for 15 minutes.
7. Examine the sprayer parts and fittings for damage. Replace or repair as necessary.
8. Reassemble the sprayer. Spray the vinegar solution on the outside of the sprayer to remove any calcification.
9. Empty out any remaining vinegar solution.
10. Rinse the sprayer with clean water. Rinse the inside of the pipes.
11. The sprayer is ready to be refilled with chlorine solution.

Frequency of cleaning

- Rinse the sprayer every 2 days with clean water.
- Clean the sprayer with vinegar once every week, following the directions above.

¹⁸ Adapted from Thomson, P., Ebola and Marburg Outbreak Control Guidance Manual, Version 2.0 (MSF, 2007), pp. 202-203.

Annex 11. Sample SDB Reporting Template

NOTE TO USERS. Modify aspects of section 6 to address specific cultural or religious needs of the population being served. Failed burials must be reported to surveillance.

1. General Information						
Name of the SDB volunteer or team reporting:			SDB team location/base:			
Name of the SDB team supervisor:			Date and time SDB alert received: _____/_____/20____ H: ____ Min			
Date and time of departure from the base: _____/_____/20____ H: ____ Min			Date and time when SDB completed: _____/_____/20____ H: ____ Min			
SDB team members (check all that were present for the SDB):						
Supervisor/TL <input type="radio"/>	Body handlers <input type="radio"/>	Type-1 Hygienist <input type="radio"/>	Type-2 hygienist <input type="radio"/>	CEA <input type="radio"/>	PSS <input type="radio"/>	Others <input type="radio"/>
Specify if others:						
2. Case identification						
Unique identification #:			First and last name of the deceased:			
Health zone of collection:			Health area of collection:			
Locality of collection:			Collection site (check):			
			Community <input type="radio"/>	Hospital <input type="radio"/>	Ebola facility <input type="radio"/>	
Name of the next of kin:			Contact number of the next of kin:			
3. Outcome (check)						
Successful SDB (completed according to SOPs)			<input type="radio"/>	Proceed to section 4		
Successful SDB (completed but with issues)			<input type="radio"/>			
Unsuccessful (SDB not completed)			<input type="radio"/>	Jump to section 5		
Other			<input type="radio"/>			
4. Burial site						
Health zone of the burial:		Health area of the burial:		Locality of the burial:		
5. Community engagement and feedback (information received from family/community during the SDB process):						
Rumours or misinformation:		Questions raised:		Comments made:		

COMPLETE SECTION 6 FOR ALL SDB ALERTS THAT RESULTED IN FAILURE, VIOLENCE OR OTHER ISSUES													
6A. Incident reporting (for all failure, violence, incomplete, etc.)					6B. Outcome: Did the SDB team complete...								
Tribe/ethnicity/ community of the deceased:	Permission granted by the family?		If permission refused, why?		Post-mortem sampling?		YES <input type="radio"/>	NO <input type="radio"/>					
	YES <input type="radio"/>				Body secured?		YES <input type="radio"/>	NO <input type="radio"/>					
	NO <input type="radio"/>				Safely buried?		YES <input type="radio"/>	NO <input type="radio"/>					
					Site decontaminated?		YES <input type="radio"/>	NO <input type="radio"/>					
6C. Type of incident (choose all that apply, circle F if event occurred with family, C if with community members):													
Body still there on arrival?		Refused SDB from beginning		Consent revoked during process		Threats		Violence		Body removed from body bag		Other (describe)	
YES NO		F C		F C		F C		F C		F C			
When did the incident occur?					Before dressing in PPE		YES <input type="radio"/>		NO <input type="radio"/>				
					While securing the body		YES <input type="radio"/>		NO <input type="radio"/>				
					While transporting the body		YES <input type="radio"/>		NO <input type="radio"/>				
					During the funeral		YES <input type="radio"/>		NO <input type="radio"/>				
					After the funeral		YES <input type="radio"/>		NO <input type="radio"/>				
6D. Conduct of the SDB: had the family...													
Been accompanied by a member of the Ebola response before the arrival of SDB team?							YES <input type="radio"/>		NO <input type="radio"/>				
Received an explanation of the SDB process?							YES <input type="radio"/>		NO <input type="radio"/>				
Understood the SDB protocol and the reasons for an SDB?							YES <input type="radio"/>		NO <input type="radio"/>				
Agreed to have an SDB?							YES <input type="radio"/>		NO <input type="radio"/>				
Been invited to nominate a person to assist in the SDB process (in full PPE)?							YES <input type="radio"/>		NO <input type="radio"/>				
Been invited to put objects of the deceased in the coffin?							YES <input type="radio"/>		NO <input type="radio"/>				
Agreed to the location of the burial?							YES <input type="radio"/>		NO <input type="radio"/>				
Agreed to the route taken with the body to the cemetery?							YES <input type="radio"/>		NO <input type="radio"/>				
Provided guarantees of the safety of the SDB teams, with the local authorities?							YES <input type="radio"/>		NO <input type="radio"/>				
Been invited to choose a spokesperson to say the last words?							YES <input type="radio"/>		NO <input type="radio"/>				
6E. Description of events and actions. Please describe what happened that contributed to the burial failure or challenge.													

