



Storage and Handling Plans

[↗](#) for details and see [Vaccine Disposal](#) for general guidelines)

- Storage requirements for each vaccine and diluent in your inventory ([package inserts](#)). [↗](#)
- Samples of forms used in your facility (e.g., ordering forms, temperature logs, stock records, etc.).
- Additional resources are available in [Resources](#) and from the [Immunization Action Coalition \(IAC\): Clinic Resources – Storage and Handling](#). [↗](#)
- Also establish a checklist of procedures and post it on all vaccine storage unit(s) (IAC's [Checklist for Safe Vaccine Storage and Handling](#)). [↗](#)

Emergency Vaccine Retrieval and Storage Plan

Advance Preparations

Various situations may compromise vaccine storage conditions, such as equipment failures, power outages, or natural disasters. Ensure that the emergency plan includes up-to-date information regarding procedures to follow to protect and/or retrieve vaccines as quickly as possible when a potentially compromising situation occurs. In addition to facility staff, ensure that custodial and security staff are aware of the emergency plan and know procedures to follow to notify designated staff about any problems with vaccine storage equipment or power outages.

What's in an Emergency Plan?

The information below is provided as a guideline for developing an emergency plan. You may also use the [Emergency Vaccine Retrieval and Storage Plan Worksheet](#) and

IAC's [Emergency Response Worksheet](#) [↗](#) to help organize your response. Consult your agency or [immunization program](#) [↗](#) for any special instructions or forms.

Each emergency plan should include:

- Role of vaccine coordinator and alternate (back-up)
 - Emergency contact list
 - Storage unit specifications
 - Alternate storage facilities
 - Written instructions for after hours
 - Adequate supplies for packing and transport
 - Protocol for packing
 - Protocol for transport
- Designated primary and alternate (back-up) vaccine coordinators with emergency contact information.
- In addition to routine vaccine storage and handling duties ([Staff](#)), primary and alternate (back-up) vaccine coordinators should:
- Monitor operation of storage equipment and systems
 - Track inclement weather conditions
 - Set up and maintain monitoring/



Staff members should be familiar with the Routine and Emergency Vaccine Storage and Handling Plan.



Storage and Handling Plans

notification system during times of inclement weather or other conditions that might cause a power outage (a continuous-monitoring temperature alarm/notification system should be considered, especially for facilities with large inventories)

- Post emergency contact information on circuit breaker(s) or electrical panel
- Ensure appropriate handling of vaccine during a disaster or power outage
- Ensure 24-hour access to building and vaccine storage unit(s)
- Ensure that sufficient fuel is on hand to continuously run generator for at least 72 hours if facility has a back-up generator
- Emergency staff contact list in order of contact preference.

Determine whether all or certain persons on the list should be contacted in the event of a vaccine storage emergency or if the first person reached is sufficient. Include primary and alternate (back-up) vaccine coordinators on the list. Record names (in order) and

contact information. Assure that contact information is updated at least quarterly.

- Vaccine storage unit specifications. For each vaccine storage unit in your facility, identify type of unit (e.g., stand-alone refrigerator), brand name, model number, and serial number. These specifications may be useful for the repair company.
- Alternate vaccine storage facility or facilities. Establish working agreements with at least one alternate storage facility with a back-up generator where vaccines can be appropriately stored and monitored for the interim (e.g., hospital, long-term care facility, state depot, Red Cross, fire station, packing plant, commercial pharmacy). Make advance arrangements with facility(ies) to store your vaccines when weather predictions call for inclement conditions (e.g., tornadoes, hurricanes, ice, severe snowstorms), when your storage equipment cannot be repaired, or when power cannot be restored before the storage unit temperature rises above the recommended range. Record name of alternate facility(ies), name of contact



Establish at least one alternate storage facility where vaccine can be appropriately stored and monitored. This facility should have a back-up generator.



