Public Health
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Bismarck-Burleigh Public Health

Cold Chain

General Recommendations for Vaccine Transportation

The vaccine cold chain must be maintained during transportation or transfer. **Refrigerated vaccines should be kept at 2 to 8 degrees Celsius (36-46 degrees Fairenheight), while frozen vaccines must be transported at -15 to -50 degrees Celsius (5 to -58 degree Fairenheight).** Dry ice is not a viable method of cooling for transportation of varicella-containing vaccines. The number of times a vaccine is transported should be kept to a minimum. Once transported, a facility must make every effort to distribute the vaccine as soon as possible. The North Dakota Immunization Program encourages providers to transfer vaccines when they have a state supplied vaccine which they do not anticipate administering before the expiration date.

CDC recommends portable refrigerators and/or freezers be utilized for vaccine transport. However, other containers may be utilized. Bismarck-Burleigh Public Health does not recommend or endorse products or manufacturers. Providers may purchase containers that are not manufactured by the companies on the North Dakota Department of Health reference sheets. However, it is important to ensure the refrigerator/freezer used meets the health department's standards for vaccine storage.

Diluents must be transported with their corresponding vaccines, but dilluents that do not contain antigens (diluents for MMR, varicella and zoster) may be transported at room or refrigeration temperature. Diluents for ActHIB, MPSV4, MCV4, and Pentacel as well as other diluents that contain antigens must be transported at refrigerator temperature. Diluent for rotavirus (Rotarix) may be transported at room temperature or at refrigeration temperature.

The North Dakota Immunization Program requires providers to use a certified, calibrated thermometer during vaccine transport. The prefered method of utilizing data loggers are with a probe in glycol. Vaccines should be attended at all times during transportation and the temperature should be documented at least every 30 minutes during transport. Do not ship vaccines. If a vaccine is exposed to out-of-range temperature during transport or transfer, label the vaccine **"Do Not Use"** and contact vaccine manufacturers for further guidance.

For further guidance on transportation of vaccines, contact Bismarck-Burleigh Public Health, the North Dakota Immunization Program at (800) 472-2180 or refer to the CDC Vaccine Storage and Handling Toolkit at www.cdc.gov/vaccines/recs/storage/toolkit/storage-handling-toolkit.pdf.

I have read the above information and reviewed the attached reference sheet and agree to follow the directions herein.

_____	_____	_____
Signature	Organization	Date

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General Recommendations

NORTH DAKOTA DEPARTMENT of HEALTH

Vaccine Transport Guidance

The vaccine cold chain should be maintained at all times during vaccine storage and transport. Due to the risk of temperature excursion associated with vaccine transport, the number of times vaccines are transported should be kept to a minimum.

Refrigerated vaccines should be transported at 2^{0}C to 8 ^{0}C (36^{0}F to 46^{0}F).
Frozen vaccines should be transported at -15^{0}C to -50^{0}C (+5^{0}F to - 58^{0}F).

CDC recommends the use of portable refrigerators and freezers for vaccine transport.

Containers

CDC recommends the use of portable refrigerators and freezers for vaccine transport. In the absence of portable refrigerators, other containers can be used. See the table below for details. The equipment used for vaccine transport should maintain the required temperature during vaccine transport.

Note the following products are used for transport of refrigerated vaccines only.

The transport containers listed have a specific guide on how to pack vaccines. Providers must refer to the specific guide provided by the manufacturer.

Product	Volume in Liters	Holding time	Tempera-ture range	Price	Website
AcuTemp PXL1	1 L	22 hours	2 - 8^{0}C	~$334 (with VXS1 cold packs)	www.acutemp.com/products/vaccine-carriers
BP 2620	3 L	120 hours	2 - 8^{0}C	$935 for purchase $47/ month for lease	www.pelican.com/biopharma/specs.php
PX3L and PX6L	3 & 6 L	12 hours	2 - 8^{0}C	$235	www.csafellc.com/lp/Courier1/index_PX3L.html
GTS 77	10.7 L	48 hours	2 - 8^{0}C	$122	www.coldchaintech.com/products/kooltemp-pre-qualified-solutions/item/gts-77/
Series 4 248	2 L	48 hours	2 - 8^{0}C	$265	www.mnthermalscience.com/products/series-4-248-emt
GTS18	2.2 L	24 hours	2 - 8^{0}C	$356	www.coldchaintech.com/products/kooltemp-pre-qualified-solutions/item/gts-
Nomadic	2.1 L	24 hours	2 - 8^{0}C	$65	www. /store.thermosafe.com/model/E24AUPS.html

The North Dakota Department of Health does not recommend or endorse products or manufacturers. Providers may purchase containers that are not manufactured by companies on the list. However, it is important to ensure that any refrigerator/freezer you purchase meets the health department's standards for vaccine storage.

Dry ice should not be used for transportation of varicella-containing vaccines.

Transportation of frozen vaccines

Vaccine manufacturers do not recommend transportation of varicella containing vaccines. If the vaccines must be transported, a portable freezer must be used.

Do not transport diluents at freezer temperature.

The North Dakota Immunization Program requires providers to use a certified, calibrated thermometer during vaccine transport.

Do not store vaccines in transport containers.

Do not ship vaccines.

Vaccines should be attended at all time during transport.

If a vaccine is exposed to out-of-range temperature during transport, label the vaccine "Do Not Use" and contact vaccine manufacturers for further guidance.

If you have questions, please contact the ND Immunization Program at: 701.328.3386 or toll-free at 800.472.2180.

Transportation of diluents

Diluents should be transported with their corresponding vaccines. Diluents that do not contain antigens (diluents for MMR, varicella and zoster) can be transported at room temperature or refrigeration temperature. Diluents for ActHIB, MPSV4, MCV4, and Pentacel as well as other diluents that contain antigens must be transported at refrigerator temperature. Diluent for rotavirus (Rotarix) may be transported at room temperature or at refrigeration temperature.

Thermometers

Vaccine temperatures should be monitored at all times during vaccine transport. Data loggers with a probe in glycol are preferred for vaccine transport, as they measure vial temperature and provide detailed information on temperature during transport. Regardless of the type of thermometer used, the temperature of the vaccine should be documented at least every 30 minutes during transport.

Tips for vaccine transport

- Pack vaccines with their original package. Do not remove vaccine vials from their boxes.
- Record the vaccine type, amount and the time of packaging before transport.
- Make sure that staff participating in vaccine transport are aware of the vaccine cold chain and its importance.
- Vaccine transportation containers should be labeled by appropriate labels such as "fragile" or "refrigerated material."
- Never transport a multidose vial that is opened.
- Coolant packs should be conditioned before use by leaving them at room temperature for one to two hours until the edges have defrosted and the packs look like they are sweating.
- When you transport vaccines, be sure to place an insulating barrier (bubble wrap, crumpled brown packaging paper, styrofoam peanuts) between vaccines and conditioned coolant packs to prevent accidental freezing of vaccines.
- Vaccine should not be placed in the trunk of a vehicle. It should be placed in the passenger compartment.
- When you transport vaccines, make sure the immunization staff at the designated location is available to receive and store the vaccines.
- Vaccine should be delivered directly to the receiving facility and upon arrival it should be unpacked and stored at the appropriate temperature (2 to 8°C).

Vaccine transfer

The Immunization Program encourages providers to transfer vaccines when they have a state supplied vaccine which they do not anticipate administering before the expiration date.

For further guidance on transportation of vaccines, refer to the Vaccine Storage and Handling Toolkit available at:
www.cdc.gov/vaccines/recs/storage/toolkit/storage-handling-toolkit.pdf.