Annex 12. Sample SDB team training agenda

Example of a basic 3-day SDB training curriculum	
Day 1	
Time	THEMES
15 minutes	Registration of participants.
30 min.	Introductions. Expectations.
45 min.	Basic information on EVD and MVD.
30 min.	Response pillars. The role of the Red Cross Red Crescent. Responding to an outbreak.
45 min.	Introduction to SDB.
120 min.	Basics of infection prevention and control (IPC): water, hygiene and hand washing, PPE, waste management, disinfection and decontamination. Operational base, decontamination base.
45 min.	Preparation of chlorine solutions.
15 min.	Summary and evaluation of day 1.
Day 2	
15 min.	Recap of Day 1.
90 min.	Secure and dignified burials. SOPs – step by step.
30 min.	Diagnostic sampling (if applicable in the context).
60 min.	Community engagement and accountability (CEA). Its role and importance for SDB.
120 min.	Personal or individual protective equipment (PPE). Donning and doffing practice.
45 min.	Decontamination and disinfection of households.
15 min.	Summary and evaluation of day 2.
Day 3	
15 min.	Recap of day 2.
60 min.	Basics of psychological first aid.
180 min.	Simulation: performing SDB after a death in the community, including first aid for accidental breach of PPE.
45 min.	Volunteer management. Health and well-being. PSS, vaccination, and staff health considerations.
60 min.	Q&A and recap. Next steps.

Annex 13. Local burial and mourning practices: open-ended questions

Introduction [to be read aloud to the respondent].

“I would like to discuss a sensitive topic with you. It is important for us to understand the situation here in [location of outbreak]. Remember, your answers are confidential and there are no good or bad answers. If you do not wish to answer any of these questions, that is completely fine. If you would like to pause or take a break at any time, please let me know. Thank you for your help and for answering these questions.”

Question	
1	When a person dies, who is notified of the death? Who needs to be informed first?
2	How much time passes between a death and a burial or funeral?
3	Where is the body kept before a burial or funeral? (Prompt: at home, at a funeral home, in a hospital or health centre.)
4	How is the body prepared for burial/funeral? Who prepares the body? (Prompt: washing, dressing, decorating, spraying perfume, touching.)
5	What happens during a normal burial or funeral process? (Prompt: what happens before, during and after the body is laid to rest?)
6	Who attends the burial or funeral?
7	How is the body handled during the burial or funeral process? Who handles the body? (Prompt: include physical contact; ask about relationships to the deceased.)
8	Would it be acceptable to carry out [type of post-mortem sampling] on a deceased person?
9	What, if anything, is the body buried in? (Prompt: coffin, shroud, leaves, remains of the hut of the deceased.)
10	Are burials or funerals different for different people? If so, how? (Prompt: men/women, children, people of social standing, different ethnic or religious groups, pregnant women.)
11	Where are people usually buried? Why? (Prompt: the person's place of origin or home town, even if it is a different village or town.)
12	If a person's body needs to be moved elsewhere for burial, how is it moved? (Prompt: when, by whom, what mode of transport, what happens along the way?)
13	Separate to the burial/funeral itself, is it important to hold mourning rites or practices? What are they? Who must follow them? How long do they last? (Prompt: include physical contact.)
14	What happens to the possessions of the deceased?
15	Is food shared among people at the burial or funeral?
16	Do friends and family have physical contact with the deceased during the burial or funeral?
17	Do friends and family have physical contact with each other during the burial or funeral? (Prompt: hug, shake hands, kiss.)

