



Oregon VFC Refrigerator and Freezer Guide

Vaccine storage units must be selected carefully and used properly. Whenever possible, choose a lab-grade refrigerator and freezer for your vaccine storage. If this is not a viable option, choose separate (undercounter or full-size) units instead. If none of the above options work for your situation, a domestic refrigerator/freezer is acceptable for VFC vaccine storage.

The Centers for Disease Control (CDC) recommends that any refrigerator or freezer you choose for vaccine storage must:

- be able to maintain required vaccine storage temperatures year-round
- be large enough to hold the year's largest inventory
- have a certified, calibrated thermometer inside each storage compartment
- be dedicated to the storage of vaccines. Food and beverages should not be stored in a vaccine storage unit because this practice results in frequent opening of the door and destabilization of the temperature.

- 2008 CDC Vaccine Storage & Handling Toolkit (CD edition)

General Requirements

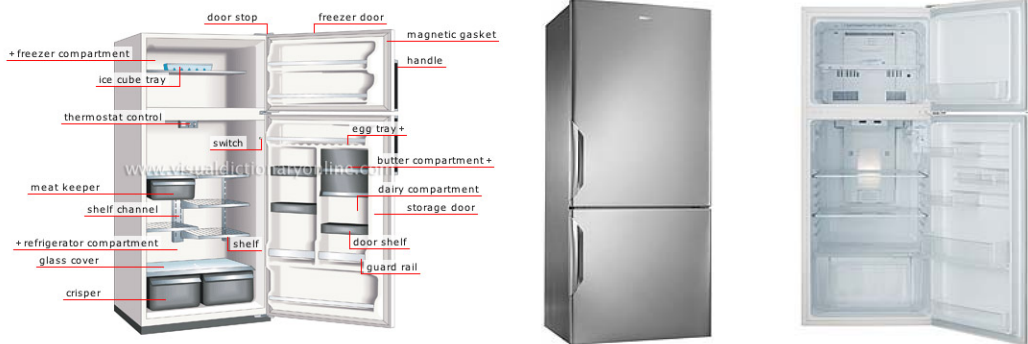
Vaccines that require storage temperatures between **35° and 46°F (2° and 8°C)** may be stored in the refrigerator compartment of a domestic or commercial-style refrigerator/freezer unit. Vaccines that require storage temperatures at **5°F (-15°C)** or colder may be stored in the freezer

Compartment of such units. Sites that store large volumes of vaccine might prefer separate refrigerator and freezer since stand-alone refrigerator and freezer units maintain the required temperatures better. Whatever type of storage unit is used, the refrigerator and freezer compartments must have separate external doors. The storage unit must have enough room to store the year's largest *without crowding* and to store enough water bottles (in the refrigerator) and frozen packs (in the freezer) to stabilize the temperature. Additionally, the unit must function properly and reliably maintain the appropriate temperatures.



Refrigerator and freezer compartments must have separate external doors.

Option 1: Domestic refrigerator/freezers



These are the units found in home and appliance stores. Higher-end models are sometimes referred to as “commercial-grade” and are most often used in the food service industry. While not ideal for vaccine storage, many clinics use this type of unit due to its affordability and availability. **The VFC program recommends that a clinic consider *separate* (undercounter or full-sized) refrigerator and freezer units if possible. Experience has shown that separate units remove the risk of freezing refrigerated vaccine, increases storage space and reduces compressor wear associated with a dual zone system.**

If you choose a domestic combination unit, some *essential* features to look for are:

- Separate doors for the refrigerator and freezer compartments

- Separate temperature dials for the refrigerator and freezer compartments
- Fully adjustable shelves
- Ample room to store **all** vaccine on the middle 2-3 racks

Some *recommended* features include:

- Locks on the outside of the doors
- Separate compressors for the freezer and refrigerator compartments
- Automatic condensate removal; no drain lines
- Forced air circulation
- Alarm on door to detect door ajar
- Battery back-up (for power failure)

Warnings:

Freezing vaccine- Never store freeze-sensitive vaccines near the cold air vent in refrigerator section. Air from the freezer will often blow down on the vaccine and freeze it.

Single thermostat units- Domestic refrigerators with a single thermostat are strongly discouraged. This type of refrigerator/freezer is only accepted if storing vaccine in refrigerator *or* freezer, but not both. A single thermostat makes it difficult to maintain recommended temperatures in both sections.

