

Guidelines for the Management of Mass Fatalities During an Influenza Pandemic

Table of Contents

Introduction	377
1.0 Planning for Mass Fatalities	377
1.1 General Planning Considerations.	379
1.2 Role of the Funeral Service Association of Canada (FSAC)	380
1.3 Autopsies	380
1.4 Preparations for Funeral Homes and Crematoriums	381
1.5 Planning for Temporary Morgues	381
1.6 Capacity of and Access to Vaults	382
2.0 Other Technical Considerations	382
2.1 Death Registration	382
2.2 Infection Control	382
2.3 Transportation	383
2.4 Supply Management	383
3.0 Social/Religious Considerations	383
3.1 Special Populations	383
3.2 Northern and Isolated Communities	384
Appendix 1: List of Suppliers	385



During a pandemic, local authorities will have to be prepared to manage additional deaths due to influenza, over and above the number of fatalities from all causes currently expected during the inter-pandemic period. Within any locality, the total number of fatalities (including influenza and all other causes) occurring during a 6- to 8-week pandemic wave is estimated to be similar to that which typically occurs over six months in the inter-pandemic period. This guideline aims to assist local planners and funeral directors in preparing to cope with large-scale fatalities due to an influenza pandemic. A number of issues have been identified, which should be reviewed with coroners/medical examiners, local authorities, funeral directors, and religious groups/authorities.

1.0 Planning for Mass Fatalities

In order to identify planning needs for the management of mass fatalities during a pandemic, it is important to examine each step in the management of a corpse under normal circumstances and then to identify what the limiting factors will be when the number of corpses increase over a short period of time. The following table identifies the usual steps. Possible solutions or planning requirements are discussed in further detail in the sections that follow this table.

Table 1: Usual Process for Corpse Management

Steps	Requirements	Limiting Factors	Planning for Possible Solutions/Expediting Steps
Death pronounced	<ul style="list-style-type: none"> › person legally authorized to perform this task 	<ul style="list-style-type: none"> › if death occurs in the home then one of these people will need to be contacted › availability of people able to do this task 	<ul style="list-style-type: none"> › provide public education re. how to access an authorized person › consider planning an on call system 24/7 specifically for this task
Death certified	<ul style="list-style-type: none"> › person legally authorized to perform this task 	<ul style="list-style-type: none"> › legally, may not necessarily be the same person that pronounced the death 	<ul style="list-style-type: none"> › consider “collecting” corpses and having one authorized person perform this task en masse to improve efficiency
Body wrapped	<ul style="list-style-type: none"> › person(s) trained to perform this task › body bags 	<ul style="list-style-type: none"> › supply of human and physical (body bags) resources › if death occurs in the home: the availability of these requirements 	<ul style="list-style-type: none"> › consider developing a rotating 6 month inventory of body bags, given their shelf life › consider training or expanding the role of current staff to include this task › provide this service in the home in conjunction with pronouncement and transportation to morgue

Steps	Requirements	Limiting Factors	Planning for Possible Solutions/Expediting Steps
Transportation to the morgue	<ul style="list-style-type: none"> › in hospital: trained staff (orderly?) and stretcher › outside hospital: informed person(s), stretcher and vehicle suitable for this purpose 	<ul style="list-style-type: none"> › availability of human and physical resources 	<ul style="list-style-type: none"> › in hospital: consider training additional staff working within the facility › consider keeping old stretchers in storage instead of discarding › look for alternate suppliers of equipment that could be used as stretchers in an emergency e.g., trolley manufacturers › outside hospital: provide public education or specific instructions through a toll-free phone service re. where to take corpses if the family must transport
Morgue storage	<ul style="list-style-type: none"> › a suitable facility that can be maintained at 4 to 8 degrees Celsius 	<ul style="list-style-type: none"> › capacity of such facilities 	<ul style="list-style-type: none"> › identify and plan for possible temporary morgue sites
Autopsy if required/requested	<ul style="list-style-type: none"> › person qualified to perform autopsy and suitable facility with equipment 	<ul style="list-style-type: none"> › availability of human and physical resources › may be required in some circumstances 	<ul style="list-style-type: none"> › ensure that physicians and families are aware that an autopsy is not required for confirmation of influenza as cause of death
1) Cremation*	<ul style="list-style-type: none"> › suitable vehicle of transportation from morgue to crematorium › availability of cremation service › a cremation certificate 	<ul style="list-style-type: none"> › capacity of crematorium/speed of process › availability of coroner or equivalent official to issue certificate 	<ul style="list-style-type: none"> › identify alternate vehicles that could be used for mass transport › examine the capacity and surge capacity of crematoriums within the jurisdiction › discuss and plan appropriate storage options if the crematoriums become backlogged › discuss and plan expedited cremation certificate completion processes
2) Embalming**	<ul style="list-style-type: none"> › suitable vehicle for transportation from morgue › trained person › embalming equipment › suitable location 	<ul style="list-style-type: none"> › availability of human and physical resources › capacity of facility and speed of process 	<ul style="list-style-type: none"> › consult with service provided regarding the availability of supplies and potential need to stockpile or develop a rotating 6 month inventory of essential equipment/supplies › discuss capacity and potential alternate sources of human resources to perform this task e.g. Retired workers or students in training programs › consider “recruiting” workers that would be willing to provide this service in an emergency