Question	
18	What are the consequences if burial or funeral practices are not correctly followed? (<i>Prompt: spiritual, social, economic, legal, land-related consequences.</i>)
19	In certain cases, is it acceptable to alter or suspend normal burial or funeral practices? (<i>Prompt: if so, in what situations, how are practices changed?</i>)
20	Have you heard the term ‘safe and dignified burial’? If yes, where did you hear it? What do you think or know happens during such a burial? (<i>If the respondent doesn’t know what a safe and dignified burial is, explain.</i>)
21	Is this kind of burial acceptable to you or your community during an Ebola/Marburg outbreak? Why or why not?
22	If normal burial practices need to be altered or suspended for some reason, how should this be decided or negotiated? Who should be involved in the decision?
23	In your view, what can be changed to make a safe burial acceptable or more acceptable to you or your community? (<i>Prompt: who should be involved? What is each person’s role?</i>)
24	What is your ethnicity, tribe, or religion?
25	Do you feel that other members of your community have similar burial rites?
26	Would you like to share any other comments you have? Do you have any questions?

Thank the respondent for his or her time and participation.

Adapted from: Bedford, J., SSHAP – Local Burial and Mourning Practices: Open-Ended Questions (UNICEF, IDS and Anthrologica, 2018).

Annex 14. Guide for the establishment and management of an operational base for safe and dignified burials

1. General considerations

An operational base for SDB operations establishes structures, materials, equipment and mechanisms that enable SDB teams to react promptly and securely to SDB alerts. An SDB operational base:

- Creates the space and facilities required for infection prevention and control (IPC).
- Reduces the risk of infection for volunteers and others involved in the response.
- Enables SDB teams to react quickly and remain permanently on alert.
- Provides better working conditions for operational teams.

While a specially constructed operational base has added value and should be considered for any MVE or EVD outbreak that is not contained rapidly, SDB operations can begin safely with minimum facilities. A temporary operational base can be created at an existing Red Cross Red Crescent facility such as a branch office, provided a nearby health facility or ETC agrees to safely incinerate contaminated waste created during the SDB process and a restricted-access space is established for decontamination of vehicles and reusable materials.

2. Establishing an operational base

2.1 Site selection

The site of an operational base must meet certain requirements:

N°	Considerations	Needs of an operational base
1	Legal and administrative	A title deed or lease agreement; written authorization from the authorities; a commitment from the community that houses the structure.
2	Site dimensions	The site should have a minimum surface area of 600 m ² (in other words, at least 20 m by 30 m).
3	Access	Access must be easy. There must be a fairly wide and well-maintained access road.
4	Location	The base should ideally be far from homes and in a secure area.
5	Drainage	The site must possess a wastewater and stormwater drainage system. It should have a natural slope that promotes drainage or it should be possible to create a slope.
6	Access points	The site should possess two separate entrances for vehicles and a third entrance for pedestrians.

2.2. Organize the base into three risk zones

The base should create three zones based on risk:

1. Red zone: high-risk.
2. Transit zone: medium-risk.
3. Green zone: low-risk.

The red and green zones must be clearly separated by the transit zone.

The table below sets out the characteristics and different functional units of each zone.

