Colorado VFC Refrigerator and Freezer Guide

A new VFC vaccine storage equipment requirement took effect July 1, 2008. This new requirement was designed to help ensure that VFC-supplied vaccines are properly stored and managed, preventing inadvertent administration of improperly stored vaccines to VFC-eligible patients, costly vaccine losses, and unnecessary vaccine wastage. It will also ensure that you have enough usable space to store the increased number of recommended vaccines.

> The Centers for Disease Control and Prevention (CDC) has never recommended that small dorm-type refrigerators be used as permanent storage units for VFC vaccine. In 2008-2009, CDC is requiring all state VFC programs to work with their enrolled VFC providers to eliminate the use of dorm-style refrigerators as permanent storage units for VFC vaccine. States must plan to have all dorm-style refrigerators phased-out of currently enrolled VFC-provider offices by December 31, 2009. Grantees must work with providers that have these units so the transition to acceptable VFC vaccine storage units will be completed by December 31, 2009.
>
> VFC Operations Guide - Module 6 pages 8-9, VFC Questions and Answers Document

Vaccine storage units must be selected carefully and used properly. If your clinic is considering replacement of your current vaccine storage unit, refer to the guidelines below or check with your local VFC Nurse prior to making your purchase. Refrigerators without freezers and stand-alone freezers may be better at maintaining the required temperatures. However, a combination refrigerator/freezer unit sold for home use is acceptable for vaccine storage if the refrigerator and freezer compartments each have a separate external door. 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)** must be stored in a refrigerator, preferably pharmaceutical or medical grade. Vaccines that require storage temperatures at **5°F (-15°C)** or colder must 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 inventory **without crowding.** If a household unit is used, you must store enough water bottles (in the refrigerator) and frozen packs (in the freezer) to stabilize the temperature.

- Vaccine packages or storage baskets should **not** touch the sides or back of the unit.
- Vaccines should also not be stored on the top shelf or on the bottom of the unit.

All providers must comply with these requirements in order to receive VFC vaccines. The type of refrigerator or freezer you need is based on:

- The number of vaccine doses your practice orders in a year;
- The maximum amount of vaccine you will store;
- Required specifications.

Did you know?

An average provider stores tens of thousands of dollars worth of vaccines

Not having the correct refrigerator or freezer may lead to costly vaccine losses or worse, inadvertently giving non-viable vaccines to your patients!

Option 1: Laboratory-grade refrigerators and freezers



Laboratory–grade refrigerators and freezers are considered the best, most secure option for vaccine storage, a true "gold-standard" product. These units are no longer reserved only for health departments, laboratories, and hospitals. Many of the lab-grade manufacturers also produce an array of refrigerators and freezers that may meet your clinics needs. 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. Most laboratory-grade refrigerators and/or freezers have built-in thermometers; however these are not as considered certified calibrated thermometers unless the manufacturer does the calibration onsite when the unit is delivered. **The VFC program still requires thermometers be read and documented twice daily by the individual responsible for the vaccines.**

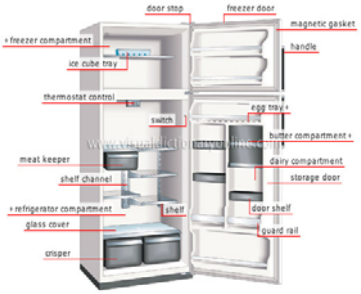
Option 2: Under-counter Refrigerators and Freezers



Under-counter 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 under-counter refrigerators and freezers are high quality stand-alone units that allow for the separation of frozen and refrigerated vaccines. Benefits of under-counter 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.

Option 3: Household/Commercial refrigerator/freezers





These units are most often 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. If you choose a household model that incorporates the following guidelines, you should get many years of reliable, stable vaccine storage.

- Some *essential* features to look for if you are buying this type of unit for vaccine storage are:

    - Separate doors for the refrigerator and freezer compartments
    - Separate temperature dials for the refrigerator and freezer compartments
    - Adjustable shelves
    - Ample room to store 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

Warnings:

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

Single thermostat units - Household-style 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.

Warnings:

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.