Steps	Requirements	Limiting Factors	Planning for Possible Solutions/Expediting Steps
Funeral service	<ul style="list-style-type: none"> › appropriate location (s), casket (if not cremated), funeral director 	<ul style="list-style-type: none"> › availability of caskets › availability of location for service and visitation 	<ul style="list-style-type: none"> › contact suppliers to determine lead time for casket manufacturing and discuss possibilities for rotating 6 month inventory › consult with the FSAC to determine surge capacity and possibly the need for additional sites (e.g., use of churches etc. for visitation)
2a) Transportation to temporary vault or burial site	<ul style="list-style-type: none"> › suitable vehicle and driver 	<ul style="list-style-type: none"> › availability of human and physical resources 	<ul style="list-style-type: none"> › identify alternate vehicles that could be used for this purpose › consider use of volunteer drivers
2b) Temporary vault storage	<ul style="list-style-type: none"> › access to and space in a temporary vault 	<ul style="list-style-type: none"> › temporary vault capacity and accessibility 	<ul style="list-style-type: none"> › expand capacity by increasing temporary vault sites
2c) Burial	<ul style="list-style-type: none"> › grave digger, space at cemetery 	<ul style="list-style-type: none"> › availability of grave diggers and cemetery space › extreme cold and heavy snowfall 	<ul style="list-style-type: none"> › identify sources of supplementary workers

* cremated bodies are not usually embalmed; families may choose to have a funeral service followed by cremation or to have the body cremated first and a memorial service later.

** bodies to be buried may be embalmed and may need to be stored in a temporary vault prior to burial.

1.1 General Planning Considerations

In order to develop guidelines or adjust existing plans to suit the pandemic situation, local pandemic planners should ensure that the following persons are involved in mass fatality planning:

- › the Coroner Office/Branch,
- › the Medical Officer of Health,
- › the Emergency Response Team,
- › representatives of the Funeral Services Association of Canada (FSAC) and/or the local funeral director,
- › representatives from local health care facilities, and
- › representatives of local religious and ethnic groups.

Existing disaster plans may include provisions for mass fatalities but should be reviewed and tested regularly, to determine if these plans are appropriate for the relatively long period of increased demand which may occur in a pandemic, as compared to the shorter response period required for most disaster plans. There are currently no plans to recommend mass burials or mass cremations. This would only be considered in the most extreme circumstances.

Since it is expected that most fatal influenza cases will seek medical services prior to death, hospitals, nursing homes and other institutions (including non-traditional sites) must plan for more rapid processing of corpses. These institutions should work with the pandemic planners and the FSAC and coroner office to ensure that they have access to the additional supplies (e.g., body bags) and can expedite the steps, including the completion of required documents, necessary for efficient corpse management during a pandemic.

In order to deal with the increase in fatalities, some municipalities will find it necessary to establish temporary morgues. Plans should be based on the capacity of existing facilities compared to the projected demand, for each municipality. Local planners should make note of all facilities available, including those owned by religious organizations. Some religious groups maintain facilities including small morgues, crematoria and other facilities that are generally operated by volunteers. Access to these resources should be discussed with these groups as part of the planning process during the interpandemic period.