N°	Zones	Characteristics	Functions
1	High-risk / red zone	<ul style="list-style-type: none"> • Direct contact with materials likely to be contaminated. Activities include decontamination after SDBs, cleaning of recyclable materials, destruction of single-use materials. • Decontamination is the primary activity. • Protective clothing and maximum protection are mandatory. • Access is restricted to authorized persons, notably returning teams and their vehicles and Type-3 hygienists. • The zone is installed on a raised area with a slight slope to facilitate water drainage. • Sufficient water is available to decontaminate vehicles and reusable PPE/ materials. 	<ul style="list-style-type: none"> • Control point (temperature measurement, hand washing, foot disinfection). • Handwashing stations and garbage bins installed in all areas frequented by volunteers. • A vehicle decontamination area. • An undressing and decontamination area for teams. • A waste area with incinerator. • A laundry room with drying area. • Water points.
2	Low-risk / green zone	<ul style="list-style-type: none"> • It has no direct contact with contaminated materials. • It includes support areas for the red zone (dressing, laundry, storage, offices). • It has facilities for dressing: work clothing, boots, scrubs, gloves. • Authorized persons include logistics, cleaning staff, SDB volunteers, coordination staff, visitors, etc. • It is larger than the red zone, because it accommodates all units, including parking facilities for vehicles after decontamination. • Its entrance is separate from the entrance to the red zone. • It shelters the water supply system. • Its location is such that no water from the red zone runs off into the green zone. 	<ul style="list-style-type: none"> • Living or resting area for volunteers. • Volunteer dressing area. • Storage room for materials and equipment (warehouse). • Toilets. • Water points. • Workspaces/desktops. • Control point (temperature measurement, hand washing, foot disinfection).
3	Medium-risk / transit zone	<ul style="list-style-type: none"> • Three spaces must be considered as medium risk areas: <ul style="list-style-type: none"> (1) The space between the undressing area and the dressing area. (2) The space between the vehicle decontamination area and the vehicle exit point from the red zone. (3) The transmission points for recycled materials between the drying area and the small warehouse. 	<ul style="list-style-type: none"> • Control point (temperature measurement, hand washing, foot disinfection). • Transit space for crew members. • Vehicle passage space. • Transmission space for recycled materials

2.3 Description of the different units of the operational base

An operational base includes a number of units that operate in a coordinated manner. They are placed in the three zones according to the level of risk that is associated with their work. The characteristics of these units are set out in the table below.

2.3.1. High-risk zone (red zone)

N°	Unit	Functional sub-unit	Characteristics
1	Control point	Handwashing station.	<ul style="list-style-type: none"> Mandatory passage for all teams returning from the field. Supervised by hygienists. Materials and inputs required: 0.05% chlorine solution, pedal kit at the entrance to the undressing area.
		Foot bath.	<ul style="list-style-type: none"> Placed at the entrance to the undressing room. Filled with sand or gravel. 0.5% chlorine solution.
		Boot removers.	<ul style="list-style-type: none"> Placed at the entrance of the undressing area.
2	Waste zone	Storage shed for waste awaiting incineration.	Stores waste from the field, as well as from the red and green areas.
		Garbage can for solid waste.	Installed at the entrance of the undressing area.
		Incinerator.	<ul style="list-style-type: none"> Located at a distance from neighbours and living areas. Has a minimum 3 m³ burning pit. Must have a metal or concrete surround (a Montfort made of baked bricks or metal) to control smoke release.
		Necessary materials.	<ul style="list-style-type: none"> Workers' gloves. Lighter fluid or other fuel to start fire.

>> Continuation of the table on page 116

N°	Unit	Functional sub-unit	Characteristics
3	Vehicle decontamination area	A 40 m ² concrete or gravel slab.	<ul style="list-style-type: none"> • Used for decontaminating and washing vehicles. • Must be a raised area with a slight 5% slope (either concrete or gravel) for drainage. • Must be able to accommodate at least two vehicles simultaneously while giving hygienists room to move around. • Must be walled to prevent splashing and water flow. • Must have a channel to collect and drain runoff, preventing pooling of stagnant water.
		Water source to supply the base.	<ul style="list-style-type: none"> • Must be sufficient to decontaminate and wash vehicles and supply other needs. • Must include three forms of water source (clean water; and chlorine solutions at 0.05% and 0.5%). • The location of tanks for chlorinated water will depend on the base's water consumption.
		Materials for decontamination area.	<ul style="list-style-type: none"> • Sprayers: to decontaminate vehicles and materials. • Compressors and accessories: a compression machine for washing vehicles, electrical extension, piping. • Plastic containers: drums, buckets, basins. • Washing tools: cloths, brushes, etc. • Soap.
4	System to collect greywater	Piping system for soiled water.	<ul style="list-style-type: none"> • A secure circuit should collect contaminated water from washing areas and pipe it to disposal wells. • Trenches should be 40 cm wide by 60 cm deep. • PVC pipes (diameter 125 mm) and gravel should be laid at a 20% slope towards the runoff well. • Wells should be 2 m in diameter and 3 m deep. (Consider soil type and groundwater table.)

