Disposal of dead bodies in emergency conditions

Dealing with the dead is one of the most difficult aspects of a disaster reponse. This is not so much due to health-related risks, which tend to be negligible, but to the psychological, social and political impact of the trauma. This technical note outlines the health implications of dealing with mass fatalities and priority actions that need to be considered when planning for the collection and disposal of the dead.

Health risks from mass fatalities

Contrary to common belief, there is no medical evidence to suggest that large numbers of dead bodies, in themselves, cause disease or epidemics. Human remains originating from traumatic events (natural disasters, accidents or warfare do not represent a health hazard. The only situation where there is a health risk is when communicable disease has been the cause of the fatalities.

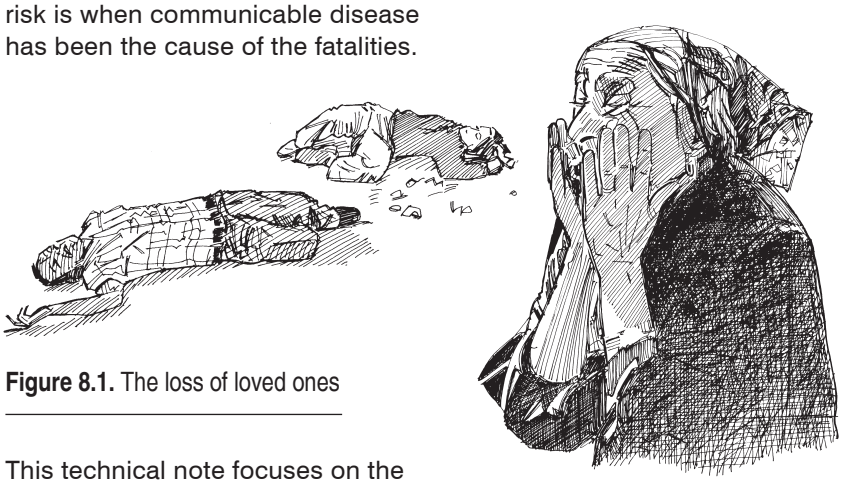


Figure 8.1. The loss of loved ones

This technical note focuses on the priority tasks for dealing with dead bodies not caused by medical epidemics.

Much of the information given in this note is draws on Morgan et al. (2006). It is strongly recommended that, if you are likely to be involved in the disposal of dead bodies, you should consult this text first.

Priority tasks

Beyond injury, the primary health concern for survivors of a disaster is the psychological trauma of the loss of loved ones and of witnessing death on a large scale (Figure 8.1). For this reason it is important to proceed with the collection of dead bodies as soon as possible, but it is not necessary or advisable to hurry their disposal.

Deal with the living first

In all cases, priority should be given to the living. Search and rescue should not be held up because of concerns about the dead, nor should health care resources (e.g. ambulances and hospital beds) be used to deal with them.

Protect the workforce

Body recovery often takes place spontaneously by groups from the surviving community, volunteers, and search and rescue teams. Recovery teams should wear protective equipment such as gloves and boots. They should also be encouraged to wash their hands with soap after handling dead bodies.

Recovery teams also face risks from working in dangerous environments. Try to vaccinate workers against tetanus and ensure first aid and medical treatment is available in case of injury (Figure 8.2).

Figure 8.2. A first aid kit

The handling of large numbers of dead bodies can have a serious impact on the mental health of members of the recovery team. The effects can take a variety of forms and may occur immediately after the event or much later. Health services must be prepared for this and deal with it as and when it arises (Figure 8.3).

Figure 8.3. Caring for the recovery team

Body recovery

Bodies should be recovered as quickly as possible, but without interrupting other activities aimed at helping survivors. Rapid recovery aids identification and reduces the psychological effects on survivors. Bodies should be placed in body bags. If these are not available, use plastic sheets, shrouds, or other locally-available materials. Separate body parts such as arms or legs should be treated as individual bodies. Do not try to match severed parts at the disaster site.

Figure 8.4. Wrapped bodies

Personal belongings should be kept with the body. They will aid identification and may have legal and psychological implications for survivors.