In the event that local funeral directors are unable to handle the increased numbers of corpses and funerals, it will be the responsibility of municipalities to make appropriate arrangements. Individual municipalities should work with local funeral directors to plan for alternate arrangements.

Planning should also include a review of death documentation requirements and regulatory requirements that may affect the timely management of corpses.

1.2 Role of the Funeral Service Association of Canada (FSAC)

It is recommended that all funeral directors contact their Medical Officer of Health to become involved in their disaster and pandemic planning activities with respect to the management of mass fatalities at the local level. The national Mass Fatalities sub-group for pandemic influenza planning has recommended that funeral directors consider it a part of their professional standards to make contingency plans for what would happen if they were incapacitated or overwhelmed. This recommendation is being taken forward to the association, which has an established disaster planning committee. It is expected that this committee will put forward a recommendation to the Provincial/Territorial associations to set up disaster plans.

Currently, FSAC is planning to set up three containers to be placed at three military bases across Canada (probably Edmonton, Toronto area and Halifax). Each container would be a fully organized temporary morgue with all necessary equipment. These are intended for use in such disaster scenarios as major fire, flood or aircraft crash but might be useful as adjuncts to large auxiliary hospitals in a pandemic. FSAC and funerary supplies companies are setting up these containers; any materials used would be re-supplied by the user.

Members of the FSAC board are on the Funeral Supply Coalition Council of Canada. FSAC is likely to take a role in supply (e.g., fluids, body bags and caskets) management for mass fatalities related to a pandemic.

The FSAC is currently updating information regarding health concerns and funeral service issues, which will be available through a publicly accessible web site.

1.3 Autopsies

Many deaths in a pandemic would not require autopsies since autopsies are not indicated for the confirmation of influenza as the cause of death. However, for the purpose of public health surveillance (e.g., confirmation of the first cases at the start of the pandemic), respiratory tract specimens or lung tissue for culture or direct antigen testing could be collected post-mortem. Serological testing is not optimal but could be performed if 8-10 mL of blood can be collected from a subclavian puncture post-mortem. Permission will be required from next-of-kin for this purpose.

Any changes to regular practices pertaining to the management of corpses and autopsy requirements during pandemic situations, would require the authorization of the Chief Medical Examiner or Coroner.

If a physician requires that an autopsy be performed, normal protocols will be followed, including permission from the next-of-kin. In cases where the death is reportable to a Medical Examiner or Coroner, the usual protocols prevail based on provincial legislation.

1.4 Preparations for Funeral Homes and Crematoria

In a pandemic, each individual funeral home could expect to have to handle about six months work within a 6- to 8-week period. That may not be a problem in some communities, but funeral homes in larger cities may not be able to cope with the increased demand.

Individual funeral homes should be encouraged to make specific plans during the inter-pandemic period regarding the need for additional human resources during a pandemic situation. For example, volunteers from local service clubs or churches may be able to take on tasks such as digging graves, under the direction of current staff.

Crematoriums will also need to look at the surge capacity within their facilities. Most crematoriums can handle about one body every four hours and could probably run 24 hours to cope with increased demand. Cremations have fewer resource requirements than burials and, where acceptable, this may be an expedient and efficient way of managing large numbers of corpses during a pandemic.

1.5 Planning for Temporary Morgues

Additional temporary cold storage facilities may be required during a pandemic, for the storage of corpses prior to their transfer to funeral homes. A temporary morgue must be maintained at 4-8° C. However, corpses will begin to decompose in a few days when stored at this temperature. If the body is not going to be cremated, plans to expedite the embalming process should be developed since in the case of a pandemic, bodies may have to be stored for an extended period of time. In jurisdictions where a timely burial is not possible due to frozen ground or lack of facilities, corpses may need to be stored for the duration of the pandemic wave (6 to 8 weeks).

Each municipality should make pre-arrangements for temporary morgues based on local availability and requirements. The resource needs (e.g. body bags) and supply management for temporary morgues should also be addressed. The types of temporary cold storage to be considered may include refrigerated trucks, cold storage lockers or arenas.