>> Continuation of the table on page 117

N°	Unit	Functional sub-unit	Characteristics
5	Team undressing and decontamination area	Hand-washing station.	<ul style="list-style-type: none"> Chlorinated solution of 0.05%. A hands-free washing station (with foot-operated taps) should be established at the entrance to the undressing area.
		Footbaths.	<ul style="list-style-type: none"> There should be a minimum of two footbaths (one at the entrance to and one at the exit from the transit zone). Footbaths should be filled with granite or gravel. They should contain 0.5% chlorine solution.
		Boot removers.	<ul style="list-style-type: none"> These should be placed in the undressing zone after the first foot bath.
		Garbage bags and bins.	<ul style="list-style-type: none"> The number of garbage buckets with plastic lids and bags should be sufficient to temporarily store all the clothing removed by team members. Bins should be located before the 2nd foot bath.
		Sprayers.	<ul style="list-style-type: none"> To decontaminate team members.

>> Continuation of the table on page 118

N°	Unit	Functional sub-unit	Characteristics
6	Laundry	A 3 m ² slab or gravel area.	The hygienists' work area. This should be a raised concrete or gravelled area, with a slight 5% slope to the drainage system.
		Shed on the slab.	Covered and partially fenced, with shelves to store materials.
		Water sources (2 taps).	Clean water and two strengths of chlorine solution.
		6 plastic containers of 50L, 80L, 100L.	<ul style="list-style-type: none"> • A 100L container for 0.05% solution. • A 100L container for 0.5% solution. • Two 100L containers for rinsing water. • Two 80L basins for detergent products.
		Washing tools.	<ul style="list-style-type: none"> • Cloths, brushes, etc.
		Soap.	<ul style="list-style-type: none"> • Soap, powdered detergent, etc.
7	Drying area	Drying area for reusable aprons, scrubs.	Ropes.
		Goggle drying area	Perforated wooden board.
		Boot and household glove dryer.	Wood or metal posts.
8	Hygienists' store	Covered and fenced shed.	Shelving units for storage.

2.3.2. Low-risk / green zone

This zone must be larger than the red zone and accommodates all units that provide significant support to red zone activities and on-duty SDB teams. It houses the operation's offices, a water supply system, and materials and inputs for maintenance. Garbage bins and hand-washing kits should be placed in easily accessible locations and used frequently by volunteers on the base. The green zone houses the following functional units:

N°	Units	Functional sub-units	Characteristics
1	Volunteers' living areas	Rest space.	<ul style="list-style-type: none"> Volunteers wait for alerts in this area. It must be sufficiently spacious. It must contain: chairs and tables, sufficient drinking water, basic equipment (fans, kettles, AM/FM radio, telephone charging sockets, etc.).
		Dressing area.	<ul style="list-style-type: none"> Located next to the undressing room and close to the entrance to the base. Equipped with shelves and lockers (one per volunteer), a mirror, and a dressing poster. Designed to meet the needs of both male and female volunteers.
		Toilet.	<ul style="list-style-type: none"> Located close to the waste area. Must have sufficient water supply. Requires a good sewage disposal system. Must meet the needs of both female and male volunteers. Equipped with kettles. Must be easy to maintain. Must have maintenance equipment and materials.
		Small storage area.	<ul style="list-style-type: none"> Stores materials removed from stock (materials returned from the field, recycled materials). Located close to the drying zone.
		Office.	<ul style="list-style-type: none"> This is the workspace for volunteers. Located in a position that allows a good view of the entire operational base. Has work desks for the management team (supervisors, delegates, focal points and others). Is appropriately equipped with furniture, computer equipment, photocopier, means of communication, etc.
		Meeting space.	<ul style="list-style-type: none"> Must be sufficiently spacious. Has necessary support equipment for meetings and presentations. Used for meetings and training sessions.