Option 2: Undercounter Refrigerators and Freezers




Undercounter refrigerators and freezers are excellent choices for those clinics that may be limited on space but would like a scientific-grade vaccine storage solution. Not to be confused with dorm-style refrigerators (see warning at end

of this section), scientific-grade undercounter refrigerators and freezers are high quality stand-alone units that allow for the separation of frozen and refrigerated vaccines. Benefits of undercounter refrigerators and freezers include:

- **Lower risk of catastrophic loss.** Separate compressors and condensers decrease the risk of a total vaccine loss that might occur in a single refrigerator/freezer unit.
- **Stability of temperatures.** Because these units are only required to hold a single set temperature they are not constantly re-adjusting and “sharing” cold air between the refrigerator and freezer.
- **No risk of accidental freezing of refrigerated vaccine.** Combined units often use a cold air vent (from the freezer) to regulate temperatures in the refrigerator compartment. This freezing air blows down on the top shelf of the refrigerator and can quickly freeze any vaccines in its path.
- **Cost benefit.** If a clinic is looking to add to their existing refrigerator or freezer capacity, this option allows for the purchase of only what is needed. A single under-counter refrigerator might negate the need to buy a new larger, more expensive combination unit.

Warning:

	<p>Dormitory-Style Units- Small single-door (dormitory-style or bar-style) combined refrigerator-freezer units should not be used for permanent vaccine storage. The freezer compartment in this type of unit is incapable of maintaining temperatures cold enough to store MMRV, varicella, and zoster vaccines. If attempts are made to cool the freezer compartment to the appropriate temperature, the temperature in the refrigerator compartment will fall below the recommended range, potentially freezing the refrigerated vaccines.</p>
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Quick picks- Undercounter

So-Low MV4-6UCRGD

Undercounter Laboratory Refrigerators - 6.1 cu ft Lab Refrigerator



So-Low MV4-6UCRGD, an undercounter refrigerator, is used for laboratory and pharmacy purposes. This upright unit has clear tempered glass door that offers product visibility. Having capacity of 6.1 cu. ft., it works between 1°C / 34°F to 7°C / 44°F temperature. This built-in refrigerator comes with an auto cycle defrost, vacuum form high impact polystyrene interior, forced air ventilation and works with 3.3 AMPS. It also features seamless finish with rounded corner, insulated power cord and three prong plug for convenient usage. Get this U.L listed

unit for commercial purpose.

So-Low MV23-4UCF

Undercounter Laboratory Freezers - 4.5 cu ft Lab Freezer



All So-Low undercounter freezer units are ideal for laboratory and pharmacy use. Model MV23-4UCF is one such Freezer that has a manual defrosting and comes with U.L approval for commercial purpose. This upright unit has a capacity of 4.5 cu. ft. with the temperature range of -23°C / -9°F to -17°C / 1°F. Designed for built-in application, this unit offers forced air ventilation through front grille and works with 3.3 AMPS. Get this reliable and durable flat door liner with double insulated power cord and three prong hospital grade plug for safe usage.

Option 3: Laboratory-grade refrigerators and freezers



Laboratory-grade refrigerators and freezers are considered the best, most secure option for vaccine storage. As with most “gold-standard” products, they carry a large price tag and are usually reserved for health departments, laboratories and hospitals. However, many of the lab-grade manufacturers also produce refrigerators and freezers in an array of sizes and price points. For example, Sanyo produces very large, vaccine/blood lab-grade refrigerators (see first picture above) but they also produce more moderately priced under-counter models ideally suited for small clinics.

Quick picks- laboratory-grade

The **HLR111** is a single door Horizon Series™ Laboratory Refrigerator. It offers a microprocessor temperature controller with an alarm/monitor, superior cabinet construction, and maximum temperature uniformity with a heavy-duty, forced-air refrigeration system.



Features:

- Temperature Controller with Alarm/Monitor System
 - LED digital display of chamber temperature
 - Programmable operating temperature range
 - Single temperature probe
 - Programmable high and low temperature alarms with visual and audible indicators
 - Manual alarm checks
- Bacteria-resistant powder coated interior, exterior and door handle
- Dual-pane glass door
- Innovative Sure-Seal door system with magnetic closure
- Access port with interior and exterior plugs
- Dual, swivel locking casters
- Key lock

The HLF120 Laboratory Freezer operates at -30°C. This Horizon Series freezer offers superior construction, heavy-duty, forced air refrigeration system, and a magnetic door closure. Programmable defrost times allow the user to schedule defrost cycles to run automatically during low use periods.