Keep details of the place and date when the body was found, using a form similar to that shown in Box 8.1.

Give the body a unique reference number, copy it on to waterproof labels and attach these to both the body and its container. Labels should not be removed until the body has been collected by relatives.

Temporary storage of dead bodies

In warm climates, a body will begin to decompose within 12 to 48 hours. If possible, keep the body under refrigeration between 2°C and 4°C, at least until it has been formally identified. A refrigerated transport container used by shipping companies can store up to 50 bodies. Where this is not possible, temporary burial is the next-best option. Dig a trench 1.5m deep, at least 200m from any water source and at least 2m above the water table. Lay the bodies in a single layer leaving 0.4m between each (Figure 8.5). Clearly mark the position of each body at ground level with its unique identification number.

Identification and release

As bodies decompose quickly, especially in warm climates, they should be identified as soon after recovery as possible. Make a photographic record of the body (Box 8.2). Clean the body sufficiently to allow key features to be visible and make sure the identifying label is visible in each photograph. Leave clothing on the body and store it with all belongings. Complete an identification form such as that in Annex 1 of Morgan (2006).

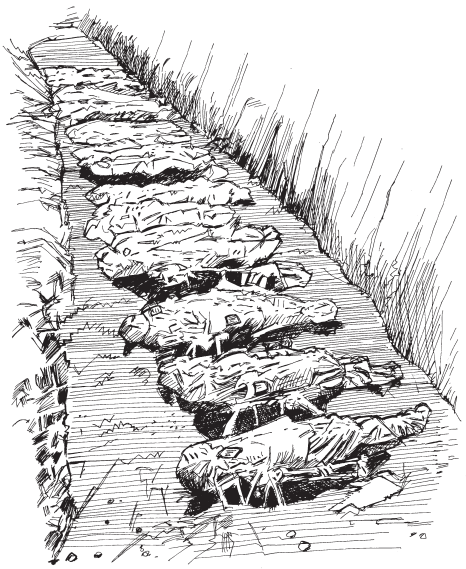


Figure 8.5. Preparing for temporary burial

Box 8.1. Unique reference numbering for dead bodies

Each body or body part *must* have a unique reference number. The following is recommended.

PLACE + RECOVERY TEAM/PERSON + BODY COUNT

For example:

Colonia San Juan - Team A–001

or:

Chiang Mai Hospital - P. Sribanditmongkol–001

PLACE: Where possible, all bodies should be assigned a unique reference number indicating place of recovery. If recovery place is unknown, use instead the place where the body was taken for identification/storage.

RECOVERY TEAM/PERSON: Person or team numbering the body.

BODY COUNT: A sequential count of bodies at each site (e.g., 001 = body number one).

Note: Details about where and when the body was found and the person/organization who found it should also be recorded on the Dead Bodies Identification Form.

Source: Morgan et al. (2006)

Identifying a loved one from amongst a mass of dead bodies is extremely distressing. Try to minimize emotional stress. First, use good quality photographs as the preliminary phase of the identification process. Visual identification is the simplest method, but not always the most reliable, particularly if the body is disfigured or has begun to decompose. Always cross-check identification by using personal belongings or special identifying marks.

Bodies that are severely disfigured or have decomposed may have to be identified by scientific methods such as DNA testing or referral to dental records.

Bodies should only be released to relatives once a formal identification has been made. A formal handover document (such as a death certificate) should be provided. Keep a record of the people collecting the bodies of their relatives.

Long-term storage and disposal

Only in rare cases can the mass disposal of unidentified dead bodies be justified (Figure 8.6).

It is a basic human right for a deceased person to be identified, issued with a death certificate and disposed of in accordance with local customs. Failure to do so causes distress to relatives and can lead to long-term mental health problems.

Figure 8.6. Mass disposal of dead bodies

Box 8.2. Minimum photograph set required for visual identification

Face

Whole body

Upper body

Lower body

Note: For the purpose of demonstration, these photographs were taken of a volunteer and not of a deceased individual. Source: Pongruk Sribanditmongkol in Morgan et al. (2006) Photographer: Kunt TongTahm Na Ayudhaya

All identified bodies should be released to relatives for final disposal.

