



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.

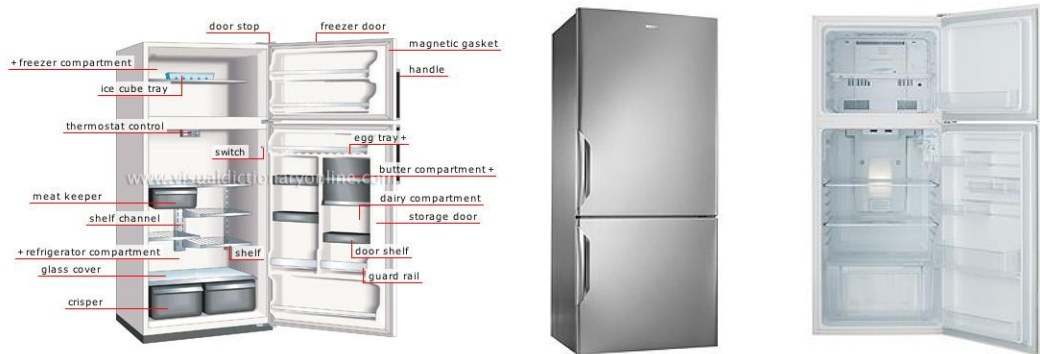


Purpose of this list

With the above guidelines in mind, we have compiled a short list of refrigerators and freezers that would be appropriate for use by any VFC clinic. The list covers a range of price points and styles to fit any size clinic or budget. We do not recommend or endorse any of these products and only offer this list as a basic guide to our valued VFC partners. Ultimately, the terms, conditions, price, etc. related to your purchase are between you and the vendor.

If you have found a unit you would like to purchase (not listed here), please contact your Health Educator for review and approval. While we make every attempt to keep this document updated, please contact the distributor/vendor for up-to-date pricing and specifications.

Home-style 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* 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 shelves

Some *recommended* features include:

- Locks on the outside of the doors
- Separate compressors/fans for the freezer and refrigerator compartments
- Forced air circulation
- Alarm on door to detect door ajar
- Battery or generator back-up (for power failure)

Warnings:

Freezing vaccine- Never store freeze-sensitive vaccines near the cold air vent in refrigerator section. It is common for air to blow out of the vents at below freezing temperatures.

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.

Quick picks- Home-style

Samsung RB195ACWP - 18.7 cu. ft.

This home-style refrigerator is unique because it offers several features not found in conventional home units.

Unique features:

- Exterior digital temp controls for both fridge and freezer.
- Twin cooling system: two independent evaporators, two independent fan systems and precise electronic control.
- ENERGY STAR Compliant.
- Pull-out bottom freezer compartment.



***Note:** Even with advanced features, home-style refrigerators are not built for medical use and are not considered “best practice” in vaccine storage.


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 or thawing.** 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. Conversely, turning up the temperature in your refrigerator can result in a warmer freezer compartment.
- **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:



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.

Quick pick: Biologic-grade Undercounter



Sanyo Undercounter Laboratory Refrigerator (SR-L6111W) & Freezer (SF-L6111W)

Laboratory and Clinical Design

- Door mounted controller
- Digital input of temperature allows end user temperature flexibility
- Integrated electronic and microprocessor technology for proven quality
- Feature stable temperature and uniformity for scientific grade preservation



Microprocessor Temperature Controls

Comprehensive temperature set point with adjustable range, preset alarm at $\pm 3^{\circ}\text{C}$ from temperature setpoint, monitoring based on SANYO-built microprocessor controller with digital display.

Accessibility and Safety

- Easy to read, angled LED display and keypad
- Remote alarm contacts for connecting to a centralized alarm monitoring system
- Automatic tracking alarm around setpoint monitors critical temperature variances
- Door ajar alarm with alarm delay timer eliminates nuisance alarms

Secured Door

Keyed door is lockable. Optional padlock hasp allows for additional security.

Biologic-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 pick: Biologic-grade full size

Helmer iLR120 Laboratory Refrigerator

The iLR120 is a single door i.Series® Laboratory Refrigerator. It features advanced security and monitoring with the i.Center® Integrated Monitoring System, superior cabinet construction, and maximum temperature uniformity with a heavy-duty, forced-air refrigeration system.



Features:

i.Center Integrated Monitoring System with:

- Advanced monitoring of temperature, door openings, and critical refrigerator functions
- Password protection
- Automatic high and low alarm testing at the touch of a button
- Dual temperature probes
- Adjustable alarm volume and tone
- Digital display of upper and lower chamber temperature
- LCD temperature graph with 24 continuous hours of data
- 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

Follett REF20-LB Medical-grade Refrigerator

High-performance upright refrigerators designed specifically for healthcare. Advanced features leapfrog other offerings to deliver superior performance, long-term reliability and user-friendly features.

- Custom-designed, modular refrigeration system with microprocessor controller provides a $\pm 1^{\circ}\text{C}$ performance throughout
- Industry-exclusive plenum air distribution delivers cold air at six different levels
- Frost-free and auto-condensate evaporation
- Easy-to-read LCD shows temperature and provides navigation to feature programming
- All the alarms you need: high/low temperature, door open, power failure, low battery
- RS-485 port and dry contacts for data streaming and remote alarming
- Full stainless steel interior and exterior provide outstanding resistance to rust and corrosion
- Dished stainless floor contains spills for easy clean-up
- Heavy-duty dual casters roll easily and lock securely
- 2.75" of CGC-free foam insulation throughout



**LB model with
4 epoxy-coated shelves**

Quick pick: Biologic-grade fridge/freezer combo

MPR-215F: 7.6 cu. ft. Pharmaceutical Refrigerator with Freezer

One unit with dual temperature zone needs only minimal installation space. The two door design reduces air loss during door openings. The triple or double-pane windows with heat reflection film reduces the condensation. To provide easier validation services calibration adjustment through the control panel is available. The MPR Series combo units have two separate specially designed compressors and offers quiet operation.

- Microprocessor control for accurate temperature management.
- Mechanical convection airflow- ducts and plenums achieve uniform temperature regardless of product loading, with quick temperature recovery following door openings.
- Unique refrigerator defrost system prevents temperature variations during defrost cycle.
- Secondary temperature deviation safety device prevents over temperature or under temperature condition.
- High and low temperature alarm includes audible and visual warning with alarm ring back.
- Remote alarm contacts allow connection to remote alarm system.
- Open door indicator light with 15 minute delayed audible alarm adds to safety.
- Keyed door locks contribute to inventory security.



Manufacturers to consider

Sanyo Biomedical (used by Klamath and Multnomah County Health Department)

<http://www.sanyobiomedical.com>

Follett

<http://www.follettice.com>

Helmer (used by Washington County Health Department)

<http://www.helmerinc.com>

Thermo Scientific

<http://www.thermo.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

Lab Research Products

<http://www.labresprod.com>

Gem Scientific

<http://www.gemref.com>

Equipment Repair

If you are having mechanical issues with your refrigerator or freezer, the following companies serve various territories throughout Oregon. They might be able to either assist you with repairs or refer you to another shop in your area.

Home style units:

Appliance and Refrigeration Hospital

503-281-0041

Biologic-grade units:

Commercial Refrigeration

503-234-6445

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

This section was created to showcase additional equipment, add-ons 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