>> Continuation of the table on page 120

N°	Units	Functional sub-units	Characteristics
		Store/warehouse.	<ul style="list-style-type: none"> Attached to the office (outside or inside). Contains storage facilities (shelves, cupboards) and essential furniture (desk table, chairs). Has logistics management tools (stock sheet, delivery notes, exit notes, etc.).
2	Stormwater and waste water management system	Wastewater drainage system (sewers).	<ul style="list-style-type: none"> PVC piping.
		Wastewater drain away pit.	<ul style="list-style-type: none"> Located downstream from wastewater collection points. Must permit good infiltration of collected water.
		Runoff water drainage circuit.	<ul style="list-style-type: none"> Set up a simple system for draining rainwater in the open air. Construct it from reinforced concrete; make a trapezoidal cross-section (gutter). Ensure no water runs off from the red zone into the green zone.
3	Water supply and distribution system	Water reserve, water tower.	<ul style="list-style-type: none"> Construct a rainwater recovery system (impluvium). Dig a well or borehole with a high flow rate (sufficient to supply the entire network). Connect the centre to the national water network. Install a water tank with capacity to contain 48 hours of water (if the public water network is unreliable).
		Distribution circuit with water points.	<ul style="list-style-type: none"> Lay pipework and taps. Establish at least two water points (one in the rest area, one near the toilet).
4	Entry and decontamination control points	Control point.	<ul style="list-style-type: none"> Staffed by security guards. Requires: thermo-flash, separate registers for volunteers and for visitors.
		Hand washing.	<ul style="list-style-type: none"> Hand washing kits are to be placed wherever necessary (at the entrance, in front of the office, in the store, toilets, rest area, etc.).

2.3.3. Medium-risk (orange) zone

The orange zone includes three spaces, which are located respectively between the undressing area and the dressing area, between the vehicle decontamination area and the red zone vehicle exit point, and at the recycled material transmission point between the drying area and the small store.

N°	Units	Characteristics
1	Transit area for team members	<ul style="list-style-type: none"> Located between the undressing area and the dressing area. Materials required: medical clogs, garbage cans, foot baths.
2	Transit area for vehicles	<ul style="list-style-type: none"> Vehicle crossing point between the red and green zone. Has a hygienist with a sprayer loaded with 0.5% chlorine solution.
3	Transit area for reusable items	<ul style="list-style-type: none"> Located between the drying zone and the small warehouse. Has a table placed between the two zones.

Flow and movement of personnel and vehicles in an operational base

- For both vehicles and people, the main entry point into an operational base is via the low risk area (green zone). Pedestrians must use the gate and vehicles must disembark their passengers outside to allow them to pass through the checkpoint.
- Vehicles coming from the field, which contain SDB teams and contaminated equipment, must access the base exclusively through the access door to the high-risk area (red zone). No pedestrians may enter through this vehicle gate.
- Team members must follow the circuit to properly enter and leave the red zone.
- The driver must remain in his or her vehicle during the vehicle decontamination process if the time required does not exceed 20 minutes. If the time required exceeds 20 minutes, he or she must get out of the vehicle and stay in the waiting area provided for this purpose. The driver's shoes must be decontaminated before getting back into the vehicle at the end of the process.
- Hygienists engaged in activities in the red zone are the only persons authorized to access the red zone through the dressing area (the transit area and the undressing area). As they pass, after putting on their work clothes, they use a sprayer filled with 0.5% chlorine solution to disinfect the dressing area, the crew members' transit area and the undressing area. They recover all materials to be reused and all waste to be destroyed. After completing their activities, they access the green zone, like all the other crew members, by the same route (undressing → transit area → dressing area) leaving their clothes and boots in the undressing area.

Forbidden movements in the operational base:

- Vehicles that are returning from an SDB activity may not enter through the green zone.
- Team members returning from an SDB activity may not enter through the green zone.
- Neither vehicles nor pedestrians may go from the green zone into the red zone through the vehicle entrance.
- Only Type-3 hygienists engaged in decontamination activities may enter the red zone through the dressing and undressing areas. No other person may proceed from the green zone into the red zone.
- No vehicle or person may leave the base through the entrance to the red zone.

3. Management of an operational base

Management of an operational base involves the full range of management tasks (human, material and financial resources). This Guide focuses on management of: field return teams; hygienists' work in the red zone; waste from the field; and activities in support of field teams.

3.1 Preparation and storage of chlorine solutions: See Annex 7.

3.2 Management of SDB teams on their return from the field

1. Vehicles that return from the field with SDB teams enter via the access gate to the red zone (Gate 1).
2. Vehicles are parked on the decontamination platform.
3. Volunteers exit the vehicles and proceed immediately to the access door of the undressing unit.
4. After dipping their feet in the foot bath (containing a 0.5% chlorine solution), they remove their boots with boot pulls at the entrance. Once inside the undressing room, they remove their scrubs.
5. They wash their hands with a 0.05% chlorine solution.
6. They pass through to the dressing room where they recover the clothes they left in the morning.
7. They access the green area where they wait for the next alert.