Refrigerated trucks can generally hold 25-30 bodies without additional shelving. To increase storage capacity, temporary wooden shelves can be constructed of sufficient strength to hold the bodies. Shelves should be constructed in such a way that allows for safe movement and removal of bodies (i.e., storage of bodies above waist height is not recommended). To reduce any liability for business losses, municipalities should avoid using trucks with markings of a supermarket chain or other companies, as the use of such trucks for the storage of corpses may result in negative implications for business.

Arenas and curling rinks, where the required temperature of 4-8° C can be maintained, are other options for temporary morgues. Using local businesses for the storage of human remains is not recommended and should only be considered as a last resort. The post-pandemic implications of storing human remains at these sites can be very serious, and may result in negative impacts on business with ensuing liabilities.

1.6 Capacity of and Access to Vaults

A vault is a non-insulated storage facility for remains that have already been embalmed, put into caskets and are awaiting burial. In most places in Canada extra corpse storage facilities already exist, as they are often needed from January to April when the ground is frozen and burials are difficult to perform. Although larger cities may be able to open burial plots in winter, smaller communities do not have the equipment or permanent staff to do this.

The accessibility of vaults during the winter should be assessed. A vault may be situated in the back of cemeteries, with entrances that are partially below ground level or in close proximity to headstones, so that a snow blower or plough would have difficulty creating a path of access without damaging some headstones.

In preparation for a pandemic each community should identify the capacity of existing vaults and address access issues for temporary storage. In addition, the need for the creation of new temporary vaults, to meet the increased demand during a pandemic should be addressed. This temporary vault should be non-insulated, have some security features such as covered windows and locks on doors.

2.0 Other Technical Considerations

2.1 Death Registration

Death registration is a provincial/territorial (P/T) responsibility and each P/T has its own laws, regulations, and administrative practices to register a death. Moreover, there is a distinction between the practices of pronouncing and certifying a death. For example, in Ontario physicians, nurses, and in some circumstances police and ambulance attendants may pronounce a person dead. Only physicians, and a small group of designated nurses in narrowly defined circumstances may certify death.

In the pandemic situation, with the increased number of deaths, each jurisdiction must have a body collection plan in place to ensure that there is no unnecessary delay in moving a body to the (temporary) morgue. If the person's death does not meet any of the criteria for needing to be reported to a coroner, then the person could be moved to a holding area soon after being pronounced dead. Then, presumably on a daily basis, a physician could be designated to complete the death certificate.

Funeral directors generally have standing administrative policies that prohibit them from collecting a body from the community or an institution until there is a completed certificate of death. In the event of a pandemic with many bodies, it seems likely that funeral directors could work out a more flexible practice if directed to do so by some central authority (e.g. provincial attorney general, registrar of vital statistics). These special arrangements must be planned in advance of the pandemic and should include consideration of the regional differences in resources, geography, and population.

2.2 Infection Control

The Infection Control and Occupational Health Guidelines (Annex F of the Canadian Influenza Pandemic Plan) provide general recommendations on infection control for health care facilities and non-traditional sites during a pandemic. However, special infection control measures are not required for the handling of persons who died from influenza, as the body is not "contagious" after death. Funeral homes should take special precautions with deaths from influenza. Training in the routine infection control practice and additional precautions is available through the FSAC. <<http://www.fsac.ca/>>.

Visitations could be a concern in terms of influenza transmission amongst attendees, particularly in smaller communities. For example, in P.E.I., the average attendance at a visitation is 1,000 to 1,400 people; visitations in larger centres are typically a fraction of that size. The Guidelines to Infection Prevention and Control and Occupational Health (Annex F of the Pandemic Plan), lists several recommendations regarding public gatherings. It is the responsibility of the Medical Officers of Health to place restrictions on the type and size of public gatherings if this seems necessary to reduce the spread of disease. This may apply to funerals and religious services. Medical Officers of Health should plan in advance for how such restrictions would be enacted, and enforced, and for consistency and equitability of the application of any bans.

Families requesting cremation of their deceased relative are much less likely to request a visitation, thus reducing the risk of spreading influenza through public gatherings.