Storage and Handling Plans

- person(s), and telephone number(s). Include instructions for 24-hour access.
- Written instructions for entering your facility and vaccine storage spaces in an emergency if building is closed. In these instructions, include the building security/after-hours access procedure, floor diagram, and locations of the following:
 - Alarms (including instructions for use)
 - Doors
 - Flashlights
 - Spare batteries
 - Light switches
 - Keys
 - Locks
 - Circuit breakers
 - Packing materials
 - Adequate supply of qualified containers and packing materials for facility's largest annual inventory. Appropriate materials may include portable actively or passively cooled refrigerator/freezer units, hard-sided insulated containers, "conditioned" coolant packs that are cold or frozen (depending on type of vaccine), and a calibrated temperature monitoring device for each container ([Vaccine Transport](#)). In situations where an alternate vaccine storage facility with a back-up generator cannot be identified within a reasonable distance, qualified containers and packing materials can be used to store vaccines temporarily and safely at your facility. This temporary storage should only be for as long as the container and pack out are qualified to maintain storage temperatures and the container remains closed. A temperature monitoring device should always be placed with the vaccines. Record names and contact information for sources of materials.
 - Written protocol for vaccine packing. Develop standard operating procedures (SOPs) for packing vaccines. Make instructions readily available for staff. Key steps that should be reflected in all SOPs are:
 - Open refrigerator and freezer doors only when absolutely necessary and only after you have made all preparations for packing and moving vaccines to an alternate storage facility.
 - Use qualified containers and packing materials and procedures for refrigerated and frozen vaccines ([Vaccine Transport](#) for general guidelines).
 - Written protocols, vehicles, and drivers for transporting vaccines to and from alternate vaccine storage facility.
 - Vaccines may be transported within non-commercial vehicles inside the passenger compartment (not in trunk because temperatures cannot be controlled inside trunk). Make advance arrangements for primary and back-up vehicles and drivers and record the contact information.
 - If location is far away or if you have a large quantity of vaccines, consider renting a refrigerated truck. In this case, joining with other facilities to reduce costs may be advantageous. Make advance arrangements with a local refrigeration company and an alternate and record contact information.
 - Check with your [immunization program](#)  for guidance and resources on emergency transport of vaccines.
 - Develop written protocols for transporting vaccines to and from alternate storage facility:
 - Establish how to load vehicle.



- Have pre-selected routes to take (and alternate routes if necessary).
- Determine estimated time en route.

Improper packing of vaccines for transport is as risky as storage unit failure. Vaccine manufacturers do not support reuse of their containers and packing materials for vaccine transport. Improper repackaging using these materials and improper transportation could negatively impact vaccines.

Emergency Procedures

Equipment failure

No piece of vaccine storage equipment is infallible, and there is always potential for vaccine storage equipment failure. At some point, equipment failure will occur related to a power failure, breakdown, or normal wear and tear. Part of a provider's responsibility for proper vaccine storage is preparing for equipment failure by having back-up equipment and back-up plans available.

Impending emergency

When state officials, local officials, or providers have reasonable cause to believe that weather conditions, natural disasters, or other emergencies might disrupt power in or flood any facility where vaccines are stored, implement emergency procedures in advance of event.

Power outages

If power is lost short-term (usually 2 hours or less) and depending on room temperature, storage temperatures can probably be maintained with water bottles in the refrigerator, frozen coolant packs in the freezer, and by taking the following steps:

- Do not open storage unit door until power is restored.
- Continue to monitor temperature inside each storage unit.
 - Some temperature monitoring devices allow temperature monitoring without opening storage unit door. In this case, record room temperature and temperature(s) inside unit(s) at time problem is discovered, as well as minimum and maximum temperature(s) reached inside unit(s) during power outage.
 - If this type of temperature monitoring device is not being used, do not open a storage unit door to check temperature during power outage. Document room temperature and temperature inside each storage unit as soon as possible after power has been restored. If you have a digital data logger, document length of time power has been off and minimum and maximum temperatures observed within storage unit(s).
- When power is restored, if temperature inside refrigerator is not between 35°F and 46°F (2°C and 8°C) or if temperature inside freezer is not between -58°F and +5°F (-50°C and -15°C), document duration of inappropriate temperature exposure and follow procedures for [Handling Inappropriate Vaccine Storage Conditions \(Light and Temperature\)](#).

Do NOT allow vaccines to remain in a nonfunctioning unit for an extended period of time. If at any time you are unsure how long the power interruption will last, or you determine that power will not be restored in time to maintain internal temperatures within recommended ranges, activate your emergency



plan.

- Suspend vaccination activities before onset of emergency conditions, if possible. This will allow sufficient time for packing and transporting vaccines.
- Notify staff at alternate vaccine storage facility. Before moving your vaccines, contact alternate storage facility to make them aware of the situation and to ensure that their back-up generator is working.
- Conduct an inventory of vaccines and record actions taken. Use the [Emergency Vaccine Retrieval and Storage Plan Worksheet](#). Also note if frozen coolant packs were in freezer and water bottles were in refrigerator at time of event.
- Pack the affected vaccines ([Vaccine Transport](#)).
- Follow established vaccine transport procedures ([Written Protocols, Vehicles, and Drivers for Transporting Vaccines to and from Alternate Vaccine Storage Facility](#)).
- Check vaccine temperature upon arrival at alternate storage facility and ensure immediate storage at manufacturer-recommended temperatures.