3.3. Management of drivers who return from the field

1. Once the SDB teams have left the vehicles, the driver exits the vehicle too and waits in a designated area while the vehicle is decontaminated.
2. When decontamination is complete, the driver gets back in the vehicle after the hygienist has decontaminated his or her shoes (safe boarding).
3. The driver then drives the vehicle through the crossing point after a final decontamination of the wheels in two steps: first the front wheels are decontaminated on the line that separates the red and green zones, then the rear wheels.

3.4. Decontamination of the vehicles

- Type-3 hygienists in partial PPE are responsible for decontaminating vehicles.
- They require: PPE, and a sprayer filled with 0.5% chlorine solution.
- Procedure for donning partial PPE: See Annex 5.

The lead Type-3 hygienist must ensure that decontamination teams have properly followed all donning steps.

Disinfection of a vehicle after transporting a body

The Type-3 hygienist must:

1. Wear the appropriate PPE.
2. Rinse the interior of the vehicle where the body was transported with a 0.5% chlorine solution.
3. Spray the outside of the vehicle with a layer of chlorine solution and wait for 10 minutes.
4. Rinse with clean water and allow the vehicle to air dry. Make sure to rinse thoroughly because the solution will corrode the vehicle.

3.5. Decontamination of reusable materials

- The Type-3 hygienist, wearing partial PPE, takes each bag of disposable PPE to the waste area for incineration.
- Decontaminating reusable PPE:
 - Reusable material to be disinfected after every SDB activity includes household gloves, heavy-duty aprons, goggles, boots, and scrubs.
 - The type-3 hygienist wears disposable gloves, scrubs (top and bottom) and boots. He or she must rinse his or her gloves with 0.5% chlorine between each step (using chlorine solution prepared daily).

3.5.1. Decontamination of goggles

- Soak the goggles in a 0.5% chlorine solution for a few seconds, making sure that all parts of the goggles are completely immersed in the solution.

- Rinse with clean water.
- Hang to dry, preferably in the sun.

3.5.2. Disinfection of work clothes (scrubs)

- Soak work clothes in 0.05% chlorine solution for 30 minutes.
- Rinse twice with clean water.
- Wash with soap or detergent and water.
- Rinse with clean water.
- Hang to dry in the sun.

3.5.3. Cleaning and disinfecting rubber boots

- Soak the boots in a 0.05% chlorine solution for 30 minutes.
- Rinse twice with clean water.
- Dry upside down on sticks sunk into the ground.

3.5.4. Disinfection of reusable gloves

Household and heavy-duty gloves can be reused after cleaning and disinfection.

- Soak them in a 0.05% chlorine solution for 30 minutes.
- Rinse twice with clean water.
- Fill the gloves with water and squeeze to check for leaks. Destroy any gloves with leaks or holes.
- Dry on sticks sunk into the ground.

Note. Chlorine solutions can weaken both the gloves that are being decontaminated and the gloves worn by the Type-3 hygienist. Gloves should be checked regularly for damage and the person wearing them should leave the high-risk area if they are broken. Rubber household gloves should be checked after cleaning and before reuse.

3.5.5. Maintaining the sprayers

Sprayers used for chlorine solutions must be maintained regularly. Some parts of the sprayers are metallic and corrode on contact with chlorine solutions. Calcium in HTH granules can solidify and block pipes and fittings. See Annex 10 for instructions.

3.6. Management of single-use waste, including contaminated PPE

- The Type-3 hygienist in charge of waste disposal must quickly transport waste bags to the waste area.
- Bags must be incinerated without opening them.
- Accelerators like gasoline can be used to improve the burning of the contaminated materials.

3.7 Other aspects of management

- Other aspects of management need to be undertaken, including management of human, material and financial resources.
- It is essential to promote team spirit, good communications and motivation.
- Team supervision is critical to maintaining team performance and safety.

Adapted from: Guinea Red Cross and IFRC, *Guide d'implantation et de gestion d'une base opérationnelle Croix-Rouge Guinéenne dans le cadre de la riposte contre la maladie à virus Ébola : Destiné aux responsables des opérations de lutte contre la MVE du niveau central au niveau du chef de base* (2015).



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