Long-term storage will be required for bodies that are unclaimed. Burial is the preferred method as other methods destroy the evidence for future identification.

Bodies should be buried 1.5 to 3.0m deep in marked graves and following local customs and traditions. Communal graves should only be used in the case of an extreme disaster.

The minimum distance from water sources is shown in Table 8.1.

Remember, a body must be buried with its unique reference number attached to it and to the container.

Support for relatives

The dead and bereaved should be respected at all times. It is a priority for affected families to know the fate of their loved ones. A sympathetic and caring approach is necessary. Take note of cultural and religious needs, but give honest and accurate information about the circumstances of death, even if this appears to cause further grief.

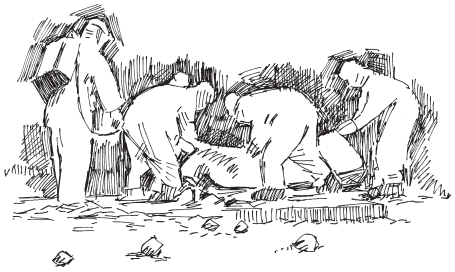
Table 8.1. Minimum distances to water sources

Number of bodies	Distance from water source
4 or less	200m
5 to 60	250m
60 or more	350m
120 bodies per 100m^2	350m
Note: The bottom of grave should be at least 2.0m above the groundwater table.	

Dealing with public health emergencies

Public health emergencies causing mass fatalities are relatively rare, but when they do occur extreme care must be taken when handling the dead because of the risk of cross-infection. Table 8.2 lists the diseases for which infection from dead bodies is possible. The measures required to prevent infection vary according to each disease, but in general:

- mortuary staff should wear protective gloves, masks, boots and overalls;
- mortuaries must be kept cool and well ventilated;
- ritual cleaning and preparation of the body should be avoided;
- bodies should be sealed in water-tight body bags and relatives prevented from touching them; and
- burial should take place close to the point of death, and the number of people present should be restricted.



Missing persons

During an emergency, family members can become separated. Missing persons should be considered to be alive unless there is evidence to suggest otherwise. Alongside measures for dealing with the collection and disposal of the dead, there should be measures in place to enable families to discover the whereabouts of their relatives. Further information about missing persons is available from the International Red Cross and Red Crescent Movement at www.icrc.org

Figure 8.8. Looking for information about loved ones

Table 8.2. Preventative measures to reduce the risk of infection from dead bodies

Disease		Use PPE (1)	Use body bag	Allow viewing	Allow embalming
Cholera		Yes	Yes	Yes	Yes (2)
Viral haemorrhagic fever (3)	Hantavirus	No	No	Yes	Yes
	Ebola / Marburg	Yes	Yes	Yes	No
	Crimean-Congo Haemorrhagic fever	Yes	Yes	Yes	Yes (with full PPE)
	Lassa fever / arena viruses	Yes	Yes	Yes	Yes (with full PPE)
	Rift Valley fever	No	No	Yes	Yes (with full PPE)
	Dengue	No	No	Yes	Yes
Influenza		Yes	No	Yes (with mask / goggles)	Yes

(1) Personal Protective Equipment such as goggles/visor/face shield, gloves, medical mask, boots, coverall/gown, apron
(2) Disinfect the body e.g. with 2% chlorine solution
(3) Blood-borne transmission: tissues, vomit, blood

Figure 8.7. (Left) Handling the dead with extreme care

Further information

Morgan, O., Morris, T. B. and Van Alphen, D.(ed.) (2006) *Management of Dead Bodies after Disasters: A Field Manual for First Responders.* Pan American Health Organization (PAHO), USA. http://www.paho.org/english/dd/ped/DeadBodiesFieldManual.pdf

Pan American Health Organization (PAHO) (2004) 'Management of Dead Bodies in Disaster Situations', in *Disaster Newsletter*, Disaster Manuals and Guideline Series No 5. PAHO, USA. http://www.paho.org/english/dd/ped/DeadBodiesBook.pdf

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