If you have no warning and an emergency event is already occurring or has already occurred, you should still follow these procedures if they can be done safely. Consult your agency or [immunization program](#)  for special instructions.

The Center for Biologics Evaluation and Research (CBER) at the Food and Drug Administration (FDA) offers general guidance concerning storage and use of temperature-sensitive biological products that have been involved in a temporary

electrical power failure or flood conditions ([Impact of Severe Weather Conditions on Biological Products](#)) .



Notes:



Emergency Vaccine Retrieval and Storage Plan Worksheet

In advance of an emergency, complete the following checklist and forms and store this information in an easily accessible area near the vaccine storage units. See the [Vaccine Storage and Handling Plans](#) chapter for details.

Checklist of Resources for the Emergency Vaccine Retrieval and Storage Plan

- Designated primary and alternate (back-up) vaccine coordinators with emergency contact information
- Emergency staff contact list in order of contact preference
- Specifications of vaccine storage unit (type, brand, model number, serial number)
- Alternate vaccine storage facility(ies)
- Written protocols, vehicles, and drivers for transporting vaccines to and from alternate vaccine storage facility(ies)
- Written instructions for entering your facility and vaccine storage areas in emergency if building closed. Instructions should include building security/after-hours access procedure, floor diagram, and locations of the following:
 - Alarms (including instructions for use)
 - Doors
 - Flashlights
 - Spare batteries
 - Light switches
 - Keys
 - Locks
 - Circuit breakers
 - Packing materials
- Calibrated temperature monitoring devices
- Portable refrigerators and freezers
- Qualified containers
- Appropriate packing materials to safely transport or temporarily store vaccines
- Written protocol for vaccine packing refrigerated vaccines
- Written protocol for vaccine packing frozen vaccines
- Written protocol for vaccine transport
- Written protocol for appropriately storing vaccines at alternate storage facility
- Up-to-date list of manufacturers' telephone numbers



Emergency Vaccine Retrieval and Storage Plan Worksheet

Vaccine Coordinators

Vaccine Coordinators	Name/Title	Telephone Numbers (home, cell, pager)	E-mail Address
Primary			
Alternate (Back-up)			

Emergency Staff Contact List*

Name	Title	Telephone Numbers (home, cell, pager)	E-mail Address
1.			
2.			
3.			
4.			
5.			
6.			

* List contacts in order of preference. Determine whether all or certain persons on the list should be contacted or if the first person reached is sufficient. Include the primary and alternate (back-up) vaccine coordinators on the list.

Vaccine Storage Unit Specifications

Type of Unit (Refrigerator or Freezer)	Brand	Model Number	Serial Number
1.			
2.			
3.			
4.			
5.			



Emergency Vaccine Retrieval and Storage Plan Worksheet

Emergency Resources Contact List			
Emergency Resources	Company Name Contact Person Name/Title	Telephone Numbers (home, cell, pager)	E-mail Address
Additional Staff (to move and pack vaccine)			
<u>State Health Department Immunization Program</u>			
Local Health Department Immunization Program			
Electric Power Company			
Emergency Generator Repair Company (if applicable)			
Emergency Generator Fuel Source (if applicable)			
Refrigerator Unit Repair Company			
Freezer Unit Repair Company			
Temperature Alarm Monitoring Company (if applicable)			
Security or Perimeter Alarm Company (if applicable)			
Weather Service			



Emergency Vaccine Retrieval and Storage Plan Worksheet

Alternate Vaccine Storage Facility(ies)			
Emergency Resources Company Name/Address	Contact Person Name/Title	Telephone Numbers (home, cell, pager)	E-mail Address
1.			
2.			
3.			
4.			

Transportation to Alternate Vaccine Storage Facility(ies)*			
Emergency Resources Name/Address	Contact Person Name/Title	Telephone Numbers (home, cell, pager)	E-mail Address
Refrigeration Company			
Refrigeration Company (alternate)			
Private Vehicle			
Private Vehicle (alternate)			



Emergency Vaccine Retrieval and Storage Plan Worksheet

Emergency Resources Company Name	Contact Person Name/Title	Telephone Numbers (home, cell, pager)	E-mail Address
Packing Materials			
Portable refrigerator/ freezer units			
Portable refrigerator/ freezer units (alternate)			
Qualified containers			
Qualified containers (alternate)			
Fillers (e.g., bubble wrap, Styrofoam pellets)			
Fillers (alternate)			
Coolant packs			
Coolant packs (alternate)			
Calibrated temperature monitoring devices			
Calibrated temperature monitoring devices (alternate)			