Other things to consider:

Required Specifications

All refrigerator units must:

- Maintain required vaccine storage temperatures (35ºF – 46ºF) year-round.
- Be automatic defrost (frost-free) and free of any frost, ice, water, or coolant leaks. Manual defrost (cyclic defrost) refrigerators with visible cooling plates/coiling in the internal back wall are not acceptable.
- Provide enough space to store the largest number of doses expected at one time

(including influenza season), allowing for vaccine storage at least 2-3 inches away from walls, floor, and other boxes, and away from cold air vents.

- Be reliable (with a quiet compressor) and has not needed frequent repairs.
- Replacement should be considered for household refrigerator/freezer combination units over 10 years old.
- Have doors that seal tightly and close properly.
- Have separate temperature controls for refrigerator and freezer for combination units.
- Not have convertible features that switch to an all-freezer unit.
- Have a working thermometer placed centrally in the unit. Thermometers must be certified in accordance with National Institute of Standards and Technology (NIST).
- Be used only for vaccine storage. In limited circumstance, and as space allows, other medications may be stored in the same units.

All Freezer units must:

- Maintain required vaccine storage temperatures (5ºF or below) year-round.
- Provide enough space to store vaccines along with sufficient frozen cold packs.
- Have an automatic defroster. (Manual defrosters are acceptable only if the office has an alternate place to store vaccines when defrosting the unit.)

Things to think about before buying a refrigerator or freezer:

1. Where will it go?
   - It must be placed away from direct sunlight and in a well ventilated area.
   - There must be enough space around it to allow air to flow freely.
   - There must be an electric outlet nearby that can be used only by the refrigerator and does not depend on the light switch.
2. What is the warranty and extended service option?
3. Will the store dispose of or recycle your old unit?
4. Is there an energy rebate?
5. How long will it take to be delivered?

Getting started with a new refrigerator or freezer:

1. Plug in the refrigerator or freezer (one unit per outlet).
2. Place thermometers in the center of unit.
3. Set temperatures to correct ranges:
   Freezer: 0º F
   Refrigerator: 40º F
4. Record temperatures twice a day on your vaccine Temperature Log.
5. Place vaccines in unit if recorded temperatures are within the correct range for at least 5 days in a row.

How to decide the size of refrigerator/freezer you need.

STEP 1: Estimate the maximum number of doses of VFC vaccine and privately purchased vaccine that will be in your refrigerator and freezer

Refrigerator:

Add the number of doses *on hand (current inventory)* from your last order form.

VFC vaccine _____
VFC flu vaccine + _____
Private vaccine + _____
Private flu vaccine + _____
Total doses =_____
Multiply (max inventory) x 1.25

Maximum doses =_____

Freezer:

Add the number of doses *on hand (current inventory)* from your last order form.

VFC MMR & Varicella vaccine _____
Private MMR & Varicella vaccine +_____
Total doses =_____
Multiply (max inventory) x 1.25

Maximum doses =_____

Doses/Year	Required Equipment
Very High Volume Providers (>10,000 doses/year)	Pharmacy-grade or biological grade refrigerator-only unit and stand-alone freezer unit
High Volume Providers (2,000-10,000 doses/year)	Refrigerator-only (minimum size 11 cu.ft) Stand-alone freezer unit
Medium Volume Providers (500-2,000 doses/year)	Refrigerator-only (minimum size 11 cu.ft) or Pharmacy-grade or biological grade under counter unit Stand-alone freezer unit
Low Volume Providers (< 500 doses/year)	

* Most practices will need a separate refrigerator and freezer, but low and medium volume providers already enrolled in the VFC Program may continue to use household refrigerator/freezer combination units if they meet all the required specifications below.

Now choose the unit that's right for you!

Manufactures to consider

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

Helmer
http://www.helmerinc.com/category.aspx?__taxonomyid=20&path=%5CProducts%5CUSA

GEM
http://www.gemref.com/2

Marvel Scientific
http://www.hospitalrefrigerators.com/index.htm

Lab Research Products
http://www.labresprod.com/

Summit
http://www.summitappliance.com/category/2

SO-LOW
http://www.so-low.com/

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