



While it is best to never transport vaccine, on occasion moving vaccine is necessary. The tips below are available to help vaccine providers transport their vaccine in the safest way possible. The CDC Vaccine Storage and Handling Toolkit also includes guidance on how to transport vaccine. To view the CDC guidance visit: <http://www.cdc.gov/vaccines/recs/storage/toolkit/>.

Key Points:

- Do not transport vaccines unless necessary.
- Use gel packs or conditioned (see below) frozen water bottles for safe transport of refrigerated-vaccines.
- Never transport opened multi-dose vials.
- Protect refrigerated-vaccine from freezing during transport.
- Immediately place vaccines in an appropriate storage unit at the recommended temperature ranges upon arrival at the alternative facility.
- Keep a calibrated thermometer(s) in the storage unit(s) with the vaccines.

When is it appropriate to transport vaccine?

- During an emergency or power outage expected to last over 4 hours – if there is a safe place with proper storage units to receive the vaccine.
- When your vaccine storage equipment is not functioning.
- When you need to redistribute vaccine among different clinics. This should not happen regularly. All attempts should be made to order correctly for each clinic.

When is transport of vaccine prohibited?

- Never transport multi-dose vials of vaccine that have been opened. That is against FDA regulations. All opened vials must be used in the facility that opened them.

General rules for transporting vaccines:

- Transport refrigerated-vaccine in a separate container than frozen vaccine (those containing Varivax).
- Always hand-carry by a trusted & trained employee. Do not delegate to a commercial service.
 - Do not place in the trunk of the vehicle – carry in the passenger cabin.
 - Deliver directly to the alternative facility.
 - Promptly unpack and place into appropriate storage units upon arrival
- Never use dry ice, not even for frozen vaccine.



Materials for Transporting Vaccine

- Coolers:
 - Portable refrigerators and freezers (if available)
 - Polystyrene coolers
 - These are the coolers that manufacturers use to ship vaccine.
 - Hard-sided insulated coolers with at least 2-inch walls
 - If those coolers are not available, consider using collapsible coolers:
 - Store these in a refrigerator so they are already chilled.
 - They can then be placed in a larger hard-sided insulated cooler with at least 2-inch walls with additional coolant for longer transportation.
 - Collapsible coolers are better than nothing but do not hold temperatures for long. If these need to be used, have a plan in place for moving the vaccine to a more stable situation quickly.
- Calibrated thermometer (preferably with a glycol-encased thermometer probe) for each cooler
- Insulation:
 - cardboard,
 - table paper,
 - Styrofoam beads, or
 - bubble wrap.

Materials for refrigerated-vaccine

- Portable refrigerators are ideal. Many have detachable power cords for indoors or use in vehicle cigarette lighters. A transportable power source, like the cigarette lighter adapter, is necessary.
- Use either appropriately conditioned, frozen gel packs or conditioned frozen water bottles (CFWBs) – described below – as the coolant for refrigerated-vaccine, taking care not to freeze vaccine.
 - CFWBs are clear plastic drinking water bottles (available by the case at grocery stores) that have been hard frozen and then “conditioned.”
 - Conditioning means warming them until a small amount of liquid water is visible on the inside of the bottle where the solid ice has begun to melt. Water bottles or gel packs that are not “conditioned” may be colder than **0 degrees C** (**32 degrees F**) and can freeze vaccine. Freezing refrigerated-vaccine can render them impotent. Take precautions to never freeze these vaccines!
- Additional studies are under way to determine the most appropriate materials for transporting refrigerated-vaccine. (**-58 degrees F and +5 degrees F**)

Materials for frozen vaccine (Varicella-containing vaccine)

- Portable freezer unit that maintains the temperature between **-50 degrees C and -15 degrees C** (**-58 degrees F and +5 degrees F**).
 - These may be available to rent in some places.
- Frozen gel packs.



Packing for Vaccine Transport

Procedures for refrigerated-vaccine transport

- If available, place vaccine and diluents in a portable refrigerator.
- If a portable refrigerator is not available, layer the following in one of the types of coolers described above:
 - a row of CFWBs on the bottom,
 - insulation (this will protect the vaccine from condensation),
 - the refrigerated vaccine & corresponding diluent,
 - more insulation,
 - another layer of CFWBs on top.
- If the cooler is not big enough for two layers of bottles, at least put one layer on top of the vaccines (with a layer of insulation in between).
- Place a calibrated thermometer (preferably with a glycol-encased thermometer probe) in the cooler, as close to the vaccines as possible.

Procedures for Varicella-containing vaccine transport (if a portable freezer is not available)

It is imperative that varicella-containing vaccine be transported frozen. Although it may arrive from the manufacturer warmer than -15 degrees C ($+5\text{ degrees F}$), once you receive it, it must be stored between $-50\text{ degrees C and }-15\text{ degrees C}$ ($-58\text{ degrees F and }+5\text{ degrees F}$). This is a difficult vaccine to transport safely. If it has to be transported, great care must be taken:

- Store a small cooler(s) in your office and frozen gel packs in the Varicella-containing vaccine freezer
- Place the Varicella-containing vaccine in the container(s) along with a small data logger if possible and then place that container(s) in a larger polystyrene or similar thick-walled cooler with a large number of hard frozen gel bricks below and above.
- Pack a freezer thermometer in the larger cooler so that the temperature can be verified on arrival.

Document times and temperatures during transport. Call the manufacturer (Merck) at 1-800-637-2590 or your VFC coordinator as soon as possible whenever Varicella-containing vaccine has been warmer than

-15 degrees C ($+5\text{ degrees F}$). The vaccine may be good for up to 72 hours depending on the exposure. Merck or your VFC coordinator can advise you whether the vaccine can still be used.



What else should I know about transporting vaccines?

- Transport diluents with corresponding vaccines, never freeze diluents.
- Always continue to monitor temperature of vaccines when transporting, and when stored at a temporary location.
- Only remove vaccine that will be administered immediately from its temporary storage location.
- Keep temporary storage containers closed as much as possible.

Resources:

AAP Vaccine Storage and Handling Web page:

<https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/vaccine-storage-and-handling-guidance.aspx>

AAP Storage and Handling Tip Sheet: Disaster Planning

https://www.aap.org/en-us/Documents/immunization_disasterplanning.pdf

CDC Vaccine Storage and Handling Toolkit

<http://www.cdc.gov/vaccines/recs/storage/toolkit/default.htm>

Immunization Action Coalition Emergency Response Worksheet

<http://www.immunize.org/catg.d/p3051.pdf>