2.3 Transportation

No special vehicle or driver licence is needed for transportation of a corpse. Therefore, there are no restrictions on families transporting bodies of family members if they have a death certificate.

Transportation of bodies from their place of death to their place of burial in northern and isolated communities may become an issue, especially if this requires air transport. Local pandemic planners should consult existing plans for these communities and determine what changes can be made to meet the increased demand during a pandemic.

2.4 Supply Management

FSAC is recommending to funeral directors that they not order excessive amounts of supplies such as embalming fluids, body bags, etc., but that they have enough on hand in a rotating inventory to handle the first wave of the pandemic (that is enough for six months of normal operation). Fluids can be stored for years, but body bags and other supplies have a limited shelf life. A supply list for temporary morgues will be accessible through FSAC. Cremations generally require fewer supplies since embalming is not required.

A list of current suppliers is provided in Appendix 1.

Families having multiple deaths are unlikely to be able to afford multiple higher-end products or arrangements. Funeral homes could quickly run out of lower-cost items (e.g. inexpensive caskets such as cloth and some wooden caskets) and should be prepared to provide alternatives.

3.0 Social/Religious Considerations

3.1 Special Populations

A number of religious and ethnic groups have specific directives about how bodies are managed after death, and such needs must be considered as a part of pandemic planning. First Nations, Inuit, Jews, Hindus, Muslims, all have specific directives for the treatment of bodies and for funerals. The wishes of the family will provide guidance, however, if no family is available local religious or ethnic communities can be contacted for information. For example, in the case of First Nations peoples, mechanisms currently exist to communicate with band councils for this purpose (established to deal with archeological issues) and medical examiners should contact the band council of the individual where this is possible.

As a result of these special requirements, some religious groups maintain facilities such as small morgues, crematoria, and other facilities, which are generally operated by volunteers. Religious groups should be contacted to ensure these facilities and volunteers are prepared to deal with pandemic issues.

Religious leaders should be involved in planning for funeral management, bereavement counselling, and communications, particularly in ethnic communities with large numbers of people who do not speak the official languages.

3.2 Northern and Isolated Communities

Northern and isolated communities face particular issues in dealing with large numbers of fatalities. The following issues make the preparation, storage and burial/disposal of large numbers of corpses very challenging in such communities.

- The lack of funeral service personnel and other resources.
- The extreme cold weather and heavy snowfalls in winter result in difficulties with burials, and in difficulties with the transportation of corpses.
- In remote areas where families live vast distances apart, corpses may have to be transported a long way for burial/disposal. This may be challenging for areas with few plane flights and no road access or poor road surface conditions. The large distances also pose a challenge for the transportation of funeral directors and funeral supplies.
- Permafrost, boggy land and other geographical features also pose a challenge to transportation and burial.

Planners responsible for these jurisdictions should ensure that local pandemic plans address these issues.

Appendix 1: List of Current Suppliers

Embalming fluids and suppliers:

- › H.S. Eckels and Company, Guelph, Ontario
- › Esco of Rexdale, Ontario
- › Les Fournitures, J.C.R. Inc., Vanier, Québec
- › Dodge Chemical, Mississauga, Ontario

Casket suppliers:

- › Alton Caskets
- › J.I. Astley & Associates
- › Batesville Canada
- › Bernier Caskets Inc./Cercueils Bernier Inc.
- › Classic Casket Distributors, Limited.
- › Colonial Caskets Limited
- › Cercueils Concept Inc/Concept Caskets Inc.
- › Cormier & Gaudet
- › Exquisite Enterprises, Inc.
- › Imperial Evergreen Casket Corporation
- › Imperial Casket (Calgary) Limited
- › Imperial Casket (Saskatchewan) Limited
- › Imperial Casket (Manitoba) Limited
- › Imperial Legacy Caskets Limited
- › Industries Maximel Inc.
- › Cercueils Magog Caskets
- › Northern Casket (1976) Limited
- › Cercueils South Durham Caskets
- › St. Lawrence Casket Co. Inc.
- › Trans-Global Casket
- › Victoriaville Funeral Supplies, Inc.
- › Winkler Caskets Co. Limited

