WASHINGTON STATE CVP
Childhood Vaccine Program
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Vaccine Storage Unit Guide

Storage units must keep vaccines stored at appropriate temperatures. Give safe and effective vaccines to patients by following storage and handling guidelines. This guide shows federal and Washington State requirements for vaccine storage units. Often the most expensive part of Childhood Vaccine Program (CVP) participation, selecting your vaccine storage units, must be done with care. Please contact us for guidance prior to purchasing equipment.

REQUIREMENTS

As required by the CDC and Washington State Childhood Vaccine Program, providers storing public-supplied vaccine must follow certain rules for their cold storage units. Storage units must:

- Be pharmaceutical/medical grade, commercial stand-alone or household stand-alone. **Household combination units are not allowed.**
- Reliably maintain proper vaccine temperatures.
  - Refrigerators must maintain temperatures between 36°F and 46°F (2°C and 8°C).
  - Freezers must maintain temperatures between -58°F and +5°F (-50°C and -15°C).
  - Ultra-cold freezers (for Pfizer COVID-19 vaccine storage) must maintain temperatures between -130°F and -76°F (-90°C and -60°C).
- Have thermostat controls with multiple settings.
- Use a calibrated temperature monitoring device, such as a DDL (digital data logger) with a buffered temperature probe, centrally located in each storage unit. For ultra-cold freezers an air probe must be used, or a probe designed specifically for ultra-cold temperatures with the DDL.
- Have enough room to store water bottles in the refrigerator (on the top shelf and floor and in the door racks) and frozen coolant packs in the freezer, to stabilize the temperatures and minimize temperature excursions that can impact vaccine potency.
- Have enough room to store the year's largest inventory without crowding. Vaccines should be placed in the middle of the unit and allow for space in-between and around vaccines for air circulation. Never store vaccines in vegetable bins, in doors or on the floor of the unit.
- Have wire shelving for better airflow.
- Have door latch safeguards (ex. lock, alarm).
- Be placed in a room with good air circulation, ventilation, and stable room temperatures 20°C-25°C (68°F-77°F).
- NOT have food and beverages stored anywhere in the unit. This practice results in frequent door opening and temperature destabilization.
- Have biologics stored on the shelf below vaccines.
- Freezer units should have frost-free or auto-defrosting features. If they do not, it is the provider's responsibility to manually defrost the storage unit on a regular basis to prevent frost and ice buildup which can affect vaccine temperatures.
- Receive maintenance based on manufacturer guidelines.
- Have a "Do Not Disconnect" sign by the power source and the circuit breaker.

Equipment Options

GRADE (TYPE) *RATING*	DESCRIPTION	
Pharmacy-grade or Biologic-grade (stand-alone and combination units) ***Best***	Purposely built to maintain consistent temperatures for storage of vaccines or biologics. Come in stand-alone, combination and doorless/vending style units. This includes ultra-cold freezers.	
Compact Pharmacy-grade or Biologic-grade (stand-alone) ***Best***	These under-the-counter units are suitable for smaller practices with limited space. This includes ultra-cold freezers.	
Commercial Units* (stand-alone) ***Better*** **&** **Household Units* (stand-alone)** ***Good***	Intended to store food and beverages in commercial and household settings. Commercial units are often larger and more powerful than household units, but neither are designed to store biologics and experience some temperature fluctuations. *These units may require additional water bottles to maintain stable temperatures.	

MANUFACTURERS TO CONSIDER

Accucold	Lab Research Products (LRP)
American Biotech Supply (ABS)	Migali Scientific
Fisher Scientific	Nor-Lake Scientific
Follett	Panasonic Biomedical (PHCBI)
Helmer Scientific	Thermo Fisher Scientific

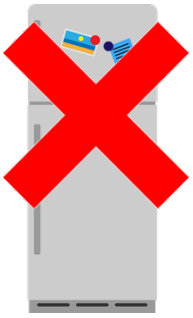
The Washington State Department of Health does not endorse specific vendors or products. This guide is provided for informational purposes only. Other vaccine storage units may meet state and federal guidelines for proper vaccine storage and handling. It is your responsibility to make sure a storage unit meets CDC requirements before you purchase it.

There are several used and remanufactured equipment vendors online. Prices are often 30-50% off retail. Also consider calling your manufacturer of choice and asking about less expensive used units. Helmer, for example, has a rotating inventory of scratch and dent units that come with a much lower price tag and full warranty. As with any large purchase, only buy from reputable vendors and get all guarantees in writing.

If your biomedical-grade refrigerator or freezer malfunctions, call your manufacturer to check on warranty status. The manufacturer should also have a list of local repair shops authorized to work on your equipment.

Unapproved Storage Units

According to studies conducted by National Institute of Standards and Technology (NIST), household style units are less capable of maintaining proper storage temperatures in both the refrigerator and freezer compartments. This is because cold air from the freezer blows directly into the refrigerator compartment and onto the sensitive vaccine

DORM-STYLE AND BAR-STYLE UNITS	
Small, single door combined units should never be used for ANY type of vaccine storage. The freezer compartment is incapable of maintaining temperatures appropriate for varicella and zoster vaccine storage. Furthermore, cold air from the freezer compartment is often vented down into the main compartment causing unstable and inconsistent refrigerator temperatures.	
COMBINATION HOUSEHOLD UNITS	
Intended for use in homes and offices, typically for food storage. Like commercial units, they are not designed to store biologics and experience frequent temperature fluctuations.	

Choosing the Right Sized Unit

Below are a few helpful steps for determining the ideal storage unit size for your clinic:

1. Estimate the maximum number of doses of publicly supplied vaccine and privately purchased vaccine (if applicable) that will be in your storage unit.

2. Match your maximum doses with the minimum cubic feet need to safely store your vaccine.

3. Using this refrigerator and freezer guide as a reference, search for a storage unit that's properly sized and meets all VFC requirements. Whenever possible, choose biomedical grade over household style unit

Storage Unit Calculation	
Add the number of doses on hand (current inventory) from your last order placed.	
Public vaccine	
Private vaccine	+
Total doses	=
Multiply (max inventory)	x1.25
Maximum doses	=

Max. Doses	Minimum Cubic Ft.
2,000+ doses	may need more than one refrigerator
1000 - 2000	40 cu. ft
900 - 1000	36 cu. ft
801 - 900	21 - 23 cu. ft
701 - 800	17 - 19.5 cu. ft
400 - 700	11 - 16.7 cu. ft
100 - 399	4.9 - 6.1 cu. ft

OTHER EQUIPMENT OPTIONS

PORTABLE COLD STORAGE TO CONSIDER

These are excellent options for emergency storage, long distance transport or use during day clinics in the field. Some units use electricity to run a cooling system while others use advanced insulation combined with proprietary cooling packs. Whichever type you choose, it's a smart investment that will add another layer of protection to your vaccine management practice. Try using the search terms: "portable vaccine refrigerator", "portable vaccine freezer" or "phase change materials vaccine carrier"



EMERGENCY BATTERY BACK-UP TO CONSIDER

Other than a generator, one of the best ways to buy time during an emergency is through the use of a battery backup. Ideally, these would be used in combination with an alarm system to add 2-4 hours to your response window. Try using the search terms: "backup battery vaccine refrigerator."