Features:

- Microprocessor temperature controller with:
 - Programmable operating temperature
 - Programmable high temperature alarm with visual and audible indicators
 - LED display of chamber temperature
- Bacteria-resistant powder coated exterior and interior
- 4 Epoxy coated wire shelves
- Dual, swivel locking casters
- Key lock

Manufactures to consider

Sanyo (used by Klamath and Multnomah County Health Department)

<http://www.sanyobiomedical.com/productList.php?cat1=19>

SO-LOW (used and highly recommended by OHSU and Kaiser)

<http://www.so-low.com/>

Sun Frost (recommended by Green Guide and Planet Green for it's energy efficiency and used by Coos County Health Department)

http://www.sunfrost.com/vaccine_refrigerators.html

Helmer (used and highly recommended by Washington County Health Department)

<http://www.helmerinc.com/category.aspx?taxonomyid=20&path=%5CProducts%5CUSA>

Lab Research Products

<http://www.labresprod.com/>

Kelvinator Scientific

www.PMCScientific.com

PMC Scientific is an Oregon-based retailer of Kelvinator. Call Ty Altman at 1-866-656-7400 for assistance in choosing the right Kelvinator for your VFC needs.

Marvel Scientific

<http://www.hospitalrefrigerators.com/index.htm>

Summit

<http://www.summitappliance.com/category/2>

True (targeted towards the food industry)

<http://www.truemfg.com/tfs/ushome.asp>

Informational resources

Globalspec- The Engineering Search Engine

<http://www.globalspec.com/>

This search engine can be used to search over 14,000 online catalogs for vendors of laboratory and pharmacy products.

Extras

Description: This section was created to showcase additional equipment, additions and services that your clinic may want to consider when assessing your vaccine storage and monitoring needs. These options are in *no way required* to participate in VFC; they are merely being offered as a resource for those who are interested.

Portable cold storage

These are excellent options for emergency storage or use during day clinics in the field.



AcuTemp PX1L

The AcuTemp PX1L (formerly VaxiPac®) ice-free carrying case can transport chilled vaccines, drugs, specimens and other bio-medical material safely to the point of use. Designed with ThermoCor® high performance insulation technology and used with AcuTemp® PXC coolant packs, the AcuTemp PX1L is capable of extensive hold times with no active cooling. As a result, the integrity of the critical, and often lifesaving, products transported in the AcuTemp PX1L is ensured.

Phone: 937-312-0114

<http://acutemp.com/products/index.asp>

FridgeFreeze portable vaccine refrigerators and freezers

All FridgeFreeze portable vaccine refrigerators and freezers work with 12/24 and 110/240 volts. All units include an internal fan to prevent thermal layering and keep a consistent temperature throughout the entire FridgeFreeze. For precise temperature control, a digital thermostat is standard with built-in temperature alarms. All units come with a lockable latch and your choice of a smooth or diamond plated finish.



Phone: 619-220-6003

<http://www.fridgefreeze.com>

Alarm phone dialers

These are sold by several manufacturers with varied models, styles and prices to choose from. They are designed to call pre-determined phone numbers when the attached temp probe goes outside of the user-set range. Alarm Phone dialers are especially useful in areas that experience frequent power outages. Below are



some suppliers of Alarm Phone dialers:

Sensaphone

Phone: 877.373.2700

www.sensaphone.com/sensaphone-400.html

Dickson

Phone: 1-800-757-3747

www.dicksondata.com/product/model_D121.php

United Security Products

Phone: 800-227-1592

www.unitedsecurity.com/pages/dialers.htmlPrice:



Refrigerator /Freezer power back-up

Disruption in power supply is one of the most frequent causes of costly vaccine loss. It doesn't take long for a refrigerator and freezer to begin to warm once the power has been cut. With this in mind, a clinic may want to consider adding a secondary source of power in case of emergency. If a clinic already has a back-up system, it is highly

recommended that you have your refrigerator placed on that emergency power circuit.

For those clinics without one, a small back-up generator might be a great option for an extra layer of protection. Backup generators should be of a sufficient capacity to run continuously for 72 hours if necessary. Plans should be made to ensure that an adequate supply of fuel is on hand. Some examples include:

Guardian: 8 kW Air-Cooled Standby Generator

www.guardiangenerators.com/Products/Residential/Guardian/GUARDIAN8kW.aspx

Winco: Packaged Standby Generator-8 kw

www.usa-emergencygenerator.com/winco/index.html